Central Vermont 2026 Regional Plan



Draft Date: 4/20/2026

Table of Contents

1. INTRODUCTION AND STATEMENT OF POLICY 11
Equitable Planning 20
Flood Resilience 23
2. NATURAL SYSTEMS AND LAND USE ELEMENT 25
Discussion: Trends 25
Productive Resources 26
Resource Protection 31
Land Development Issues 41
Future Land Use 45
General Land Use Goals, Policies and Strategies 68
3. ENERGY ELEMENT 82
Introduction 82
Regional Energy Use Summary 85
Sector Targets 92
Renewable Energy Resources and Siting Energy Infrastructure 104
Key Issues 128
Energy Goals and Strategies 133
4. TRANSPORTATION ELEMENT 145
Discussion: Trends 147
Transportation System ~~Performance~~ 147
Highways 147
Safety 150
Transit 152
Freight Movement 153
Air Transportation 153
Bicycle and Pedestrian 154
Climate Impacts and Vehicle Emissions 155
Historic and Natural Transportation Assets 164

DRAFT

Funding for Town Transportation Projects 166
Regional Transportation ~~Plan~~ Recommendations 168
Transportation Goals and Policies 169
5. UTILITIES, FACILITIES AND SERVICES ELEMENT 176
Electric Power 176
Energy Infrastructure: Electricity 179
Wastewater Systems 194
Water Supply Systems 200
Solid Waste 205
Communications 213
Emergency/Health Services 223
Crime And Safety 231
Educational Facilities and Services 233
Child Care 235
Healthy Communities 239
Outdoor Recreation 243
Cultural Resources 245
Historic and Archeological Resources 248
Utilities, Facilities and Services Goals, Policies and Strategies 249
6. HOUSING ELEMENT 270
Discussion: Trends 270
Meeting Current & Future Needs 291
Housing Targets: 297
Housing Goals, Polices & Actions 307
7. ECONOMIC ELEMENT 310
Discussion: General Economic Profile 310
Economic Development 314
Challenges 319
Summary 322
Economic Goals, Policies and Strategies 323

DRAFT

8. Implementation Plan 336
APPENDICES 340
Appendix A. Maps 342
Appendix B: Enhanced: Energy Plan 356
Appendix C: Housing Target Methodology 357
Appendix D: Future Land Use Map Methodology 358
Appendix E : Environmental Benefits & Burdens Analysis 362
Appendix F: Statutory Language 362
Appendix G: Regional Plan Review Committee Dates of Draft Chapter Review.....367

Commented [LB1]: Required by statute

Commented [LB2]: Required by statute

Commented [LB3]: Required by statute

DRAFT

Staff:

Executive Director: Christian Meyer
Office Manager: Barbara Petrie
Program Manager: Brian Voight
Senior Planner: Reuben MacMartin
Planner: Sam Lash
Planner: Keith Cubbon
Planner: Lincoln Frasca
Planner: Niki Sabado
Planner: Eli Toohey
Planner: Pamela Sonn
Planner: Lorraine Banbury
Planner: Kari Pelletiere

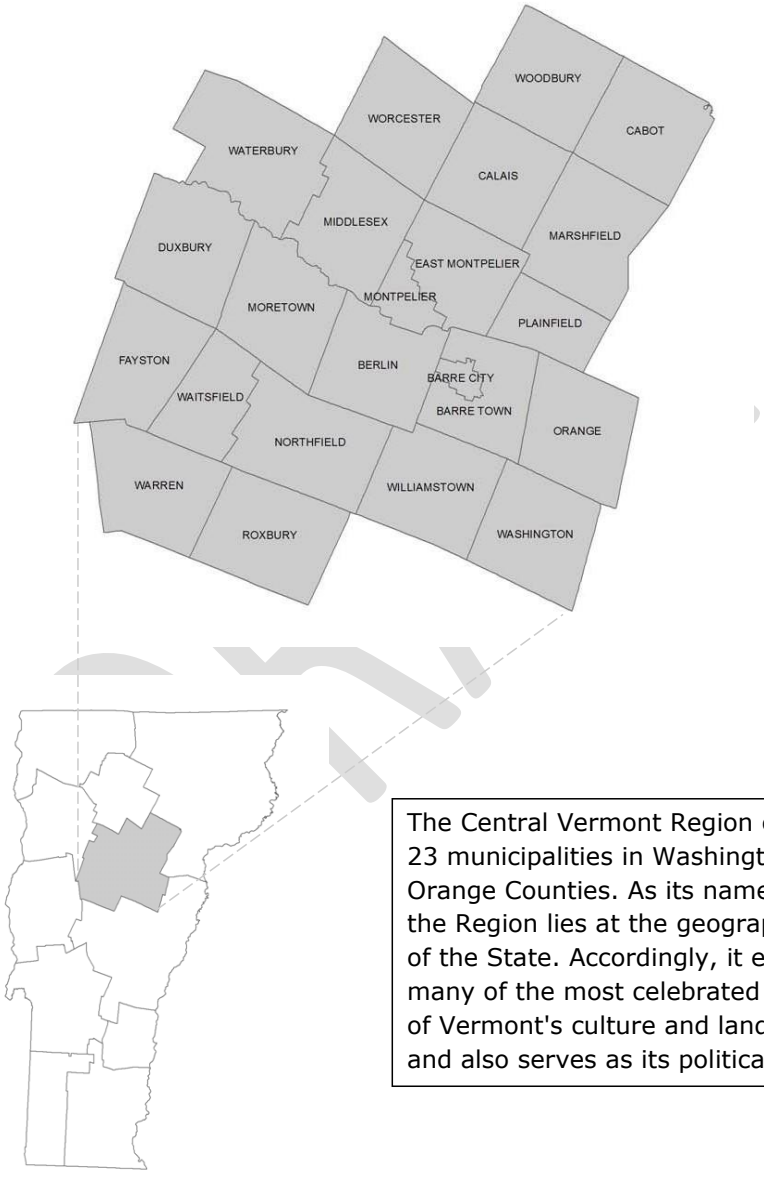
DRAFT

Commissioners:

Municipality	Commissioner
Barre City	Janet Shatney
Barre Town	*Vacant*
Berlin	Robert Wernecke
Cabot	Brittany Butler
Calais	John Brabant
Duxbury	David Wendt
East Montpelier	Alexander Rob
Fayston	Andrew McNealus
Marshfield	Amy Monahan
Middlesex	Roanld Krauth
Montpelier	Mike Miller
Moretown	David Stapleton
Northfield	Royal DeLegge
Orange	Lee Cattaneo
Plainfield	Paula Emery
Roxbury	Jerry D'Amico
Waitsfield	Alice Peal
Warren	Jim Crafts
Washington	Peter Carbee
Waterbury	Doug Greason
Williamstown	Richard Turner
Woodbury	Michael Gray
Worcester	Bill Arrand

DRAFT

Map of Central Vermont



The Central Vermont Region comprises 23 municipalities in Washington and Orange Counties. As its name implies, the Region lies at the geographic heart of the State. Accordingly, it embodies many of the most celebrated qualities of Vermont's culture and landscape and also serves as its political hub.

DRAFT

Acknowledgements

The Central Vermont Regional Planning Commission would like to recognize and thank all past and present Commissioners and staff members for their contributions and expertise to the 2026 update of the Central Vermont Regional Plan.

A note about accessibility: Verdana is used as the primary font in this document to enhance on-screen readability and create an accessible text for a wide range of readers.

DRAFT

DRAFT

Table of Figures

Connected Streets 55
Current Regional Energy Use Estimates 85
Current Regional Residential Fuel Use (see supplement for expanded data and Town breakout) 86
Current Regional Residential Heating Cost Estimate 87
Current Regional Commercial Thermal (Heating) Energy Use 88
Current Regional Transportation Energy Use 89
EV Registrations 89
Current Regional Electricity Consumption 90
Residential Weatherization Targets 94
Summary of 2020-2023 Residential Weatherization 95
Efficiency Vermont Regional Summary Selected Measures 97
Full Regional LEAP results in the supplement, and municipal target breakouts on CVRPC's website. 98
Targets for Residential High Efficiency Wood Heat Conversions 99
Summary of State Known and Possible Constraints 108
Summary of Regional Possible Constraints 109
State and Regional Preferred Site (Types) and Project Characteristics 110
Potential New Regional Renewable Energy Generation 120
Potential Vs. Target: Land Use Impact 121
Incremental Regional Targets for New Renewable Electric Energy Generation (MWh) 121
Federal Class by AADT Map(Source: HPMS 2019) 148
Average Percent of Free Flow Speed by Segment for Average Weekday 2023 Map (Source: RITIS Probe Data) 150
Crashes With Injuries on Arterials 2016-2022 ..... **Error! Bookmark not defined.**
Crashes With Injuries on Collectors 2016-2022 ..... **Error! Bookmark not defined.**
Park and Ride Utilization by Season 155

DRAFT

Change in Emissions Over Time (Source NEI Data) 157
EV Ownership by Type Targets 158
Current Regional Transportation Energy Use 159
EV Charger Location 161
Historic Markers by Town 165
Transportation Funding Programs 167
2021 Vermont Electricity Characteristics 181
Map CVRPC Distribution Utility Territory and Infrastructure (substations, transmission lines, 3 phase power lines) 183
Customer/Member by Town and Distribution Utility (DU) 184
Customer/Member by Type and Distribution Utility (DU) 184
Electrical Grid Systems Primer, Poster from Vermont Energy Education Program 186
Regional Fossil Fuel Generation 188
Existing Renewable Electricity Generation 188
Distributed Generation Projects <5MW (DG Inventory as of 2/2024) 190
Existing Renewable Energy Generation and Storage by Town 191
Wastewater Treatment Facilities 195
Municipally-owned Community Water Systems 201
Emergency Resources by Municipality in Central Vermont 225
Public School Enrollment (Vermont Agency of Education) 233
~~Regulated~~ Licensed Child Care Providers in Central Vermont, Vermont Agency of Human Services 236
List of Public Libraries in Central Vermont 247
Central Vermont Population and Household Growth 271
Age of Householders in Washington and Orange Counties 273
Projected Number of Vermont Households by Age of Householder 2029 .. 274
Housing Needs at Different Life Stages 275
Washington and Orange Counties Composition of Housing Stock 276
Vacancies in Central Vermont 277

DRAFT

Age of Central Vermont Housing Stock 278
Area Median Incomes 279
Area Median Rent and Housing Prices 280
Percentage of Households at Area Median Income 280
Median Income Compared to Median Home Price 282
Transportation and Housing Cost Burden 284
Costs of Commuting 285
Subsidized Rental Housing in Central Vermont 286
Current Distribution of Housing in Central Vermont 290
Housing Resources 295
Municipal Housing Targets 298
Percentages of Future Land Use Areas in Central Vermont 299
Housing Targets By Unit Type 300
Housing Targets By Unit Size 301
Housing Affordability Targets 302
Job Counts by NAICS Industry Sector - 2023 312
Age of Vermonters in the Workforce 321

DRAFT

1. INTRODUCTION AND STATEMENT OF POLICY

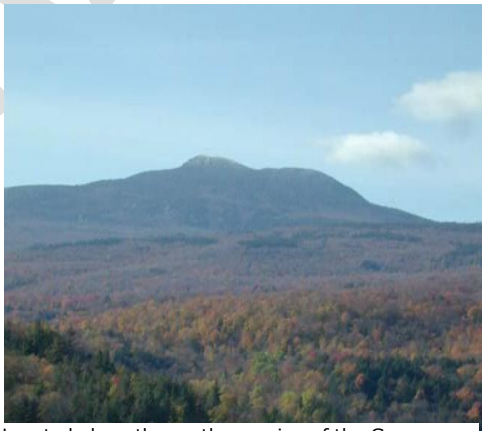
Preamble

The Central Vermont Regional Planning Commission (CVRPC) was created in 1967 under Vermont Statute Title 24, Chapter 117, to provide planning assistance to municipalities within the Region and create a forum for addressing those issues which transcend municipal boundaries. This same piece of legislation requires Regional planning agencies to prepare plans which are consistent with statewide goals and compatible with the plans of their member municipalities and adjoining Regions. This document seeks to satisfy that mandate.

CVRPC is not a part of state government, but is a creature of State Statute and bound by that Statute. Representatives appointed by the legislative bodies of its member communities govern the Commission's activities and policies.

Overview of the Region

The Central Vermont Region is comprised of 23 municipalities in Washington and Orange Counties. As its name implies, the Region lies at the geographic heart of the State. Accordingly, it embodies many of the most celebrated qualities of Vermont's culture and landscape, and serves as its political hub, as well. Unfortunately, our problems are also typical of those in evidence throughout the State: a sluggish economy, inefficient use of



Located along the northern spine of the Green Mountain range in the Central Vermont Region, Camels Hump, elevation 4,083 feet, is the highest undeveloped mountain in the state.

DRAFT

resource lands, stressed infrastructure, and increased energy costs and consumption, among them.

Physically, the Region is transected by several north-south running mountain chains (e.g. Green Mountains, Northfield Range, Worcester Range, Irish Hills, Woodbury Mountains, and Groton Range) separated by fertile river valleys. The valley of the Winooski River is the exception to this pattern cutting across the mountains as it flows west to Lake Champlain. (See map: Topography)

It was in the valleys where early settlement began where population, commerce, and infrastructure have historically been concentrated in compact hamlets, villages, and cities. Often the surrounding countryside and wilderness supplied the raw materials (e.g. lumber, granite, wool, grains, milk, etc.) for the manufacturing concerns of these centers.


Robinson sawmill, Calais, constructed 1803, is the oldest standing sawmill in Vermont.

In recent decades however, people, and to a lesser extent, commerce has shifted into the countryside. As a result of this trend, many of Central Vermont's rural municipalities have doubled their population while our largest cities have not grown at all, and even declined.

The reasons for shifting land use and habitation patterns are several: the emergence of commuter lifestyles, a population seeking rural environs, and the growth of resort areas and second home development, among them. All of these have been enabled by the advent and subsequent dominance of the automobile.

The fact that much of the Region's new growth has occurred along transportation corridors is no accident, and is often encouraged by land use regulations. Not until very recently have we noticed the more disturbing aspects of "strip development" and suburban sprawl.

Still, while Central Vermont is no longer immune to the perils and pitfalls of life in modern America, it remains a place of unique beauty, character, and

DRAFT

promise. We are not yet "just like everywhere else." In fact, Central Vermont is diverse beyond its size. We are home to a golden dome, and an interstate highway, remote logging roads, covered bridges, fast food restaurants, a culinary institute, a military college, road houses, opera houses, ski condos, hunting camps, conservatives, liberals, farmers, artisans, lawyers, activists, teachers, bureaucrats, politicians, merchants, the unemployed, the elderly, and perhaps most importantly, children.

Purpose of the Plan

Title 24 VSA Chapter 117 Section 4347 "Purposes of Regional Plan" states:

"A Regional plan shall be made with the general purpose of guiding and accomplishing a coordinated, efficient and economic development of the Region which will, in accordance with present and future needs and resources, best promote the health, safety, order, convenience, prosperity and welfare of the inhabitants as well as efficiency and economy in the process of development. This general purpose includes, but is not limited to recommending a distribution of population and of the uses of the land for urbanization, trade, industry, habitation, recreation, agriculture, forestry and other uses as will tend to:

> 1) create conditions favorable to transportation, health safety, civic activities and educational and cultural opportunities;
>
> 2) reduce the waste of financial, energy and human resources which result from either excessive congestion or excessive scattering of population;
>
> 3) promote an efficient and economic utilization of drainage, energy, sanitary and other facilities and resources;
>
> 4) promote the conservation of the supply of food, water, energy and minerals;
>
> 5) promote the production of food and fiber resources and the reason- able use of mineral, water, and renewable energy

DRAFT

resources; and

6) promote the development of housing suitable to the needs of the Region and its communities.

7) help communities equitably build resilience to address the effects of climate change through mitigation and adaptation consistent with the Vermont Climate Action Plan adopted pursuant to 10 V.S.A. § 592 and 3 V.S.A. chapter 72."

Commented [KP4]: This text was added to statute June 2024.

While the above language outlines the purposes of the Plan from a statutory stand-point, CVRPC views the Plan primarily as a means to enhance the lives of the Region's residents. Accordingly, the preservation and enhancement of the "quality of life" for all Central Vermont residents is the guiding principle of this Plan and the work of the Central Vermont Regional Planning Commission (CVRPC).

The term "quality of life" encompasses an array of factors that influence the level of satisfaction and enjoyment we are able to achieve in our day-to-day lives. As such, any analysis of quality of life must address both our basic needs and our desires and aspirations. Among these are:

1) A Safe Environment - Central Vermonters desire clean air, water, and land, a safe multi-modal transportation system, and access to quality health care and emergency services;
2) Job Opportunities - We desire meaningful, secure jobs paying livable wages.
3) Natural Beauty - We place a high value on the scenery and resources the landscape provides.
4) Educational Quality - Central Vermonters of all ages should have access to affordable, quality educational opportunities to enrich their lives and improve their skills.
5) Low Crime Rate - Central Vermont residents should live safely from crime.

CVRPC hopes this Plan reflects our desire to live in a Region that will be a model of health, wealth, knowledge, beauty, culture, and community for many generations to come. It is a goal of CVRPC to define, quantify, and track these elusive concepts over the next five-year planning period.

DRAFT

Implementation

~~This Plan presents the most recent demographic and statistical data available during the period over which it was written. Much of this information comes from the 2000 U.S. Census; however, a variety of other sources are used, as well, including state and local reports. In addition, demographic projections ("Economic and Demo- graphic Forecast, Central Vermont Regional Planning Region 2000 to 2020") were developed for CVRPC by Economic & Policy Resources, Inc. These projections are incorporated by reference as an appendix to the Plan. Data sources have been identified for all charts and tables cited in the text.~~

~~In the course of preparing this Plan, CVRPC agreed to compile data that is not included in the body of the 2003 Plan, but which may be significant or useful in identifying and understanding important Regional trends in the 2016 Plan. CVRPC intends to track these indicators over the life of the Plan (and beyond) in order to monitor changes in the Region's quality of life and help identify meaningful policies and programs for the future.~~

Throughout this document are specific policies, recommendations, strategies, offers, and proposals designed to reflect the values of Central Vermont residents and help realize the goals of this Plan. It is primarily through the statutory functions and obligations of CVRPC, and the initiative of the Region's municipalities, that these and other aspects of the Plan will be implemented. Title 3 Section 4021 of the Vermont Statutes also stipulates that State agency plans must be compatible with Regional plans, as well as approved municipal plans. In this regard, CVRPC believes that the definition of growth centers used by State agencies should be compatible with that of the Regions. An implementation program is included in Chapter 8.

Acknowledgement of Changing Conditions

By law, Regional plans in Vermont have a statutory life of eight years. The information and policies presented in this document represent CVRPC's best effort to present an accurate and useful picture of conditions in Central Vermont ~~at the beginning of a planning period starting in the summer of 2016~~. We recognize, however, that we live in dynamic times and that some of the facts, issues, and concerns presented here may change over the life

Commented [KP5]: Outdated.

Commented [LB6]: An implementation plan chapter has been added to the end of the document to meet new statutory requirements

Commented [KP7]: Outdated.

DRAFT

of this Plan. If conditions warrant amendments to the Plan prior to its expiration date, the Commission will respond accordingly.

Compatibility Statement

It is the Commission's belief that this Plan is compatible with the plans of our neighboring Regions and with those of municipalities within the Central Vermont Region. In other words, and in accordance with Chapter 117 mandates, this Plan "as implemented, will not significantly reduce the desired effect of the implementation of the other plan(s)."

It can be seen that almost everywhere the Central Vermont Region abuts other Regional commissions' jurisdictions, land uses are either very low intensity or near wilderness in nature as significant mountain ranges bound us to the west and east. In addition, most human activity is focused toward the center of the Region. Because of this geography, opportunities for land use (or other conflicts) with neighboring Regions are limited.

There was a conscious effort in the writing of this Plan not to usurp the authority or planning functions of Central Vermont's municipalities. This is made clear in the Plan's purpose statement, and elsewhere, in policies which support local initiatives and offer Commission assistance in the realization of the same.

Furthermore, the Regional Planning Commission does not believe there are any significant conflicts between this Plan and any municipal plan that has received the approval of this Commission. Should a conflict arise between this Plan and a municipal plan approved by this Commission, such conflict should generally be resolved at the most locally appropriate level. As such, the municipal plan should take precedence on impacts that are local in scope, while the Regional Plan should prevail where "substantial Regional impact"[1] may result. Individual projects may have aspects that fall under

[1] 1 Development projects of substantial Regional impact are those that will have substantial and ongoing impact on two or more municipalities, including the host municipality. Among the development projects of substantial Regional impact are those that will likely impact on a resource within the Region which is widely used or appreciated by people outside of the locality in which it is located. Development projects of substantial Regional impact are those which may affect settlement patterns to the extent that the character or identity of the Region (or its sub- Regions) is significantly affected. Development projects of substantial Regional impact are those that are likely to alter the cost of living, availability of choices, access to traditional way of life or resources widely used or appreciated by Regional residents. In addition, because CVRPC has defined housing as a critical need for

either jurisdiction. For instance, a large, new commercial development could have transportation impacts that extend beyond the host community, but have aesthetic concerns that are purely local. It should also be noted that, in accordance with CVRPC's Act 250 Review Policies, the Commission's position on any Act 250 project shall be based solely upon those aspects of a project that may have Regional impact.

CVRPC also recognizes that it is possible that even where the Regional Plan and the local plan appear to be compatible, differences in the interpretation and application of plans can and do occur. CVRPC will attempt to identify such discrepancies as early as possible in any relevant review process and notify the affected municipality accordingly. CVRPC will offer to meet with representatives of any municipality with which it may have a disagreement in an attempt to resolve any differences prior to issuing a final position or decision. However, CVRPC will retain its statutory right to reach independent judgment in any and all such instances.

Copies of the proposed Plan have been sent to neighboring Regional planning commissions and all Central Vermont municipalities in order to solicit feedback, comments and suggestions.

Statement of ~~Basic~~ Policies to Guide Future Growth

The Central Vermont Regional Planning Commission is charged with promoting mutual cooperation among its member towns in the planning and development of sites and infrastructure necessary to meet the future needs of the Region's residents. This Plan is intended to guide future growth and development, infrastructure investment and environmental protection in Central Vermont by providing a framework within which the basic human needs of clean air and water, access to employment, food and shelter, and emergency services sufficient to provide personal safety can be satisfied. In doing so, it strives to promote a healthy natural environment, quality educational systems, and broad access to recreational and cultural opportunities. ~~Although this Regional Plan has a statutory life of only eight~~

the Region, CVRPC will participate in the Act 250 review for any project which proposes to: increase the total number of year round housing units (according to the most recent U.S. Census) in its host municipality by more than 2%; or create more than 30 housing units of any type; or create more than 5 "affordable" housing units, as defined by VSA Chapter 117 Section 4303.

~~years, it is written using the year 2016 as a bench mark while keeping an eye toward the even more distant future.~~

Attainment of goals set by this Plan will require a commitment to a vision of the Region as a community. In planning for the long term public interest of the Region, CVRPC can play a vital role in assessing the strengths and opportunities by finding and building solutions to those issues that transcend town boundaries. Towns no longer function as self-sufficient islands in providing services, employment and education. The interrelationships and interdependence between towns within the Region are clear. The goals and objectives of each element of this Plan implement the following broad policies of the Central Vermont Regional Planning Commission:

- CVRPC in cooperation with its member municipalities and neighboring Regions seeks to guide the future of development to gain the maximum benefit for the least cost.
- CVRPC is dedicated to the promotion of the economic, social and educational well being of the Region and its residents by supporting the creation of opportunities for self-improvement while protecting individual rights and liberties.
- CVRPC encourages planning that identifies, respects and preserves our important historic, natural, cultural, and recreational resources.
- CVRPC promotes housing availability to meet the needs of people of all socio-economic levels.
- CVRPC seeks to maintain a healthy environment and to respect the Region's historic settlement patterns.
- CVRPC promotes diversified economic development and the creation and/or maintenance of sufficient jobs for all residents.
- CVRPC encourages development patterns which result in more energy efficient transportation patterns.
- CVRPC encourages investment in public facilities and services in areas of population and economic growth.
- CVRPC supports the identification and utilization of economic

growth centers as a method of achieving development patterns that are mutually advantageous to the environment and the socio-economic needs of the Region's towns.

(The use of the word "encourage" in this Plan is intended to mean "to foster or give support to" and is not intended to indicate any mandates.)

DRAFT

Equitable Planning

Commented [KP8]: This section was added to meet new statutory requirements under State Goal 15. The LURB had many required revisions for some RPCs for this section. Thus, CVRPC closely aligned its analysis with that of ACRPC and NRPC , which the LURB found satisfactory.

In 2022, the Vermont Legislature passed Act 154, the Vermont Environmental Justice Law, and in 2024 added the 15th state planning goal, pertaining to the equitable distribution of environmental benefits and burdens as described in 3 V.S.A. chapter 72. The changes to statute formally embedded environmental justice (EJ) and the analysis of environmental burdens and benefits into the Regional Plan.

Environmental Justice Definitions (3 V.S.A. § 6002):

Environmental Justice: All individuals are afforded equitable access to and distribution of environmental benefits; equitable distribution of environmental burdens; and fair and equitable treatment and meaningful participation in decision-making processes, including the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental Benefits: The assets and services that enhance the capability of communities and individuals to function and flourish in society.

Environmental Burdens: Any significant impact to clean air, water, and land, including any destruction, damage, or impairment of natural resources resulting from intentional or reasonably foreseeable causes.

Environmental Justice Focus Populations (EJFP): Any Census Block Group in which:

1. The annual median household income is not more than 80 percent of the State median household income;
2. Persons of Color and Indigenous Peoples comprise at least six percent or more of the population; or
3. At least one percent or more of households have limited English proficiency

Frontline/Vulnerable Communities

CVRPC recognizes that planning efforts can impact the distribution of environmental benefits and burdens and that actions on the regional scale should intentionally prioritize support to vulnerable communities. To

DRAFT

understand the distribution of environmental benefits and burdens across the region, CVRPC adapted the environmental justice impact analysis methodology used by the Northwest Regional Planning Commission. CVRPC mapped EJFPs as defined in 3 V.S.A. § 6002(4) and compared available data indicators to determine if EJFPs carried higher burdens than the region as a whole. This analysis can be found in Appendix E.

As well, to further understand vulnerable communities in the region, CVRPC consulted the following mapping tools:

1. The Vermont Environmental Disparity Index (VTEDI)[2]
2. Climate and Economic Justice Screening Tool(CEJST)[3]
3. Environmental Justice Mapping and Screening Tool (EJScreen)[4]

VTEDI:

This mapping tool identifies communities that are most susceptible to environmental hazards and have underlying socio-economic factors that could exacerbate the environmental risk level. The index compiles environmental exposure, health risk factors and social vulnerability, comparing a range of variables from traffic noise to cancer levels, and age of the population. The darker census tracts indicate that, relative to the rest of the state, that community carries a higher burden of the environmental, health and social variables, increasing their burden.

In Central Vermont, Berlin, Barre City, Barre Town, and Montpelier have at least one census tract that has the highest cumulative impact (Barre City has two census tracts which meet this threshold). Air pollutants and heat vulnerability emerged as two of the dominant risks. In all five census tracts with the highest VTEDI in the region, air pollution was in or above the 95th percentile compared to the rest of the state. Similarly, for four of the five census tracts, heat vulnerability was above the 90th percentile. Air pollution and heat vulnerability are addressed in the Land Use, Energy and Transportation chapters.

[2] VT Environmental Disparity Index
[3] This tool was developed by the Council on Environmental Quality but was removed from the White House website in January 2025. It is now maintained by the Public Environmental Data Partners.
[4] This tool was developed by the EPA but was removed from the EPA website January 2025. It is now maintained by the Public Environmental Data Partners.

CJEST:
Through the CEJST, a national database, Barre City was identified as disadvantaged area because it met more than one burden threshold and associated socioeconomic threshold. Specifically, Barre City was above the 90th percentile for expected building loss, projected flood risk, energy cost, asthma, and underground storage tanks and releases.

EJ Screen:
The EJScreen maps 13 environmental burden indicators, a combination of environmental indicators with socioeconomic information. Underground storage tanks, drinking water non-compliance and lead paint were the three indicators where at least one census block in the region was in the 95th to 100th percentile. The corresponding towns were Fayston, Barre City and Montpelier.

Efforts to address disproportionate distribution of benefits and burdens and to direct support to vulnerable communities are elaborated on in Appendix E.

Community Outreach and Meaningful Participation

Commented [KP9]: Added to fit statutory requirements including 3 V.S.A. § 6002 (6).

Throughout the planning process, CVRPC carried out meaningful public participation and actively engaged with the community to inform the development of the Plan. Specifically, CVRPC:

1. Conducted stakeholder outreach and interviews with community-based and partner organizations such as Downstreet Housing, Let's Grow Kids, Friends of the Mad River, and Good Samaritan Haven.
2. Met with all 23 towns in the Central Vermont region to discuss the development of the Regional Future Land Use Map. Meetings with Select Boards and Planning Commissions focused on the new tier-based framework outlined in Act 181, the statewide mapping approach, and opportunities for local input.
3. Held round table discussions at 10 libraries in Central Vermont discussing regional plan mapping and housing.
4. Distributed a survey on the Future Land Use Map and housing targets which was included in CVRPC's monthly staff newsletter, published to the CVRPC website, at the library tabling sessions and posted on the Front Porch Forum for several towns.

Commented [KP10]: This section will be updated as new outreach occurs following the release of the draft and before submission to the LURB.

Surveys and information distributed were written in plain, simple text to

DRAFT

allow all members of the public the opportunity to weigh in with their priorities and concerns. Moreover, libraries were important for outreach since they are established community centers located in the majority of EJFPs in the region. Both digital and hard copies of the survey were provided.

Beyond the initial outreach carried out for the Plan, CVRPC has participated in a number of other programs and processes that allow for community and stakeholder engagement. CVRPC:

1. Participated in the process of creating the Transportation Equity Framework, a VTrans report focused on understanding how transportation investments can reach and benefit all Vermonters.
2. Serves as an active member in THRIVE, a collaborative to improve health outcomes and contain costs by identifying and addressing social drivers of health. This includes health care, public health, social services, planning, nonprofits, community members, and other local partners.
3. Tabled at Waterbury LEAP, educating the public about emissions reductions, renewable energy and energy efficiency, as well as gathering comments on the energy components of the Plan.
4. Held a planning essentials training for new Development Review Board and Planning Commission members, answering questions about Act 181 and new future land use designations.

Flood Resilience

Flooding is Vermont's most common form of natural disaster, the costliest and most dangerous to public health and safety. Floods damage and destroy public and private property, disable utilities, make roads and bridges impassable, destroy crops and agricultural lands, cause disruption to emergency services, and sometimes result in fatalities. Washington County is at the highest risk for river flooding, landslides, and infrastructure losses in Vermont according to the 2023 National Risk Index Report. This is due in large part to the historical development of industry and commerce throughout the Region occurring along rivers and other bodies of water. The increase of heavy rain events and severe flooding due to climate change has increased the general awareness of the risks statewide. Avoiding or limiting development and investment in identified flood hazard areas, where feasible,

Commented [KP11]: Added to provide clarity for how flood resilience is included throughout the plan. Language taken from new draft Climate and Flood Resilience chapters.

DRAFT

is a central goal in this plan.

Moreover, CVRPC recognizes that the impacts of climate change are felt disproportionately by the Region's most vulnerable residents. Individuals on fixed incomes, with physical challenges, older adults, BIPOC Vermonters, and the unhoused often have the hardest time preparing for and recovering from these climate-induced disasters. Older residents specifically are more vulnerable to disasters and account for the highest rate of disaster related deaths nationwide.[5] There is a need to plan better at the community and regional scale to reduce the impacts of climate change on older adults and account for the limitations of individual and institutional preparedness. The future of resilience planning will require improved communications and social networks for vulnerable residents who require greater assistance before, during, and after disasters.

Given the wide-ranging implications of flooding on the region, flood resilience is incorporated into the Natural Systems and Land Use Element, the Utilities, Facilities and Services Element and the Economic Element. Further, proactive steps to mitigate flood risk, such as engaging with and providing technical assistance to towns in enhancing their flood regulations and emergency preparedness, are embedded into the goals, policies and actions of the Plan.

DRAFT

[5] Older adults and disasters: How to be prepared and assist others

2. NATURAL SYSTEMS AND LAND USE ELEMENT

The land, or more broadly, the natural earth, is the source of all that sustains human life. This fact is sometimes easy to forget in modern America. Water pours from our taps. Food is purchased, often already prepared, under the fluorescent lights of the supermarket. Clothing hangs from a rack at the corner boutique. Shelter is erected for us out of "construction materials" on "building lots."

Yet, we remain inextricably dependent upon natural systems. Traced to their origins, all of life's necessities are products of the earth and its processes. So are we.

Over the past several decades, Vermont has witnessed dramatic cultural change. Technological advances in the areas of transportation and telecommunications have been the primary agents of this transformation, opening up what was a fairly insular, self-sufficient rural society to the "outside world." With this exposure came new people, new development, and new social, economic, and land use patterns. Some of the changes the State has experienced have been beneficial; some have not.

While people may always argue about the pros and cons of technology and land development, they are part of our current reality. The challenge before us now is to guide these forces of change so as to bring about a marriage between our culture and our place that is sustainable, harmonious, and mutually beneficial. In the years to come, nothing will say more about the success of our efforts than the way in which people use the land and its resources.

Discussion: Trends

In recent decades, the amount of land in agricultural production and wetlands has diminished, as forested and developed lands have expanded. While it is always difficult to predict the future, especially for the long term,

certain expectations regarding land use seem reasonable, at least over the life of this Plan. Among them are:

- Land in agricultural production will continue to decrease. While the rate of change could depend on a number of factors, including Federal policies and pricing, development pressures, market influences, and taxation policy, the rate of loss is expected to slow given stronger protective measures now in existence, the emergence of land trusts, and the fact that most of the marginal farms are no longer in business leaving only the finest soils still in production. Some of the farmland lost over the next five years will revert to the forest/brush category and some will be converted for development.
- Wetland acreage will stabilize due to the existence of strict, protective regulations at the Federal, State, and sometimes local level.
- Acreage in forestland may increase slightly, but will not change dramatically. Conversion to development will probably be offset by vegetative succession of abandoned farmland.
- Developed land will increase. The amount of land converted to development will be a function of several variables, including: the Regional economy, population trends, regulatory controls, and the patterns of growth.

~~Central Vermont Land Uses, 2002*~~

~~Land Use by Municipality Table was deleted~~

Commented [KP12]: Table will be updated once mapping is complete.

~~*The information for this table was derived from the interpretation of aerial photographs supplemented by field checks. Figures for "developable" land include only those portions of a parcel committed to a given use and not necessarily the entire acreage of the~~

Productive Resources

Central Vermont possesses "working landscapes" where people manage, nurture, and harvest the resources of nature. Farmlands, forest lands, and lands containing mineral resources are vitally important to the economy and character of our Region. This Plan encourages the protection of resource production lands and the livelihoods of the people who use them by recognizing their benefits, promoting their products, and rethinking the attitudes, policies, and land use patterns that threaten their existence.

Agricultural Land

In spite of the general decline of agriculture, farming and farmlands continue to contribute many millions of dollars annually to the economy of the Region and provides many employment opportunities to its residents. ~~, and directly provide over one thousand jobs to its residents, and many more indirectly~~. ~~According to the 2005 Vermont Occupational Employment Projections, farming and forestry is still projected to account for about 1,000 jobs in Central Vermont in 2012~~. The lure of our pastoral landscape yields substantial indirect benefits from tourists, as well.

Commented [KP13]: Outdated.

In addition, the case can be made that preserving farms and farmlands may help preserve urban economies. Sprawling suburbs, office parks and shopping malls in now agricultural areas would likely contribute to the demise of downtown businesses and neighborhoods.

Farming helps to define the Region's cultural identity and provides Central Vermont residents with open space, recreational opportunities, aesthetic pleasure, and a sense of place. More importantly, farms and farm soils, if protected now, can assure us of some degree of Regional self-sufficiency in the event that outside food supplies dwindle, are cut off, or become prohibitively expensive. While such scenarios may seem far-fetched for the short term, a number of circumstances already in motion could make them a reality within our lifetimes. Among such circumstances are: global climate change, dwindling and expensive energy reserves, disease susceptible monoculture farming in major production areas, soil salinization and water shortages in these same locations, trade fluctuations, and worldwide population increases.

~~[1]Vermont. Department of Labor: 2004 - 2014 Occupational Employment Projections~~

Vermont Agricultural Soils

See map: *Central Vermont Primary Agricultural Soils*

Agricultural Value:

1, 2, and 3 have few limitations restricting their use; these soils are level to gently rolling and are the most productive.

Soils in classes 4, 5, 6, and 7 have more limited agricultural value due to slope, excessive wetness or shallow depth to bedrock.

Classes 4 and 7 are Federally classified as "statewide," but within Vermont agricultural values 1 through 7 are all categorized as "primary agricultural soils."

Vermont soils are identified by USDA/NRCS in its publication *Farm- land Classification Systems for Vermont Soils (June 2006 edition*).

USDA/NRCS acknowledges those soils with agricultural values of 1 through 7 as demonstrating the characteristics needed for various agricultural uses. This compilation is updated when necessary, is avail- able in print, on the internet, and on CD-ROM.

Complete details are available at: www.nrb.state.vt.us/llup/publications/importantfarmlands.pdf

The Vermont Center for Geographic Information: www.vcgi.org

Your nearest office of the USDA/ NRCS, or online at: www.vt.nrcs.usda.gov/soils/http:/websoilsurvey.nrcs.v

Farmlands provide a variety of environmental functions from which we all benefit. They provide wildlife habitat. They capture carbon dioxide, thereby maintaining air quality. They help protect the integrity and function of our flood plains and wetlands. They can help maintain water supplies through groundwater recharge. Farms, as they exist in Central Vermont, are part of, and contribute to, the natural systems that sustain life.

In light of all this, a strong, healthy agricultural economy is vital to the Region's well-being. The limited supply of primary agricultural soils, their general suitability for septic systems, combined with agriculture's increasing dependence on higher quality land make it crucial that land use decisions display foresight and recognize the importance of these soils to future generations. As such, it is a primary goal of this Regional Plan to preserve and promote a viable agricultural economy, culture, and land base.

Forest Land

Although forests cover ~~74~~ 78% of the state today, Vermont wasn't always the "Green Mountain" state[6]. At the time of European settlement, forests covered almost all of Vermont, but wide-scale clearing begun in the early 1800s significantly changed the landscape to an agricultural haven. Clearing reached its peak in the mid to late 1800s and reduced forest cover to about 35% of the state. Over the last century westward expansion, the decline of the sheep industry, and reduced timber harvesting have contributed to the steady regrowth of Vermont's forests.

Forests provide many benefits to Central Vermont residents. The timber industry contributes to the economy, providing jobs and important wood and paper products. Forests contain habitat essential to a variety of wildlife species and help protect and replenish surface and groundwater supplies. They also perform an important atmospheric cleansing function, protecting the quality of the air we breathe. Many recreational pursuits are dependent on, or enhanced by, forests, as is the aesthetic quality of the Region. Additionally outdoor recreation and tourism are major contributors the Vermont economy.

While approximately 77% of the total land area in Central Vermont is forest land, for the first time in a century Vermont is experiencing an overall loss of forest cover. Between 2005 and 2020, the total acreage of woodland parcels larger than 50 acres declined by 9.2% in the Region with an 18.2% loss statewide, according to the Vermont Natural Resources Council. For the first time in more than a century Vermont is losing forest due to the subdivision of land. This trend, also known as parcelization, is the subdivision of land into smaller and smaller pieces and multiple ownerships[7]. ~~While it is hard to pin down the exact amount of acreage, a US Forest Service report indicates Vermont may have lost up to 69,000 acres of forest land between 2010 to 2015~~. Forest fragmentation is due to the conversion of forests to agriculture and commercial uses, yet the main cause is scattered residential development. It occurs incrementally and over time non-forested pockets tend to multiply and expand. Eventually the forest is fragmented and reduced to scattered, disconnected forest islands. The remnant forest islands

Commented [KP14]: Updated data.

Commented [KP15]: Updated data from new draft Natural Systems chapter.

Commented [KP16]: Outdated.

[6] Overview of Vermont's Forests | Department of Forests, Parks and Recreation
[7] VT PARCELIZATION WEBSITE - Reports

resulting from this fragmentation are surrounded by land uses that threaten the health, function, and value of those forest islands for animal and plant habitat, and for human use. As forest fragments become ever smaller, practicing forestry becomes operationally impractical, economically nonviable, and culturally unacceptable. ~~Based upon information contained within the ANR Act 171 Guidance document, 25-years ago, 19,000 family forest landowners owned parcels up to 10 acres in size. By 2012, there were 43,000 family forest landowners.~~ Overall, economically and environmentally sustainable forest management is very difficult on lands smaller than 50 acres.

Commented [KP17]: Outdated. Trends/important information already reflected in text above.

In 2016, the Vermont Legislature passed Act 171 which amended multiple provisions related to timber harvesting and forest management. The act amends municipal and regional planning goals to encourage management of forestlands to improve forest blocks and habitat connectors and encourage the use of locally grown forest products. The Act defines a "forest block" as a contiguous area of forest in any stage of succession and not currently developed for non-forest use. A forest block may include recreational trails, wetlands, or other natural features that do not themselves possess tree cover. These can be different sizes and are identified by the land cover of an area and not bounded by political or parcel boundaries.

The State of Vermont maps and ranks important and significant landscape features, as contained within the online mapping tool BioFinder. To view the Region's Highest Priority Interior Forest Blocks and the Region's Highest Priority Connectivity Blocks see Natural Resource Map #3. Together these data layers represent a connected network of forest that provides high-quality interior forest habitat.

It should be noted this map does not identify all of the Region's productive forestland. Productive forestlands are defined as all large tracts which in themselves, or when combined, form a major economic unit for long-term timber production. It is important that these lands are conserved through sound, long-term forest management programs, and compatible patterns of growth and development.

Mineral Resources

The mineral deposits of Central Vermont are recognized as an important resource. The presently known mineral resources of the Region include granite, talc, asbestos, chromite, verde antique, sand and gravel.

The granite quarries of Barre Town and granite industries of Barre City, Berlin, Calais and Montpelier are major contributors to our economy and living monuments to a colorful part of our Regional heritage. While sand and gravel deposits are less renowned, they play an important part in local and personal economies and are relied upon by municipalities for road building and maintenance materials.

The products of earth resource operations are so important that we must accommodate them even as we guard against their more harmful aspects. This is an example where the planning process can be used to encourage locations and operating procedures that could minimize the conflicts and uncertainties of the regulatory process.

Resource Protection

Within our Region's boundaries are many ecologically sensitive areas and resources that serve as symbols of our natural heritage and barometers of the Region's environmental health.

These environmentally sensitive lands are not mere amenities. They have great value for education and research and for the understanding and appreciation of natural systems and processes. They perform critical ecological functions, enhancing the stability and diversity of ecosystems. They also provide aesthetic relief and recreational opportunities, and hence, economic benefit.

The preservation of ecologically sensitive places is a goal of this Plan. Human use of such areas should be accomplished in a manner which protects their integrity and function.

Resource protection lands include: protected lands, wildlife habitat, high elevation areas, steep slopes, critical resource areas, groundwater recharge areas, surface waters, wetlands, floodplains and scenic areas. (See maps: *Natural Resources 1* & *Natural Resources 2*)

Wildlife Habitat

Our native wildlife species are valued by Central Vermont residents in a variety of ways for a variety of reasons. Some merely enjoy their presence as a reflection of nature's spirit. Some rely on wildlife for sport, food, or income (direct and indirect). Others have scientific or academic interests in wild creatures. For many of us, a combination of the above factors plays a role in our appreciation of wildlife.

Our most critical wildlife species are generally thought of as those which yield significant economic return, provide for sport and subsistence hunting, are symbolic of wilderness values, or face the threat of extirpation or extinction. We know that viable habitat is the single most important survival need for most of these species; yet for many, habitat loss and fragmentation is a real and present threat.

Based upon information contained within the 12/14/17 draft ANR Act 171 Guidance document titled "Planning: A Key Step Towards Protecting Forest and Wildlife Resources", "habitat connectors" are those areas of land or water that links larger patches of habitat within a landscape to allow for the movement, migration, and dispersal of animals and plants. They can be a forest block, riparian area, or a specific road crossing that wildlife repeatedly use. Forest fragmentation contributes to the loss of wildlife habitat, and the loss or decline of habitat connectivity and minimizes a species' ability to travel between hunting, breeding and migration grounds.

As noted above within the Forest Lands section of this chapter, the State of Vermont maps and ranks lands and waters that support important ecosystems, natural communities, habitats, and species. The Region's Highest Priority Connectivity Blocks are comprised of habitat blocks that are of the greatest importance for wildlife movement and genetic exchange on a regional scale. Together with the Region's Highest Priority Interior Forest Blocks these data layers represent a regionally connected network of forest that provides high-quality interior forest habitat. The inclusion of Highest Priority Surface Water and Riparian Areas identifies additional lands along streams, rivers, lakes and ponds which also serve as wildlife corridors. See Natural Resource Map #3.

Additionally, the Vermont Department of Environmental Conservation has defined and mapped the following significant habitats: deer wintering habitat, bear reproduction zones, natural communities and any areas necessary to support the food, shelter or breeding needs of endangered species (See Natural Resources Map #1)[8].

In 2023, Vermont passed Act 59: Community Resilience and Biodiversity Protection Act, which addresses the overlap of conservation priorities with environmental justice, and the statewide housing crisis. It outlines a vision for conserving 30% of the state's land by 2030 and 50% by 2050. According to preliminary mapping conducted by the VT Fish and Wildlife Department, the average town in Central Vermont is approximately 20% conserved. Certain towns in Central Vermont have already set goals encouraging or requiring conservation subdivisions to guide development into preferred areas while protecting natural resources.

Commented [KP18]: Text drawn from new draft Natural Systems chapter. Added to meet statutory recommendation to discuss 10 VSA 2802.

High Elevation Areas and Steep Slopes

Areas of high elevation and steep slopes garner multiple considerations for resource protection. Slopes between 15-25% grade are typically considered "steep" in Vermont and elevations about 2,500 feet are regulated at the State level, with some com- munities regulating at lower elevations. Soils in these areas are often more sensitive to erosion, as at high elevation they can be shallow to bedrock, and on steep slopes are being willed by gravity to move. Where soils are more erodible, disturbance of them is more likely to lead to effects on water quality, as soils and their nutrients are washed into surface waters. Additional sediment in rivers can lead to bank destabilization and streambank erosion. High elevation areas also have an important role in the watershed overall, as the starting point for much precipitation that will eventually run over the land to valley water bodies.

Special scenic and wildlife habitat values are connected to high elevation areas as well. At some elevations, climatic conditions are just right for supporting certain species that are rare at lower elevations. Vermont has

[8] Vermont. Department of Environmental Conservation. Critical Habitats

long identified with the scenery of its mountains, and ridgeline vistas are inherently formed by lands at highest elevation. In Central Vermont the Camels Hump State Park is established as an ecological area, to protect scarce and rare plants and preserve natural habitat and wilderness aspect.

Critical Resource Areas

For the purposes of this plan critical resource areas include:

- National Natural Landmarks: a designation that encourages and supports the voluntary conservation of sites that illustrate the nation's geological and biological history, and to strengthen the public's appreciation of America's natural heritage;
- State-designated Natural Areas: limited areas of land which have retained their wilderness character, although not necessarily completely natural and undisturbed, or have rare or vanishing species of plant or animal life or similar features of interest which are worthy of preservation for the use of present and future residents of the State and may include unique ecological, geological, scenic, and contemplative recreational areas on State lands;
- Sites listed on the Vermont Rare, Threatened and Endangered Species, and Significant Natural Communities as designated by the Vermont Natural Heritage Inventory; and
- Elevations over 2,500 feet as shown on USGS topographic maps.

Watersheds

Commented [KP19]: Text drawn from new draft Natural Systems chapter. Added to meet statutory need for Resources and Working Land Element to incorporate tactical basin plans and would support State Goal 6 (B).

Planning on the watershed scale is a holistic process that involves local, regional, and state partners working together towards a common goal. The Winooski River Tactical Basin Plan[9] is updated every five years and is a strategic guidebook to protect and restore Vermont's surface waters. Proposed strategies focus on meeting goals through voluntary participation and project implementation by watershed partners and the Basin's Clean Water Service Provider.

Town plans throughout the Region share similar priorities for protecting

[9] 2024 Winooski River Tactical Basin Plan: https://dec.vermont.gov/sites/dec/files/WID/WPP/Winooski_TBP_2023_signedFinal.pdf

water resources. River corridor and shoreland overlay districts are widely used to increase protection. Collaboration with the basin's watershed partners is critical in protecting and restoring our shared water resources. Some of the organization's towns have partnered with to restore riparian habitat and implement town wide water quality projects include Friends of the Winooski, Friends of the Mad River, Mad River Watershed Conservation Partnership, Vermont River Conservancy, and the Winooski Natural Resource Conservation District.

CVRPC has been involved with assessment and planning for the Winooski River and its major tributaries along with partners such as Friends of the Winooski River, Friends of the Mad River, Vermont River Conservancy, Vermont Natural Resources Council, Winooski Natural Resource Conservation District, the DEC River Management Program, and the municipalities of Central Vermont.

Groundwater Recharge Areas

Well over half of Central Vermont's residents, and many of its businesses and industries receive their water from subterranean sources. In our rural areas, this figure rises to almost 100%. In general, groundwater sources in Central Vermont are plentiful and of good quality. In addition, groundwater is usually less susceptible to seasonal fluctuations and contamination than surface water making it an ideal source for public, urban supplies.

Incidents of groundwater contamination are on the rise, however, primarily due to improper activities within those areas which serve to replenish supplies.[10] Sources of groundwater contamination in Central Vermont include domestic sewage, landfills, improperly disposed of hazardous wastes, leaky underground storage tanks, pesticides and fertilizers.

Supply quantity is threatened in some locations, as well, because of an increase in impermeable surfaces in aquifer recharge areas.

Once contaminated, groundwater supplies are difficult and expensive to rehabilitate. New sources may be hard to find, costly to develop, and

[10]Greenberg, A.S/ Groundwater Quality Protection and Planning: A Guide for Local Government, UVM, 1991

susceptible to the same fate as the tainted source, if treated similarly. It is critical, therefore, that our existing and future groundwater supplies are protected. The future of our municipalities and their prospects for new growth and development depend upon the quality and quantity of this important resource.

The State of Vermont has adopted an aggressive groundwater management strategy designed to promote a proactive approach to the protection of subterranean water supplies. This strategy includes the delineation of critical recharge zones (known as Wellhead Protection Areas or WHPA's) for public water supply systems and the establishment of land use guidelines to reduce contamination potential on these sites. Although WHPA's have no individual regulations attached to them, existing State regulatory programs will regard them as "red flags" indicating the need for special consideration of proposed development activities. In addition, the Department of Environmental Conservation requires that a "source protection plan" that minimizes the contamination risk within WHPA's be developed.

Surface Waters

The Region's lakes, ponds, rivers and streams represent an invaluable resource. They provide water for drinking, and domestic and industrial uses. They generate hydroelectric power. They dilute and assimilate various effluent. They provide recreational and aesthetic values for public use and enjoyment. They also contribute to the propagation of fish and wildlife and to economic development.

Streams, rivers and lakes with adequate vegetative buffers on their shorelines enhance the benefits of the resource. Vegetative buffers protect shorelines from flood flow and ice damage, prevent bank erosion, are aesthetically pleasing, and maintain a cool water temperature, an adequate oxygen level for fish habitat, and effluent assimilation capacity.

Unfortunately, the demands that we place upon surface waters are often incompatible and detrimental to their overall quality and function. The 2024 Tactical Basin Plan identifies Nelson Pond in Calais and Sabin Pond in Woodbury as candidates for Lake Watershed Action Plans due to increasing nutrient trends, fair shoreline conditions, and moderately disturbed

watersheds. These communities are currently undergoing Lake Wise Assessments. The Region has one impaired lake, Waterbury Reservoir, due to sedimentation and turbidity. Lakeshore communities looking to address the major threats to water quality can work with the Department of Environmental Conservation to conduct Lake Wise[11] Assessments and consider adopting a Lake Watershed Action Plan[12]. Our challenge is to balance our needs with respect to surface waters and to adjust current development practices so as to minimize their harmful impacts.

Commented [KP20]: Text drawn from new draft Natural Systems chapter. Added to meet statutory need for Resources and Working Land Element to incorporate tactical basin plans and would support State Goal 6 (B).

Floodplains and Fluvial Erosion



Canoeing on Wrightsville Reservoir, Middlesex, Vermont.

Floodplains are areas of land adjacent to a water body that are frequently inundated by water. ~~While~~ These places serve important ecological functions, including flood-water storage, sediment trapping, nutrient filtering and aquifer recharge, ~~they also can be hazardous to human life and property~~. Arising from a variety of causes, including heavy rain, melting snow, ice jams, poor drainage and dam breaks, flooding is the most frequent, damaging and costly type of natural disaster experienced in the State and Region. In fact, over the last 50 years flood recovery costs have averaged $14 million per year (not adjusted for inflation) statewide.

Commented [KP21]: This language is confusing.

[11] DEC Lake Wise: https://dec.vermont.gov/watershed/lakes-ponds/lakeshores-lake-wise/what-lake-wise
[12] DEC Lake Watershed Action Plan: https://dec.vermont.gov/watershed/lakes-ponds/lakeshores-lake-wise/lake-watershed-action-plans

Floods cause damage in two distinct, but related, ways. Inundation can fill structures with water and cause property damage and drowning. It is a great concern for those living in or near flood hazard zones. Surprisingly, however, fluvial erosion, including bank failure and changes in river channel courses during floods, actually causes more damage.



Fluvial erosion along the Mad River, Waitsfield, Vermont. Image courtesy of VTDEC River Management Program.

Unfortunately, our society's historical response to floods has been to treat the symptoms rather than the causes of floods – repairing dam- ages rather than preventing them. Furthermore, some of the traditional "cures" actually exacerbate the problem they attempt to fix. The disaster response paradigm is changing, however, and CVRPC has been taking an active role in both inundation mitigation and fluvial erosion hazard mitigation.

In response to recent program and mapping changes made by the Federal Emergency Management Agency (FEMA) to the National Flood Insurance Program (NFIP), we have been working with our member municipalities to help them identify and correct any deficiencies in their flood hazard regulations and/or maps. This program identifies those areas within a flood hazard zone (the area inundated by water during a flood with a statistical probability of occurring once every 100 years – i.e., the "One Hundred Year Flood") and prescribes development review guidelines and procedures for lands within regulated areas. Compliance with these Federal standards is required for continued NFIP eligibility. Residents of municipalities that lose eligibility would face prohibitive costs for insurance protection outside of the program. ~~Most of the Central Vermont Region is facing a 2009 deadline for program compliance.~~

Commented [KP22]: Outdated.

~~On the fluvial erosion front, we have been working with the State of Vermont and member towns to conduct fluvial erosion hazard assessments for many river and stream segments in the Region. Using field surveys and GIS technology, we have completed (or will soon complete) erosion~~

Commented [KP23]: Outdated.

~~hazard maps for sections of the main stem of the Winooski River and many of its tributaries, including the North Branch, Jail Branch, Stevens Branch, Kingsbury Branch, as well as and the Dog and Mad Rivers.~~ The health of the Region's rivers and streams are best addressed through a comprehensive river corridor planning process. This involves the integration of fluvial geomorphic assessment data and the goals and objectives of the State and local community to formulate scientifically sound and ecologically beneficial river restoration and conservation projects that will improve water quality and the community's relationship with the river. Although many of the Region's rivers and tributaries have been evaluated in the past, no new assessments have been completed since 2018. Limited resources requires that Stream Geomorphic Assessments and River Corridor Plan updates are prioritized with respect to their need for collecting current data. The 2024 Tactical Basin Plan recommends partners work with the Vermont Rivers Program to pilot an assessment update process in either the Dog River or Stevens and Jail Branches where partners have previously expressed concern that river corridor plans are out-of-date while communities have expressed interest in new project development. After the flooding of July 2023 and 2024 several towns have expressed an urgent need to reevaluate rivers and streams that are exacerbating downstream flooding. It is hoped that municipalities will use this information to help avoid future life and property damage.

Commented [KP24]: Text drawn from new draft Natural Systems chapter. Added to meet statutory need for Resources and Working Land Element to incorporate tactical basin plans and would support State Goal 6 (B).

According to the Vermont River Management Program, "the largest single source of flood losses, both in terms of cost and the number of people affected, is damage to transportation infrastructure." Undersized, or blocked bridges and culverts are a main culprit in exacerbating flooding and erosion hazards. Accordingly the Commission has, through our Bridge and Culvert Program, completed detailed inventories of these structures to provide our municipalities with information on the exact locations and specifications.

Finally, we continue to work with our communities on pre-disaster mitigation planning (see Utilities, Facilities and Services Element) in order that they meet the Federal eligibility requirements for disaster recovery and mitigation funding.

Wetlands

Wetlands are areas of land that are "inundated or saturated with water for varying periods of time during the growing season."[13] Wetlands help make the environment more livable. They are among our most productive and diverse biological communities. They purify surface and underground water supplies. They are natural flood storage areas during wet periods and replenish reservoirs during dry spells.

Although wetlands can sometimes present significant and costly obstacles to development, over the past century or so more than one half of the original wetland acreage in New England has been destroyed. Now that we are beginning to understand the important ecological functions that wetlands perform, these special areas are receiving greater protection.

Recommendations for wetland restoration can be found in Stream Geomorphic Assessments, River Corridor Plans, and the Tactical Basin Plan. The 2024 Tactical Basin Plan identifies the following factors that correlate to poor wetland condition:

- Presence of invasive plant species,
- disturbance to the wetland buffer or immediate surrounding area,
- disturbance to wetland soils, and
- disturbance to wetland hydrology (how water moves through a wetland) through ditching (e.g., agricultural), filling (e.g., roads) and draining (e.g., culverts).

Commented [KP25]: Text drawn from new draft Natural Systems chapter. Added to meet statutory need for Resources and Working Land Element to incorporate tactical basin plans and would support State Goal 6 (B).

Scenic Areas

Central Vermont is a place of celebrated natural beauty. Its scenic landscapes not only enrich lives and spirits and attract new businesses and residents, they also provide the basic ingredient for one of the Region's most important industries - tourism. Each year thousands of visitors travel here to see the mountain vistas, pastoral scenes, fertile valleys, historic villages, Interstate 89 (which has received awards for its scenery), remote back roads, and woodlands ablaze with autumn color. Thus, it is in our best interest, both psychologically and economically, to preserve the best of Central Vermont's visual splendor.

[13] 5 Vermont Agency of Natural Resources, Department of Environmental Conservation, Vermont Wetlands Conservation

Land Development Issues

As our population increases and ages, more people require shelter, jobs, and places to purchase and manufacture goods. Consequently, growing areas, or areas preparing for growth, must find the ways and means to accommodate new construction. ~~In Central Vermont, the pace of new construction has greatly exceeded the rate of population growth over the past few decades. In fact, since 1970 the number of new housing units and businesses here has increased at more than twice the rate of the population. This fact is, in part, indicative of society's appetite for new products, personal services, and independent living, and in part due to comparatively large growth in the Region's 18 - 64 year old age cohort group~~.

~~Given the uncertainties of the economy and vagaries of society, it is difficult to say whether this trend will continue unabated over the next few decades. However,~~ It is safe to forecast that growth and development will continue at some level, and that the Region must be prepared to accommodate this growth for the good of its residents and its economy. At the same time, it is important to acknowledge that there are physical, ecological, and economic limits to current patterns of growth and development. Accordingly, the development policies presented in this element are intended to guide new land development so as to maximize its economic and societal benefits while avoiding, to the extent practicable, its environmental and societal pitfalls.

Commented [KP26]: Outdated.

Residential

Commented [KP27]: Discussions of residential land development issues are addressed in the Housing Chapter and within the Future Land Use section.

~~Over the past few decades, the rate of housing growth has grown faster than that of population growth (see chart: Housing Units vs. Population in the Central Vermont Region 1970-2000). A decrease in average household size, a larger adult population, and an increase in the number of vacation units are primarily responsible for this phenomenon. (For more discussion see: Housing Element.)~~

~~Housing Units vs. Population in the Central Vermont Region 1970-2000~~ ~~Tabel was deleted~~

Commented [KP28]: Outdated.

~~SOURCE: United States Census Bureau. Selected Housing Characteristics. 2000~~

Commercial/Industrial

Like residential growth, commercial and industrial expansion has out paced population increases in Central Vermont. In fact, the 80's witnessed a 46% growth in the number of business establishments in our Region compared to a modest 11% growth in the number of residents. With an increase in the Region's working age population, more business growth is likely and necessary.

Employment statistics seem to indicate that the location of many of Central Vermont's new business establishments reflects the increasing consumer base of the Region's rural towns and semi rural bedroom communities. In fact, between 1982 and 1990, 3559 of the 4328 new jobs (82%) and 361 out of 471 new employers (77%) were established outside of the Region's urban core (i.e. Barre City and Montpelier).6

6 Vermont Department of Labor Statistics

Often, new businesses have located along the state highways and collector roads which bring commuters back and forth to work and tourists to and from their destinations. While only a few locations have experienced full blown "strip development," most of the Region's major corridors are witnessing the early stages of this impact. The above generalizations are not intended to apply to traditional home occupations or modestly scaled self-employment enterprises. Such activities generally do not alter the character of the areas in which they are situated, offer goods and services which may be inappropriate or unnecessary in densely settled locations, and are usually so small in scale and impact so as to have, individually, no Regional significance. For more discussion see: Economic Element.

Commented [KP29]: Discussions of commercial/industrial land development issues are addressed in the Future Land Use Section (e.g. Strip development) and within the Challenges section of the Economic Element.

Commented [KP30]: Outdated.

Stormwater Management

In a pristine environment, stormwater is managed by the landscape's natural features. Surface flow is inhibited by vegetation and most water is able to infiltrate the ground through pervious, uncompacted soils. That which does not, settles into depressions and wetlands or finds its way into streams and rivers where excess water collects on undeveloped flood plains, retreating harmlessly, in time.

In a developed landscape, the situation is different. Falling precipitation is intercepted by roofs, parking lots, roads, sidewalks and other impervious surfaces which increase the quantity, velocity, and concentration of surface runoff. Water flowing over such surfaces picks up a variety of pollutants (e.g., gas, oil, animal waste, road salt, anti- freeze, etc.), as well as debris, thermal gain, and speed - all of which can have severe consequences on water quality and aquatic biota. Fast moving, channelized surface flows can erode roads and other structures, overwhelm combined stormwater systems, contribute to the occurrence and severity of downstream flooding, and cause sedimentation in rivers, lakes and streams. As urbanization continues, soils are disturbed by new construction, vegetated buffers are lost, and the pressure to develop in less suitable locations (e.g., steep slopes, higher elevations) increases.

While growth and development have the potential to decrease water quality and increase flooding, that is not necessarily the case. Good land use planning and site design can do much to reduce the impacts of stormwater runoff (and even help correct existing problems) by minimizing impervious surfaces, maintaining and/or providing vegetation, and employing Best Management Practices (BMP's) and structural controls during and after construction.

Brownfields

Brownfields are defined by the United States Environmental Protection Agency (U.S. EPA) as "real property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant. " Typical prior uses that may fall into this category in Central Vermont include old town dumps, photo developing sites, mill complexes, factories, dry cleaners, auto repair shops, gas stations and even some agricultural sites.

According to the U.S. EPA, it is estimated that there may be over 450,000 brownfield sites in the United States. Yet a report undertaken by the Northeast-Midwest Institute, a non-partisan research organization, suggests that there may be nearly 1 million sites nationwide. Estimates vary for different reasons. Existing inventories of brownfield properties may consider commercial and industrial properties listed on the real estate

market but, not account for those not for sale and/or abandoned. Estimates may include only those properties which are currently enrolled in a brownfield assessment or clean-up program. ~~The Vermont Department of Environmental Conservation's (VT DEC) Brownfields Response Program Sites List currently lists 52 brownfield sites currently undergoing investigation and remediation.~~ Regardless, most properties with an industrial or manufacturing history may be a brownfield.

Commented [KP31]: Outdated.

Brownfield sites often remain vacant and underutilized due to concerns over liability and unknown environmental assessment and clean-up costs; yet many sites can be rehabilitated. Redevelopment or re-use of potentially contaminated sites has many benefits:

- Eliminates eye sore properties,
- Promotes/supports historic use patterns,
- Protects human and environmental health, and
- Strengthens the local economy.

Since brownfield sites are often in already developed areas, their reuse can help to promote compact land use and in-fill development. According to the U.S. Environmental Protection Agency's web site "for every acre of brownfields redeveloped, it is estimated that an average of 4.5 acres of greenfields are saved."

~~CVRPC has been very active in the area of brownfield rehabilitation since the last Regional Plan adoption. Beginning in 2004, we have received over a half million dollars in EPA grants to assist our communities in assessing and reclaiming these important properties. To date, CVRPC's Brownfield Program has funded an extensive environmental site assessment for the Salt Shed on Stone Cutters Way in Montpelier and plans are now underway to transform the former industrial site to a mixed use development. Additional sites that have benefited from the program include the Railroad Turn Table, also located along Stone Cutters Way, next to the Salt Shed (for future use as a "pocket park"), the MWT site in Northfield Falls (for the purpose of selling the property to the current tenants of the building and to retain business in a historic mill building), and two municipally owned sites in the Town of Warren (to assess their potential for the creation of affordable housing and public recreation space).~~

Commented [KP32]: Outdated.

Noise

Any undesired sound can be considered "noise." Noise pollution is defined as "continuous and unrelenting sounds at all levels or episodic and excessively loud sounds." While it must be recognized that noise necessarily accompanies certain business and transportation operations, new development should make all reasonable efforts to minimize noise impacts and shall not exceed acceptable standards in residential areas. Among the techniques available are: restricting hours of operation or construction, using vegetated buffer zones to filter sound, taking advantage of topography in designing projects to provide sound barriers, the use of structural barriers (i.e. earth berms and sound walls), and architectural design and materials. Higher noise levels may be appropriate and unavoidable within assigned industrial, commercial, and mixed-use zones.

Future Land Use

State Statute directs Regional Plans to include a future land use element as set forth by 24 V.S.A. § 4348a. ~~"land use element, which shall consist of a map and statement of present and prospective land uses." (24 V.S.A. § 4348)~~. The Map identifies general Future Land Use Planning Areas (FLUAs) that will be used to guide land use and development in the Central Vermont Region.

Commented [KP33]: Statute has changed.

~~The Planning Areas are not meant to be detailed representations of current conditions, nor are they intended to be distinct areas of segregated future land uses. The Planning Areas FLUAs focus on the overall pattern and form of development across the rural to urban spectrum rather than on specific densities or uses, which are more properly defined at the local level.~~

Commented [KP34]: This language is included in the statement below.

Land Use Policy Statement

Commented [KP35]: This section was added from new Land Use Chapter. It helps to meet the following State Goals: 1 (D), 4, 5, 6, and 14. It is also an important statement laying the foundation for the Future Land Use Element required by statute.

This plan proposes a central land use policy that will guide future land use and development based on traditional land use patterns: concentrated nodes of residential and commercial development surrounded by open working lands and conservation lands. To achieve this, CVRPC will prioritize clustered settlement patterns and encourage higher-density residential, commercial,

and industrial development in downtown and village centers. Further, CVRPC will work with municipalities to align local regulations, capital planning and public investment strategies with state and regional infill and redevelopment goals.

CVRPC recognizes that transportation has both enabled the development of affordable housing in rural bedroom communities as well as contributed to sprawling linear development along existing state routes and town highways that competes with agricultural uses and contributes to the fragmentation of forestland. Where transportation shortcomings exist, such as lack of mode choice or dependency on vehicles, CVRPC views these as land use shortcomings, manifestations of forces that limited new development in urban cores and adjacent lands where services and alternative mode choice exist. Therefore, CVRPC supports growth in existing settlements and potential new settlements outside of the flood hazard and river corridor area, direct public funding toward village and downtown centers and the placement of new housing in or adjacent to existing walkable neighborhoods.

CVRPC recognizes that human settlement in river corridors and floodplains is at risk of increasingly frequent and intense fluvial erosion and inundation. At the same time, CVRPC recognizes that much of the Region's existing development is in river hazard areas and that it is easier to restrict new development than to remove existing development. CVRPC prioritizes conserving and, where feasible, restoring flood storage capacity and keeping new development out of harm's way. Land use regulation is the most effective method of preventing future development in floodplains and river corridors – or at least ensuring that development is safe from hazards and does not worsen the hazard downstream.

CVRPC supports compatible land uses that are determined by state and local regulations, community support, neighborhood characteristics, and site suitability. Where compatible, CVRPC supports the transformation of existing commercial areas into areas serving a mix of uses in areas not at risk of flooding.

Development should adhere to State "smart growth principles" (24 V.S.A. § 2791) to minimize its impact on the viability of agricultural operations and its contribution to the fragmentation of large contiguous tracts of woodland.

Identified critical wildlife corridors should be protected from fragmentation and uses that reduce their viability for movement of wildlife, particularly where they connect large contiguous tracts of land. Development on wetlands, steep slopes of 25% or more, and ridge lines should be avoided.

Based on these policy statements and using the recommendations from the VAPDA Regional Planning Report, required by Section 15 of Act 47 of 2023, CVRPC has developed future land use Planning Areas and a Future Land Use Map. The Planning Areas are not meant to be detailed representations of current conditions, nor are they intended to be distinct areas of segregated future land uses. The Planning Areas focus on the overall pattern and form of development across the rural to urban spectrum rather than on specific densities or uses, which are more properly defined at the local level.

Future Land Use Planning Areas

Per ACT 181, the Regional Plan Future Land Use Area's (FLUAs) will be the boundaries of state designations. FLUAs planned for growth will be mapped at a local scale considering details necessary for ACT 250 jurisdictional thresholds and state designation status. FLUAs will also be mapped on a regional scale and work in cooperation with other regional boundaries and land uses. The FLUAs are organized into the following grouping:

1. Higher Density Growth Areas-
    a. Downtown Centers
    b. Village Centers
    c. Planned Growth Areas
    d. Village Areas
2. Enterprise Areas
3. Transition/infill Areas
4. Resource-based Recreation Areas
5. Hamlets
6. Rural Areas
    a. General
    b. Agriculture and Forestry
    c. Conservation

The Regional Planning Commissions create the FLUAs as part of their regional plan, following statutory language. Below, provides a detailed view of each future land use planning area:

Commented [KP36]: This section was drawn from new draft Land Use chapter. It provides an outline for the new FLUAs.

Commented [KP37]: New descriptions added below are closely adapted from VAPDA methodology as called for by **: 24 V.S.A. § 4348a** (e) "The Vermont Association of Planning and Development Agencies shall develop, maintain, and update standard methodology and process for the mapping of areas eligible for Tier 1B status under 10 V.S.A. § 6033 and designation under chapter 139 of this title. " [That methodology is available here: act_181_statewide_flu_methodology_v_1.0.docx].

Regional Centers

~~Regional Centers are the Region's core downtowns, plus their surrounding mixed- use neighborhoods, which accommodate high density commercial, institutional, industrial and residential uses. Regional Centers in Central Vermont include portions of the City of Montpelier, Barre City and Waterbury Village, each of which contains a state- designated Downtown district and infrastructure that includes urban road networks, sidewalks, public spaces and public water and wastewater systems. These areas provide regional services and employment and are areas where efforts to reduce travel demand through ridesharing, transit and multi- modal transit options are critical.~~

~~Regional centers are not only the dominant attractors of work and personal business trips in the Region, they also attract significant numbers of trips from the outside the Region. The Region's greatest concentrations of office space, retail space, bankingservices and other generators of personal business are located in downtown Montpelier and Barre City. Relative to the other downtown areas, Montpelier and Waterbury have more office space (such as the State Office Complex). Barre City also has State Offices at the McFarland House and City Place, and has more manufacturing and industrial land uses.~~

Commented [KP38]: New definition below (Downtown/Village Centers) which reflects statutory changes.

~~Central Vermont Regional Planning Commission~~
~~Designating Future Land Uses~~

Commented [KP39]: Outdated methodology.

~~The following criteria and data are used when staff and Commissioners make land use area designations in the CVRPC Regional Plan. (Criteria are generally in order of priority.) Boundaries of land use area designations are for general planning purposes only and may contain errors and omissions. Data should be verified during permitting processes per the provisions of the regulatory authority.~~

~~*Area Designation Criteria:*~~
~~1. Is it consistent with the state land use planning goals found in 24 V.S.A., §4302 (compact centers surrounded by rural areas)?~~
~~⊟ Proximity to villages/downtowns/growth centers designated by the Vermont Downtown Board~~
~~and/or recognized hamlets, town centers or regional centers identified by CVRPC's Regional Plan~~
~~⊟ Is the area walkable (compact configuration allowing for less than ¼ to a ½ mile round trip)?~~
~~⊟ Is there a visual or physical break (river, steep slope, change in density or type)?~~

~~2. Proximity to existing infrastructure~~
~~⊟ Public wastewater, water, sidewalks, highways and transit, schools, recreation parks, other town services~~

~~3. Current Conditions~~
~~⊟ Orthophotos: development density and extent~~
~~⊟ Road network: potential access and connections~~
~~⊟ Resource constraints: conserved lands, steep slopes, rare threatened and endangered species and significant natural communities, wetlands, floodplains, elevations about 2500 ft, and lake shore buffers.~~

~~4. Town planning and zoning~~
~~⊟ What does the locally adopted and regionally approved Town Plan say?~~
~~⊟ Do the town zoning districts match current infrastructure and future land use plans?~~

There is one State-designated Growth Center within the Region and its boundaries are adjacent to the City of Montpelier's Designated Downtown. Growth Center designation in Vermont recognizes municipalities that demonstrate a capacity to plan and invest in vital, walkable, mixed-use centers and must include and support a designated Downtown, Village Center or New Town Center. A Growth Center has clearly defined boundaries that can accommodate a majority of commercial, residential, and industrial growth anticipated by the municipality or municipalities over a 20-year period.

Commented [KP40]: Planned growth areas are now discussed further down in the chapter and this information will be updated through the new mapping process.

Town Centers

Town Centers are less densely populated settlements and smaller than regional centers, but similarly accommodate many of the same residential, civic, commercial and light industrial uses. Typically referred to as "Villages," Factors in determining the presence and boundaries of a Town Center include: a state-designated village center, local road network and availability of public utility infrastructure, relatively dense development and smaller lot sizes (1 unit per acre or higher), a mix of land uses, and a distinct separation from surrounding rural areas.

The Region's largest Town Centers that provide water and wastewater infrastructure and also serve as sub-regional retail and employment centers include Waitsfield Village/Irasville and Northfield Village. Additional Town Centers that provide water and/ or wastewater infrastructure, or both, include Warren Village, Cabot Village, Colbyville (Waterbury), Marshfield Village, Northfield Falls, Plainfield Village, Williamstown Village, Washington Village, East Barre, Worcester Village and Waterbury Center.

East Montpelier Village, East Calais, Maple Corner, Woodbury Village, Moretown Village, Duxbury Village, Middlesex Village and Roxbury Village round out the twenty existing Town Centers recognized in this Plan.

A subcategory of Town Centers in this Plan is New Town Centers. "New Town Center," as defined by the State, means the area planned for or developing as a community's central business district, composed of compact, pedestrian-friendly, multistory, and mixed-use development that is characteristic of a traditional downtown, supported by planned or existing

~~urban infrastructure, including curbed streets and sidewalks and on-street parking, storm water treatment, sanitary sewers, and public water supply." Though there are no state-designated New Town Centers within the Region, the Town of Berlin desires to encourage the expansion of the historic town area in the vicinity of Berlin Four Corners to adjacent areas to serve as a location of a mix of small-scale commercial, high-density residential and civic uses in a traditional village setting.~~

Commented [KP41]: Statute has changed and is reflected in paragraphs below.

Downtown/Village Centers

These areas are vibrant, mixed-use centers bringing together community economic activity and civic assets. They include hamlets, villages, new town centers, and larger downtowns seeking benefits under the State Designation Program. The Downtown/Village Centers are the central business and civic centers within Planned Growth Areas or Village Areas, or they may stand alone.

Factors used in determining the presence and boundaries of a Downtown/Village Centers include a historical urban core, state-designated village center, local road network, availability of public water and wastewater infrastructure, dense development and smaller lot sizes (five units per acre or higher), a mix of residential, commercial and civic land uses, and a distinct separation from surrounding rural areas.

Commented [KP42]: Text from new draft Land Use chapter. Reflects changes to statute.

Planned Growth Areas

Includes areas identified for the densest future growth and highest concentrations of population, housing, and employment in each region and town, as appropriate. They include a mix of commercial, residential, and civic or cultural sites with active streetscapes, supported by land development regulations, public water and wastewater and multi-modal transportation systems, and follow State smart growth principles (24 V.S.A. § 2791). These areas could include historic or New Town Centers, Designated Downtowns, Growth Centers, Village Centers, and Neighborhood Development Areas.

The primary factor used in determining the boundaries of Planned Growth Areas is municipal input on future planned development. In including these

areas as Planned Growth Areas, the RPC will consider urban context, and surrounding land uses to ensure the Planned Growth Area is complementary to existing Downtown/Village Centers.

Commented [KP43]: Text from new draft Land Use chapter. Reflects changes to statute.

Centers Policies

1. In order to maintain the existing settlement patterns, higher density residential, commercial, and industrial development should be located in ~~Regional Centers and Town~~ Centers.

2.Small-scale shopping centers, designed to complement the historic character and support the vibrancy of community centers, are most appropriate in ~~Town~~ Village Centers or Hamlets (see Rural Areas). Community and Regional Shopping Centers, however, are less appropriate in ~~Town~~ Village Centers or Rural Areas and should be located in ~~Regional~~ Downtown Centers as a first priority and ~~Mixed-Use Commercial~~ Transition areas as a second priority.

3.Encourage infill, redevelopment, adaptive reuse of existing buildings and reuse of "brownfield " sites in ~~Regional and Town~~ Centers. Encourage the revitalization and reuse of viable historic structures whenever possible.

> Strategy 3a: Work with municipalities to align local capital planning and public investment strategies with infill and redevelopment goals.
>
> Strategy 3b: Support implementation of infill and redevelopment activities identified in the 2015 Vermont Downtown Action Team reports (Barre City, Northfield, Waterbury, Waitsfield and Warren).

4. Municipalities should consider use of innovative tools such as "form-based" land use regulations. These types of regulations focus less on specific uses and more on the physical form of the built environment, utilize dimensional standards to shape how buildings relate to each other, to streets, and to other public spaces.

> Strategy 4a: Explore opportunities to conduct a regional workshop focused on Implementing Form-based Land Use Regulations.

5. Continue to work with municipalities and VTrans to reduce conflicts

between traffic needs and human-scale functions of ~~Regional and Town~~ Centers through practices like traffic-calming measures, pedestrian-safety improvements and gateway treatments. Priority for the use of public funding for the maintenance or improvement of infrastructure shall be for those that support concentrated development in ~~Regional and Town~~ Centers.

Strategy 5a: Support identification of corridors for new roads or road segments in and around ~~Regional and Town~~ Centers as part of a local planning process, and support for construction of those roads and utility infrastructure to help drive growth in a way that supports compact center development

Shopping Center Definitions (*Source: 2024 Bennington County Regional Plan*)

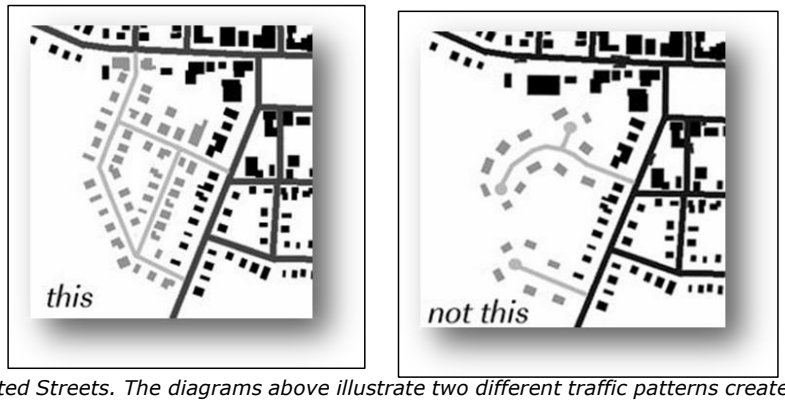
A shopping center may include one or multiple stores, in single or multiple ownership, functioning together as one integrated complex. For the purposes of the Regional Plan, the following definitions apply:

Small-Scale Shopping Center: A shopping center with a store or stores that sell daily living needs and convenience goods such as food, medicine, clothing, and hardware, and may also include service businesses (e.g., laundry, hair salon, bank, auto or bicycle shops). These centers range in size from 10,000 to 30,000 sq. ft. of gross floor area.

Community Shopping Center: A shopping center with a store or stores that sell a broad range of goods (such as food, clothing, furniture, appliances, sporting goods) and which also may include personal and professional service establishments. Large grocery stores, department stores, and movie theaters are often found in these centers. Gross floor area in a community shopping center may range from 30,001 to 300,000 sq. ft.

Regional Shopping Center: A shopping center (or "shopping mall") including stores that sell a wide variety of merchandise and services – similar to but larger and more extensive than a community shopping center – usually built around one or more large anchor department stores. These centers exceed 300,000 sq. ft. in gross floor area

Connected Streets



Connected Streets. The diagrams above illustrate two different traffic patterns created by new development (shown in light gray). The diagram on the left highlights several smart growth principles by integrating the new roads with the existing road and providing for a mixture of uses at a density consistent with compact development (Smart Growth Vermont).

6. Priority for the use of public funding for the development of affordable housing and assisted living facilities shall be for those located within ~~Regional and Town~~ Centers in order to increase access to services.

7. The placement of municipal and other government buildings should be in established ~~Regional and Town~~ Centers in order to maintain and enhance the vitality of these areas.

8. Encourage the development of public places and cultural events within ~~Regional and Town~~ Centers.

9. Support the creation of off-road bike and pedestrian paths that connect ~~Regional and Town~~ Centers with residential areas and neighboring centers in a hub and spoke pattern.

10. Identify key areas with flood storage capacity and encourage floodplain protection measures such as land acquisition or restrictive land use regulation in areas up-stream of ~~Regional and Town~~ Centers.

Village Areas

Includes the traditional settlement area or a proposed new settlement area; they typically comprise a cohesive mix of residential, civic, religious, commercial, and mixed-use buildings, arranged along a main street and intersecting streets that are within walking distance for residents who live within and surrounding the core. Village Areas may have one or more of the following: water, sewer, or land development regulations. They provide some opportunity for infill development or new development where the village can grow outside of flood hazard areas. These areas include existing Village Center designations and similar areas statewide, but this area is larger than the Village Center designation.

Factors in determining the presence and boundaries of a Village Area include: a state-designated Village Center, local road network and availability of public utility infrastructure. Where water and wastewater infrastructure are present, density will be at least five units per acre; where utilities are not available, Village Areas will have relatively dense development and smaller lot sizes (greater than one unit per acre), a mix of land uses, and a distinct separation from surrounding rural areas.

~~Industrial~~ Enterprise

Includes locations of high economic activity and employment that are not adjacent to Planned Growth Areas. These include industrial parks, areas of natural resource extraction, or other commercial uses which involve larger land areas. Enterprise areas typically have ready access to water supply, sewage disposal, electricity, and freight transportation networks. Enterprise areas are principally determined by local zoning bylaws that support concentrated commercial and industrial uses.

~~Industrial~~ Enterprise consists of areas where existing and future commercial and industrial activities are encouraged, including new development and redevelopment. ~~Largely clustered in the vicinity of the Region's urbanized areas, these include industrial parks and active quarries in Barre City, Barre Town, Berlin, Montpelier, East Montpelier, Middlesex and Northfield. A small industrial district is also located on the border of Fayston and Waitsfield, the location of the Mad River Industrial Park.~~

Commented [KP44]: Text from new draft Land Use chapter. Reflects changes to statute.

Commented [KP45]: Text from new draft Land Use chapter. Reflects changes to statute.

The specification of commercial/industrial sites allows for location of these types of businesses without creating adverse impacts on adjacent land uses. Large-scale commercial/industrial uses, which are important to the region, need to be located in areas where off-site impacts such as noise, traffic and light/glare can be mitigated.

Enterprise Policies

1. Industrial uses are encouraged to locate first in existing ~~industrial~~ enterprise areas and secondly in ~~industrial~~ enterprise areas assigned in municipal plans which are in accordance with the goals and policies included in this plan.

2. It is acknowledged that commercial activity and small scale, individual industrial activities will take place in other parts of the region as directed by town plans, which can address the town needs with more specificity.

~~Mixed-Use Commercial~~ Transition or Infill Areas

~~Mixed-Use Commercial Transition and infill areas include areas of commercial, office and mixed-use development built in a spread out pattern and served by water and wastewater infrastructure. Typically dominated by commercial service industries, the intent of this land use category is to transform these areas into higher-density, mixed-use settlements through infill and redevelopment. These areas in the region are concentrated along US 302, Fisher Rd, VT 12 and south of Route 2 in Berlin, and also includes South Barre in Barre Town.~~

Includes areas of existing or planned commercial, office, mixed-use development, or residential uses either adjacent to a Planned Growth or Village Area or a new stand-alone Transition Area and served by, or planned for, water and/or wastewater. The intent of this land use category is to transform these areas into higher-density, mixed-use settlements, or residential neighborhoods through infill and redevelopment or new development. This area could also include adjacent greenfields outside flood hazard areas and planned for future growth.
Transitional/Infill Areas are determined by municipal planning goals intended to transform an existing, low-density commercial area into a mixed-use center.

Commented [KP46]: Text from new draft Land Use chapter. Reflects changes to statute.

Planned commercial or mixed uses within existing linear commercial zoning districts along major road corridors must be developed carefully to avoid sprawl, traffic congestion, and safety hazards.

Municipalities should not encourage strip development because additional development of this type would negatively impact the economic vitality of commercial areas in nearby ~~Regional and Town~~ Centers. Communities should give substantial consideration to the long term impacts of creating or extending strip development.

"Strip ~~D~~development"

Title 10: Chapter 151, the Vermont statute dictating the Act 250 land use permitting process, defines "strip development" as follows:

"Strip development" means linear commercial development along a public highway that includes three or more of the following characteristics: broad road frontage, predominance of single-story buildings, limited reliance on shared highway access, lack of connection to any existing settlement except by highway, lack of connection to surrounding land uses except by highway, lack of coordination with surrounding land uses , and limited accessibility for pedestrians. In determining whether a proposed development or subdivision constitutes strip development, the District Commission shall consider the topographic constraints in the area in which the development or subdivision is to be located."

Transition or Infill Policies

1. Encourage the transformation of existing commercial areas into areas serving a mix of uses, including residential, and offering diversified transportation options, while also conforming to traditional historic development patterns.

    Strategy 1a: Work with towns to incorporate standards such as placement of buildings near the road with parking areas to the side and rear, attractive building design, application of access management principles and provision of pedestrian facilities within the center and facilities that connect to sidewalks and public transit.

2. Large scale retail constituting a substantial regional impact should be permitted only if it includes exemplary building and site design as described above in Policy 1, and is determined to have a net beneficial impact based on an independent economic and community impact study that may be requested by the host municipality and/or CVRPC.

~~Resort Centers~~ Resource-based Recreation Areas

~~Resort Centers are developments that are associated with large-scale recreational facilities, which in Central Vermont are concentrated around ski area facilities in the Mad River Valley.~~

~~Downhill facilities and associated development at Lincoln Peak (Warren) and Mt. Ellen (Fayston) of Sugarbush Resort and Mad River Glen (Fayston) all provide recreational facilities, services and jobs and contribute to the Region's seasonal housing stock. Sugarbush Resort has been undergoing substantial expansions at Lincoln Peak for the past decade as part of a Lincoln Peak Base Area Redevelopment Master Plan to improve base area/guest facilities and to increase the bed base of the resort.~~

~~Access to these resort areas are provided via VT Rte 100 together with VT Rte 17, German Flats Rd., the Sugarbush Access Rd. and seasonal transit services.~~

Includes large-scale resource-based, recreational facilities, often concentrated around ski resorts, lakeshores, or concentrated trail networks, which provide infrastructure, jobs, and housing to support recreational activities. Residential areas adjacent to these areas should be included in this category unless the area is part of an existing designated village or downtown in which it would then be categorized as a planned growth or village area to accommodate future housing growth.

In Central Vermont, Resource-based Recreation Areas are determined by their proximity to a large-scale recreation area such as the ski resorts in the Mad River Valley. Downhill facilities and associated development at Lincoln Peak (Warren) and Mt. Ellen (Fayston) of Sugarbush Resort and Mad River Glen (Fayston) all provide recreational facilities, services and jobs and

contribute to the Region's seasonal housing stock. Resource-based Recreation Areas may also be determined by the provision of water and wastewater.

Commented [KP47]: Text from new draft Land Use chapter. Reflects changes to statute.

Resource-Based Recreation Areas Policies:

1. The Towns of Warren and Fayston have developed specific ski area planning districts and regulations in its municipal plan and zoning bylaw to ensure that development is consistent with town goals. As the impacts of these resorts extend beyond municipal boundaries, this Plan recognizes that the Town of Waitsfield participates with the Towns of Warren and Fayston participate in the Mad River Valley Planning District (MRVPD). Also including representation from Sugarbush Resort and the Mad River Valley Chamber of Commerce, the MRVPD carries out a program of planning for the future of the Mad River Valley and conducts studies regarding key issues, such as affordable housing, recreation and trail planning and economic development that are incorporated into local plans. Future growth at Sugarbush Resort and Mad River Glen that is compliant with local plans and bylaws is consistent with this Plan.

2. The focus of alpine ski area development in the Region should remain on the expansion of existing facilities rather than development of new ones.

Rural

Commented [KP48]: Description of rural areas from current plan is retained as a broad, high-level definition. This provides context for rural areas generally and the definitions of the distinct rural subgroups are elaborated on below.

Rural areas encompass the majority of the Region's land area and are generally rural in character. Much of the Region's residential development in recent decades has occurred in these areas in a low-density pattern along transportation routes. These areas encompass much of the Region's large forest blocks, sand/gravel/mineral deposits, and prime agricultural soils that, when in productive use, contribute to the working landscape and have significant economic value. Rural areas also include residential, small-scale commercial and industrial, and recreational uses.

New subdivisions can be planned to incorporate the positive characteristics of earlier rural settlements, such as a community identity, public open spaces, and preservation of important resources (such as agricultural soils and forest blocks). Many of these objectives can be realized by clustering

lots to create a Hamlet-type character around the homes, while setting a significant percentage of the project area aside as open space reserved for agriculture, forestry, wildlife habitat or public recreation.

Rural - General:

Include areas that promote the preservation of Vermont's traditional working landscape and natural area features. Rural – General accommodates the bulk of Central Vermont's rural economy, including small enterprises and home-based occupations and professional services. They allow for low-density residential, home-based professions and limited commercial development that is compatible with productive lands and natural areas. This area could also cover land parcels that municipalities do not want to allow housing development. These areas may also include recreational trails.

Rural - Agricultural and Forestry:

Include blocks of forest or farmland that sustain resource industries, provide critical wildlife habitat and movement, outdoor recreation, flood storage, aquifer recharge, scenic beauty, and contribute to economic well-being and quality of life. Development in these areas should be carefully managed to promote the working landscape and rural economy, and address regional goals, while protecting the agricultural and forest resource value. Included in this category are forest blocks and habitat connectors that are significant on a state, regional or local level.

Rural - Conservation:

Include areas intended to be conserved often with regulations or State or non-profit purchase of property rights limiting development, fragmentation, and conversion to maintain ecological health and scenic beauty. These lands have significant ecological value, and require special protection due to their uniqueness, fragility, or ecological importance. They may include protected lands, areas with specific features like steep slopes or endangered species, wetlands, flood hazard areas, and shoreline protection areas, and are intended to remain largely undeveloped for the benefit of future generations. Some portion of managed forest land will likely fall into this category. Included in this category are forest blocks and habitat connectors that are

significant on a state, regional or local level.

Examples of Rural - Conservation area include the following:

- Protected lands
- Elevations above 2,500 ft (elevations above 1,700 ft in Waitsfield, as regulated)
- Slopes of 25% or more
- Rare, threatened or endangered species and significant natural communities
- Wetlands
- Special flood hazard areas
- Shoreline protection areas
- Critical wildlife connectors

Commented [KP49]: Text from new draft Land Use chapter. Reflects changes to statute.

Hamlets

~~Hamlets are smaller than villages, and are typically concentrated residential settlements woven into the fabric of Rural Land Use Planning Areas that may or may not provide minor commercial and civic services. Hamlet areas are identified on the Future Land Use Map by center points; when making land use decisions using the policies in this Plan, Hamlet Areas must include the locally recognized extent of the hamlet as it is delineated in the appropriate town plan.~~

~~Hamlets in the Region include Riverton (West Berlin), South Village (Northfield), Cogswell, Upper Graniteville, Lower Graniteville, Upper Websterville, Lower Websterville, East Orange, Orange Village, Adamant, North Montpelier, East Montpelier Center, Putnamville (Middlesex), East Warren and South Woodbury.~~

Small historical clusters of development – mainly homes, sometimes a school, church, store, or other public buildings not planned for significant growth; no public water supply or wastewater systems, and mostly focused along one or two roads.

Though small in area, a Hamlet is distinguished by a relatively dense development and a distinct separation from surrounding rural areas. These small settlements generally do not meet the criteria to become a village center.

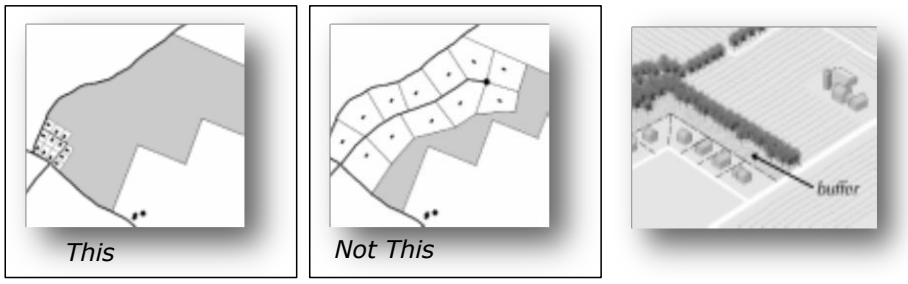
Commented [KP50]: Text from new draft Land Use chapter. Reflects changes to statute.

Rural Policies:

1. Development should be designed to minimize its impact on the viability of agricultural operations or its contribution to fragmentation of forest Blocks.

Strategy 1a: Provide guidance and training on regulatory and non-regulatory tools for open space and resource protection available to towns for use in town plans and regulations. Encourage implementation of tools such as conservation subdivisions, clustered development, transfer of development rights, building envelopes and variable lot size in all subdivision development, and especially within rural residential and productive rural lands.

2. Development is encouraged to be built outside of farms and along the edges of forests, preferably with buffers between such development and agricultural uses or environmentally sensitive areas.



Avoiding Fragmentation and Minimize Use Conflicts: Incorporate buffers between developed and resource lands to avoid conflicts between incompatible uses — maintain a well-defined edge between developed and open land. (Smart Growth Vermont).

3. Policies that enable owners of farm and forestland to bear the financial responsibility of resource protection should be supported.

4. Development that diminishes the rural character of the area as defined by local and regional plans is discouraged. Development is encouraged to incorporate the following principles:

- Convenience and safety of vehicular and pedestrian movement, including measures such as traffic calming, within the site, and in

relation to adjacent areas or roads.

- Compact development that allows for use of shorter power lines and shorter, narrower, and interconnected roads that result in lower maintenance costs.
- When new roads are being constructed, consideration should be given to burying power and phone lines, if practicable.

5. ~~Develop and expand existing Hamlets in a form that maintains traditional density and residential settlement pattern.~~ Support existing Hamlets that may want to grow and become a Beginner Center (Step 1) in the new State Designation Program and that meet State requirements for the designation of Village Center on the regional future land use map. Encourage towns to enable this pattern of development in local land use regulations.

Commented [KP51]: Policy updated to reflect statutory changes from Act 181.

6. Wildlife connectivity areas should be protected from fragmentation and uses that reduce their viability for movement of wildlife, particularly where they connect forest blocks.

7. Non-residential uses, including small service businesses, small professional offices and inns are acceptable land uses for Rural Areas provided that such uses are planned as relatively small in size or scale, are not primary or dominant uses in an area, do not unduly conflict with existing or planned residential, forestry or agricultural uses, and do not unduly affect rural character. Towns should limit the number and size of such establishments to prevent a proliferation of scattered commercial development that does not serve the needs of the community.

8. Occupations that are customarily practiced in residential areas, and which do not affect the character of those areas, are another form of small-scale commercial use common in and appropriate for rural areas. Small professional offices, antique shops, and craft studios are examples of such "customary home occupations."

9. Cross country ski centers, mountain biking facilities and other outdoor recreational areas represent an economically viable means of maintaining rural open spaces with little secondary development; both expansion and development of new facilities are consistent with this Plan.

Rural-Conservation Policies

1. Conservation of the natural landscape and careful management of lands is sought for these areas. Development in these areas should be subject to extensive planning, review and conditions that ensure its protection.

2. Any development proposed within critical resource areas shall provide evidence as to why the development cannot be avoided, and shall provide mitigation for natural resources impacted by the development.

3. The extension of permanent roads, energy transmission facilities, and utilities into Resource Areas is discouraged.

4. Development on wetlands, steep slopes of 25% or more, and ridge lines should be avoided.

5. Avoid or limit development and investment in identified flood hazard areas, where feasible.

6. Avoid development that fragments forest blocks and habitat connectors.

~~Resource~~

Commented [KP52]: This section will be incorporated into the new Rural- Conservation category above.

~~Resource areas are dominated by lands requiring special protection or consideration due to their uniqueness, irreplaceable or fragile nature, or important ecological function. These include:~~

- ~~Protected lands;~~
- ~~Elevations above 2,500 ft (elevations above 1,700 ft in Waitsfield, as regulated);~~
- ~~Slopes of 25% or more;~~
- ~~Rare, threatened or endangered species and significant natural communities;~~
- ~~Wetlands;~~
- ~~Special flood hazard areas; and~~
- ~~Shoreline protection areas;~~

~~Both Highest Priority Forest Blocks and Highest Priority Connectivity Blocks are also present within the high elevations and encompass areas of steep~~

slopes, areas with rare, threatened or endangered species, significant natural communities and wetlands. As a subcategory of Resource lands, this plan recognizes *critical resource areas (see page 2-9 for a description)* as key sites that are particularly sensitive and should be given maximum protection. Please refer to the callout box on the following page for the methodology used to determine Resource areas.

Policies:

1. Conservation of the natural landscape and careful management of lands is sought for these areas. Development in these areas should be subject to extensive planning, review and conditions that ensure its protection.

2. Any development proposed within critical resource areas shall provide evidence as to why the development cannot be avoided, and shall provide mitigation for natural resources impacted by the development.

3. The extension of permanent roads, energy transmission facilities, and utilities into
Resource areas is discouraged.

4. Development on wetlands, steep slopes of 25% or more, and ridge lines should be avoided.

5. Avoid or limit development and investment in identified flood hazard areas, where feasible.

6. Avoid development that fragments forest blocks and habitat connectors.

Future Land Use Map Resource Data and Sources

Commented [KP53]: Outdated.

Data is for general planning purposes only and may contain errors and omissions. Data should be verified during permitting processes per the provisions of the regulatory authority. Scale limitations exist and data is only as accurate as the original source.

- Protected lands: This data consists of both private and public protected lands. These include VT State Forests, Parks, Wildlife Management Areas, Town Forests, and Land Trust Easements.

Source: Vermont Conserved Lands Database, VT Land Trust, and Towns

- Elevations above 2,500 ft (elevations above 1,700 ft in Waitsfield, as

regulated): This data consists of all areas about the elevation of 2500 ft and in Waitsfield VT above 1,700 ft.

Source: USGS contours over 2500 ft and Town of Waitsfield Land Use Regulations

- Slopes of 25% or more: This data includes all areas with slopes of 25% or more.

Source: CVRPC slope analysis using 10 meter Digital Elevation Model.

- Rare, threatened or endangered species and significant natural communities: This data consists of all mapped rare, threatened or endangered species and significant natural communities as identified by the Vermont Fish and Wildlife Department, Natural Heritage Inventory.

Source: Vermont Fish and Wildlife Vermont Natural Heritage Inventory http://
www.vtfishandwildlife.com/common/pages/DisplayFile.aspx?itemId=229831

- Wetlands: This data consists of all mapped class 2 wetlands as identified in the Vermont Significant Wetlands Inventory.

Source: Vermont Department of Environmental Conservation Water Quality Division
Wetlands Section

- Special flood hazard areas: This data consists of FEMA mapped Special flood hazard areas Zone A and AE.

Source: FEMA Digital Flood Insurance Rate Map data

- Shoreline protection areas: This data consists of all lakes and ponds greater than 10 acres plus a buffer of 250 feet (Lake Shore Protection areas in Calais, as regulated) .

Source: CVRPC selected Vermont Hydrologic Dataset lakes and ponds greater than 10acres and then buffered those by 250 ft and the Town of Calais Land Use Regulations

General Land Use Goals, Policies and Strategies

General Land Use Goal 1:

To promote sound management, conservation and use of the Region's natural resources.

Policies:

1. Municipalities are encouraged to establish conservation commissions (under V.S.A.24, Chapter 118) to assist in the identification, study, maintenance and protection of important natural resources.

2. Encourage the improved identification and mapping of surface and groundwater resources.

> Strategy 2a. Work with State and Federal partners, such as U.S. Geological Survey, VT Geological Survey, and the Agency of Natural Resources in delineating ground water supply, aquifers, and groundwater protection areas.
>
> Strategy 2b. Support towns in identifying wetlands and vernal pools that are not already mapped by the State of Vermont.

3. Support the betterment of surface water quality in the Region.

> Strategy 3a. Storage and utilization of fertilizers, pesticides, petrochemicals, herbicides, sludge, or other potentially harmful industrial, agricultural, commercial or residential materials, must be accomplished in a manner compatible with existing regulations.
>
> Strategy 3b. CVRPC opposes the downgrading of surface water classifications unless such action is required to accommodate treated effluent from new or expanded municipal sewage treatment facilities. The Commission also opposes the upgrading of surface water classifications where such upgrading might be misleading or dangerous to users.

Strategy 3c. Where a proposed project involves a discharge into, or withdrawal from, any of the Region's surface waters, consideration should be given to the short and long term impact on such waters and to applicable health and water regulations. The potential degradation of water quality, the impact on wildlife, the assimilative capacity of waters, and the effect on the Region's ability to support future growth should be evaluated. Protection of the public health, safety, and welfare shall be the primary objectives.

Strategy 3d. Native vegetated buffer strips in riparian zones and shoreland areas should be protected or maintained according to Best Management Practices outlined in the Vermont Handbook for Shoreland Development and VT ANR Guidance Regarding Riparian Buffers to protect functional habitat and improve water quality.

Strategy 3e. Encourage and assist with the acquisition of conservation easements along waterways according to priorities identified in River Corridor Plans.

Strategy 3f. Assist with and support efforts to remove dams that are not serving a useful purpose and other artificial barriers from rivers and streams. Help identify dams that are not serving a useful purposes and that should be listed for removal in conformance with state and federal rules and regulations.

Strategy 3g. Assist landowners in identifying funding opportunities to support buffer- plantings on their properties that would support stream bank and shoreland restoration.

Strategy 3h. High density development in proximity to surface waters should consider community septic systems to permit adequate setback of the leaching area, or connections to public systems, if possible.

Strategy 3i. Support the implementation of the Winooski River Tactical Basin Plan priority strategies.

Strategy 3j. Require water quality restoration funding requests

Commented [KP54]: Text drawn from new draft Natural Systems Aspirations, Goals and Strategies. Added to meet statutory need for Resources and Working Land Element to incorporate tactical basin plans and would support State Goal 6 (B).

demonstrate alignment with tactical basin plan priority strategies before regional planning commission support is offered.

4. Encourage enhanced educational opportunities on watershed functions, protection and restoration, particularly those targeted to youth.

Strategy 4a. Develop a clearinghouse of resources that could be used by teachers and other groups working with youth to provide education on these topics.

5. Avoid or limit development and investment in identified flood hazard areas. Where established economic and institutional centers exist, development in these centers shall adhere to strict floodplain management standards to minimize flood damage and public safety risk.

Strategy 5a. Continue to conduct outreach to municipalities regarding the most recent state River Corridor maps as delineated by the VT Agency of Natural Resources and their implications.

Strategy 5b. Encourage and provide technical assistance to municipalities in enhancing the regulatory standards in their municipal flood hazard regulations, including the in- corporation of River Corridor regulations.

Strategy 5c. Fill and new structures within mapped floodways as identified on FEMA Flood Insurance Rate Maps shall be prohibited, except where a substantial public benefit is provided."

Strategy 5d. Wetlands that provide a flood storage function as determined by the VT Wetlands Program should be left undisturbed or development should be required to provide compensatory storage or restoration on-site or in the immediate vicinity, if disturbed.

Strategy 5e. Assist municipalities in identifying and limiting development on lands adjacent to waterways that provide flood storage or other beneficial function through acquisition, easement, deed restriction or zoning that encourages cluster design, particularly for those upstream floodplains that provide flood protection functions

for the Region's downtowns and village centers.

Strategy 5f. CVRPC will have a FEMA Certified Floodplain Manager on Commission staff.

6. Improve flood resilience planning, education and outreach activities to create a citizenry aware of flood risks, potential costs, and actions that can serve to reduce risk and future property loss.

Strategy 6a. Continue to assist municipalities in developing local hazard mitigation plans and flood resilience elements as part of municipal plans.

Strategy 6b. Promote participation in FEMA's Community Rating System, where appropriate; Assist unenrolled towns in applying for the Community Ratings System and assist towns already involved in the Community Ratings System in improving their rating.

Strategy 6c. Consider coordination of a multi-jurisdictional Program for Public Information, an ongoing effort to prepare, implement, and monitor a range of public information activities.

Strategy 6d. If requested, perform an audit of municipal web sites and communication methods and recommend additional information and communication methods that will increase local awareness of flood risks, municipal flood resilience planning, and actions property owners and residents can take.

Strategy 6e. Partner with the Vermont Agency of Natural Resources to coordinate Region-wide flood resilience-related trainings targeted to real estate agents, developers, business owners and other stakeholders with interest in floodplain management.

7. Minimize fragmentation of forest blocks and habitat connectors.

Strategy 7a. Promote the Use Value Appraisal (Current Use Program) and other non-regulatory approaches to forest conservation and management, including support of forest products and conservation

easements.

Strategy 7b. Encourage municipalities to identify forest blocks and habitat connectors and plan for the minimization of forest fragmentation.

Strategy 7c. Work with municipalities to incorporate development review standards in zoning and subdivision regulations that address forest and wildlife resources.

General Land Use Goal 2:

To enhance and support the viability of the Region's resource based industries.

Policies:

1. CVRPC supports and encourages the protection and continued productivity of viable primary agricultural soils, productive forest land, and mineral resources. Sound land use planning including flexible development options, fair government pricing taxation and subsidy programs, agricultural diversity, and promotion of value-added products and industries are viewed as means to this end.

2. Public improvements are considered a significant reason for farmland's metamorphosis into prime development land. The installation of sewer or water lines, and roads across or into the immediate vicinity of agricultural parcels or primary agricultural soils can encourage the development of farmland. For this reason they require careful review. Such improvements will be discouraged unless:

- such a position would conflict with the local plan; or
- the improvements are required to implement the settlement pattern goals set forth in this Plan or in that of a Central Vermont municipality;
- there is an overriding public need being served; or
- adequate permanent protection is inherent in the development proposal; or
- parcels or soils affected are determined to be "not viable" for reasons of size, topography, surrounding land use, or potential productivity.

3. CVRPC encourages municipalities to identify locally significant agricultural and forest parcels and/or districts through locally and consensually developed land evaluation and site assessment programs (e.g. LESA and FLESA). Such identification can assist in establishing protection priorities and programs.

4. CVRPC recommends continuation of, and participation in, the Use Value Appraisal Program as a means to promote continuing sound management of resource lands by taxing them fairly and according to their current use.

5. CVRPC will, in conjunction with other stakeholders and relevant organizations, consider methods to determine the amount of agricultural land required to meet the Region's long term requirements under a "worst case scenario" regarding food importation.

6. The extraction of sand and gravel should not be unduly detrimental to surrounding land uses or the environmental quality of the area. A reclamation plan should be included as part of any extraction proposal. Possible alternative uses should be identified in local plans. Municipalities are encouraged to map the important, accessible sources.

7. New developments that encroach upon resource lands, and the occupants thereof, are encouraged to respect the rights of resource land owners to continue existing operations, and undertake appropriate expansions, according to accepted practices.

General Land Use Goal 3:

To encourage the historic settlement pattern of compact village and urban centers separated by rural countryside while promoting development in economically viable locations.

Policies:

1. New development should be planned so as to respect the historic settlement pattern of compact villages, neighborhoods, and urban centers separated by rural countryside. Accordingly, CVRPC:

- ~~Endorses the concept of creating new villages to accommodate new~~

~~growth.~~ Endorses the concept of creating, relocating or expanding villages and downtowns to accommodate new growth and comply with the Flood Safety Act of 2024.

- Endorses "smart growth" planning principles as embodied in this Plan and supports the designation of "Growth Centers " – be they identified in local plans or through the State process codified in Act 183. ~~We would also support efforts to simplify the State Growth Center designation process so as to make its benefits more accessible to a broader cross-section of communities.~~
- Will assist municipalities in conducting the studies required to designate new future land use map designations via Act 181 of 2024. ~~to prepare applications to the Downtown Board for State Growth Center Designation.~~
- Supports the appropriate expansion of existing settlements, particularly where excess infrastructural capacity exists. (The existing settlements within Central Vermont are those areas currently served by public water and/or sewer systems or characterized by higher densities of development. Existing settlements include, but are not limited to, the downtowns and cities, the villages and the myriad concentrated residential neighborhoods.)
- Encourages PUD, "cluster" or "open space" design for new residential and commercial developments, particularly those outside of existing settlements or planned growth areas and discourages the development of commercial and residential sprawl.
- Encourages "in fill" development and adaptive reuse of buildings in existing settlements.
- Supports and encourages revitalization efforts directed towards strengthening and improving villages and cities.
- Recognizes that some environmental and development "trade-offs" will be necessary to achieve desired growth patterns. To this end, CVRPC believes that mandatory mitigation of any agricultural soils or habitat losses, even at a reduced ratio, within State designated ~~Growth~~ Centers is counterproductive to enticing development and recreating traditional land use patterns.
- Believes that land use restrictions should not unduly hinder self-employment for residents. Such opportunities may help reinforce traditional land use patterns through economic incentives.
- Believes that land use plans should not unnecessarily infringe upon the

Commented [KP55]: Policies updated to reflect statutory changes from Act 181.

land-owner's ability to enjoy and profit from the investment and use of private property.

- Encourages municipalities and individual landowners to identify sites which may qualify for assessment and/or cleanup under the EPA's Brownfields Grant Program.
- Encourages municipalities to undertake build-out modeling in order to better evaluate development capability and future growth potential under current zoning, as well as to examine the potential impact of employing alternative density strategies.

2. To seek ways to overcome the economic disincentives to development within existing built-up areas, including the high costs associated with the construction of, or hookup to, necessary infrastructure. CVRPC:

- Recognizes Tax Increment Financing (TIF) as a valuable tool for supporting infrastructure development in planned growth areas and supports amending current State law to make it more practical for communities to implement.
- Over the next five years CVRPC will continue to work with municipalities to maintain and amend, where appropriate, the regional future land use map that include designated centers and neighborhoods and incorporates feedback from municipalities on local land use planning efforts. ~~prepare a regional land use map that incorporates the developing land use plans of its municipalities and displays locally and/or State designated growth centers.~~ In conjunction with this effort, CVRPC will provide technical assistance in determining future land use designations ~~growth center planning~~, upon request, and in conjunction with State guidelines.
- Will recognize areas of growth on the regional future land use map ~~growth center designations~~ and employ them to attempt to achieve desired growth patterns through its influence over public expenditures and development review decisions, where applicable.
- Will provide assistance to municipalities seeking such funding for brownfield assessment and remediation, upon request.

Commented [KP56]: Policies updated to reflect statutory changes from Act 181.

General Land Use Goal 4:

To protect environmentally sensitive or unique areas.

Policies:

1. Natural and fragile areas identified in this Plan should receive protection from harmful uses.

2. Where natural and fragile areas occur on developable private lands and where their adequate protection would preclude any other reasonable use of those properties, acquisition in fee simple or less than fee simple is recommended.

3. Where a potentially harmful development or activity is proposed in proximity to a natural or fragile area, measures should be taken to ensure adequate protection.

4. CVRPC encourages the inclusion of natural and fragile areas information and mapping in local plans. (Municipalities should not be limited by the definitions and designations included here, as it is recognized that this Plan may not include all locally significant sites.)

5. It is the policy of CVRPC to encourage the maintenance of existing wildlife habitats and habitat connectors. Municipalities are encouraged to identify those of local importance.

> Strategy 5a. Work closely with partners such as The Nature Conservancy, the Staying Connected Initiative and Vermont Fish and Wildlife to identify areas within the Region that are sensitive to development, which contains the most recorded species, the most diverse communities, etc., and have this data available for incorporation in member town plans.

6. Any activity that would degrade important groundwater supplies is discouraged. Specifically, development activities in designated WHPA's shall be carefully reviewed for groundwater impacts.

7. Hazardous wastes shall be disposed of properly to prevent any degradation of groundwater.

8. It is the policy of CVRPC to encourage the preservation of wetlands so as to protect their function and productivity. Efforts (including consideration of site design options) should be made to mitigate against the possible

adverse impacts of development on the Region's wetlands.

9. Prevent the spread of terrestrial invasive species and forest pests.

Strategy 9a. Work with partners to implement coordinated invasive species and forest pest education, detection, prevention and control measures.

Strategy 9b. Encourage landscaping with native species over the use of non-native species, particularly in non-urban environments. Work with UVM Extension Master Gardeners on educating homeowners on the use of native trees and plants.

General Land Use Goal 5:

To preserve the aesthetic quality of the Region.

Policies:

1. Municipalities and developers are encouraged, through design and siting of structures, to make a concerted effort to preserve access to and enjoyment of scenic views for the public.

2. Unless effectively screened, or clearly in the best interest of the general public, ridge line development or conspicuous development on locally prominent landscape features is discouraged

3. The scale and siting of new structures should be in keeping with the surrounding landscape and architecture; however, towers should utilize stealth technology.

4. Outdoor lighting should be limited to minimum levels necessary to ensure safety and security of persons and property.

5. Light sources shall be shielded and not directly visible from public roads or adjacent residences.

6. Landscaping with native species is generally preferred over the use of nonnative species, particularly in non-urban environments. The use of non-

native trees and plants for landscaping can lead to unintended introductions of species which out-compete native vegetation.

7. Where possible, parking lots and storage areas should be well landscaped and/or otherwise screened from view on public roads.

8. CVRPC encourages the State and municipalities to maintain existing roadside views by means of vegetation clearing, where appropriate.

9. CVRPC will attempt to inventory and map the Region's scenic resources, with assistance from municipalities.

10. The location of telecommunication towers is a significant aesthetic issue within the Region. Policies intended to minimize negative impact are presented in the wireless telecommunication facilities policies of this Plan.

11. CVRPC will track indicators that show impacts on aesthetic quality and natural beauty in Central Vermont.

12. New development should make all reasonable attempts to minimize noise pollution and shall not exceed accepted standards in residential areas.

General Land Use Goal 6:

To ensure that new development in the vicinity of the Region's interstate interchanges is appropriate to the setting and considers the impact of such development on adjacent village and urban centers.

Policies:

1. CVRPC encourages interchange modeling and identification of preferred development scenarios.

2. CVRPC will encourage and assist municipalities in planning for land use in and around interchange areas.

~~3. CVRPC will continue to support the Town of Berlin 's efforts to plan for and implement the creation of a new village center in the vicinity of Exit 7.~~

Commented [KP57]: Completed.

4. CVRPC will encourage the concept of management associations (similar to transportation management associations) to promote master planning for interchange zones.

5. CVRPC will exercise its status as a statutory party in Act 250 whenever new development has the potential to impact the form and function of an interchange area or adjacent communities.

6. In support of regional land use priorities that endorse ~~support~~ the development of downtown, new town, and village centers ~~development of village and urban centers~~, CVRPC will not encourage development at interchanges where that development will result in a demonstrable negative impact on adjacent downtown, new town, and village centers. ~~village or urban centers~~. CVRPC will, however, encourage development at interchanges that complement or appropriately expand existing growth centers according to a locally developed, regionally approved plan.

Commented [KP58]: Policies updated to reflect statutory changes from Act 181.

7. New development should employ design guidelines that foster economic vitality in growth areas and encourage the maintenance of the rural, working landscape.

General Land Use Goal 7:

To manage the quality and quantity of storm water runoff in order to avoid property damage and negative impacts on surface and groundwater.

Policies:

1. New development should, through design and maintenance, attempt to minimize changes in the volume and chemical composition of runoff. Methods recommended to achieve this objective include:

- Avoiding construction on steep or unstable slopes and in high elevations (Slopes in excess of 25% and elevations above 2,500 feet are generally thought to be prohibitive for most kinds of development.);
- Stabilizing entrances to construction areas to eliminate tracking of sediment onto paved public roads;
- Employing cluster/open space design techniques;
- Minimizing development road and sidewalk widths to those which are

necessary for safety and access;
- Avoiding the use of wide radius, paved cul-de-sacs, where appropriate ("Hammerhead" turns, smaller radius turns, and landscaped cul-de-sac is- lands are some other options.);
- Minimizing the removal of native vegetation to the extent practical;
- Phasing new construction to minimize the amount of disturbed soil at any given time where practical; and
- Providing vegetated buffers between roof lines and paved areas and be- tween sidewalks and roads, where appropriate.

2. Structural Best Management Practices (BMP's) should be used, as appropriate, to control storm water on new development sites before, during and after construction (including plans for long term maintenance and operations). Objectives and applications include:

- Storm water retention: wet ponds, artificial wetlands
- Storm water detention: dry basins
- Storm water filtering: bio-retention, sand filters, compost filters
- Storm water velocity control: filter strips, grassed swales, rock swales
- Erosion control: construction schedule, seeding/mulching, check dams, run- off diversions
- Sediment control: sediment basins/traps, filter fabric/silt fences, hay bales, inlet protection
- Infiltration: infiltration basins, trenches, dry well, leaching catch basins, in- filtration islands, pervious surfaces

3. Acceptable Management Practices (AMP's, as defined by the Vermont Agency of Natural Resources) should be employed on all agricultural, silvicultural and earth extraction operations.

4. Efforts should be made to minimize the extent of impervious surfaces and surface runoff associated with parking facilities. The following methods are recommended:

- Constructing structured parking facilities (i.e. multi-level garages) where practical and appropriate in order to provide a higher ratio of parking spaces to impervious surface area;
- Using pervious materials in "spillover" parking areas;

- Integrating the use of landscaped areas as "bio-retention" filters; and
- Providing smaller spaces for compact cars.

5. Municipalities should consider adopting policies and practices to reduce the volume and impacts of storm water runoff, including:

- Encouraging storm water management through the use of BMP's (as outlined in policy 2) in local plans, zoning bylaws, and building permits;
- Minimizing zoning setbacks to allow for shorter driveways, and allowing shared driveways;
- Instituting maximum, as well as minimum, parking ratio requirements in local bylaws to prevent "overbuilt" parking lots;
- Allowing for shared parking facilities in local bylaws;
- Adopting "pooper scooper" ordinances to prevent the pollution of surface waters with pathogens and nutrients;
- Protecting high elevations and steep slopes from intensive development in local bylaws;
- Properly sizing and maintaining culverts;
- Properly maintaining ditches on dirt roads to slow runoff and filter sediments as per the "Road Design and Maintenance Handbook" published by the Vermont Local Roads Program;
- Separating combined storm water/sewer systems (CSO's) which can discharge raw sewage to surface waters during big storms; and
- Making sure road salt storage areas are covered.
- Consulting the "Erosion Control Prevention Manual" published by the Vermont Geological Survey.

3. ENERGY ELEMENT

Introduction

Energy is a vital component of modern life. When sources of power are lost or interrupted, even temporarily, the rhythms of our lives are profoundly interrupted. Business and industry halt and residents and goods dependent on electricity and other types of power are at great risk. Our electric infrastructure in Vermont is increasingly vulnerable to extreme weather conditions due to climate change. This comes at a time when we anticipate significant increases in demand for reliable and affordable electricity associated with the beneficial electrification of the thermal and transportation sectors.

Existing and potential sources of electric power in the region are adequate for current conditions, however, the region's electric infrastructure is aging and reaching performance limits. While the costs of developing new infrastructure are high upfront, potential long-term cost savings are increasing as resilience measures can reduce recovery spending. Furthermore, technology is rapidly advancing and markets are shifting to match beneficial electrification needs and the urgency of the climate crisis. It is increasingly important to consider cross-sector impacts and measures as well. For example, the electrification of the transportation and thermal sectors is demanding a statewide rethinking of electric efficiency targets and demand growth forecasts; there are novel and significant opportunities for municipalities and other stakeholders to implement community-scale solutions to offset energy use and mitigate costly infrastructure investments. Integrating renewable energy infrastructure more comprehensively into all scales of our planning across the region is important to not only maximize associated community benefits but also to minimize negative environmental and land use impacts of energy generation, transmission, distribution, and use. CVRPC's objective is to ensure that our energy infrastructure is located, designed, and correctly sized to support the Region's community and economic needs, which increasingly means it must be reliable, resilient, and affordable in the long term to reduce operational costs and Green House Gas emission contributions. For an introduction to existing energy infrastructure please see pages ## in the Utilities and Facilities Chapter.

This chapter and its supplements, as well as relevant sections in the Utilities, Facilities and Services, Transportation, Natural Systems and Land Use, and Housing chapters, constitute Central Vermont's Enhanced Energy Plan meeting the standards outlined in Act 174 and the 2022 Comprehensive Energy Plan (see Supplement Section: Standards) in addition to meeting the statutory requirements for the regional plan energy element (24 V.S.A. § 4348a(a)(3)). The primary purpose of this chapter is to identify a path toward achieving our regional share of the State's overarching energy and climate goals in a manner consistent with our regional priorities and needs. To meet state energy and climate goals, Vermont is shifting away from fossil fuels in the thermal and transportation sectors to electricity with a portfolio of renewable sources of energy; while pursuing efficiency across all sectors, and increasing in-state renewable energy generation. CVRPC promotes an approach to these state policies tailored to our region which includes, notably, the integration of cordwood heat especially in combination with heat pumps ; the conservation of energy and reduction of electric demand growth from thermal demand electrification via weatherization, wasteheat recovery, and community-scale decarbonization; community-centered renewable energy development; and an emphasis on long term social and physical infrastructure resilience.

Vermont Policy Framework:

This regional plan is consistent with the following state goals and requirements:

- Greenhouse gas reduction requirements under 10 V.S.A. § 578(a) (26% from 2005 levels by 2025; 40% from 1990 levels by 2030; 80% from 1990 levels by 2050)
- The 25 x 25 goal for renewable energy under 10 V.S.A. § 580 (25% in-state renewables supply for all energy uses by 2025)
- Building efficiency goals under 10 V.S.A. § 581 (e.g., reduce fossil fuel consumption across all buildings by 10% by 2025)
- State energy policy under 30 V.S.A. § 202a and the recommendations for regional and municipal planning pertaining to the efficient use of energy and the siting and development of renewable energy resources contained in the State energy plans adopted pursuant to 30 V.S.A. §§ 202a and 202b

- The distributed renewable generation and energy transformation categories of resources to meet the requirements of the Renewable Energy Standard under 30 V.S.A. §§ 8004 and 8005 (100% annual load by 2035).

Table ## in the supplement summarizes the more specific goals and targets established by the State of Vermont (page ##). The supplement provides further context for the underlying analyses and frameworks that this plan is built upon. This includes not only technical analyses that inform the State's Climate Action Plan and from which sector-based targets stem, but also Vermont's Environmental Justice Law (Act 154 of 2022), Climate Council principles from the just transitions subcommittee, and other state and national frameworks. As a result regional energy issues in energy reliability & resilience, equity, and land use are highlighted throughout this plan. These framing considerations are intended to ensure implementation of this plan centers an energy transition that is both expedient and accessible for all members of our communities and is responsive to future demands and conditions while minimizing impacts to our ecosystems.

Regional Energy Use Summary

Commented [KP59]: This section comes from the 2024 Readoption Energy Element. Data has been updated.

Definition:

"Energy" refers to all forms people use for transportation, thermal (heating space & water primarily), and electricity.

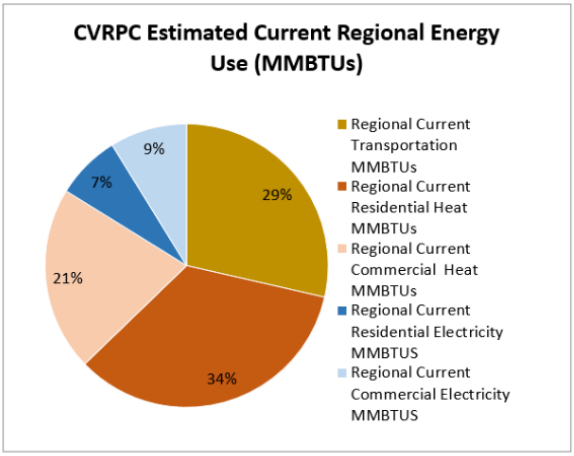
There are many different "units" of energy such as kilowatt-hours or gallons of gas, which can be converted and expressed in the common unit:

British Thermal Units (BTUs) or million BTUs (MMBTUs).

This allows us to compare across sectors but is often difficult to understand. Where possible, targets have been translated into more tangible metrics such as the number of homes to be weatherized (based on an average savings in MMBTUs per weatherized house).

Broadly across 2020-2023, the thermal sector is still the largest energy use at 55% including both residential and commercial space and water heating. Transportation is the second largest energy use in the region accounting for 29% of total usage although it is important to note that the reported estimates are limited to light-duty vehicles (commercial and medium- and heavy-duty data not available at this time). The electric sector makes up approximately 16% of the region's energy use.

Current Regional Energy Use Estimates



Sector	Current Regional Energy Use (MMBTUs)
Transportation (LDV)	**2,829,963**
Residential Thermal	3,386,790
Commercial Thermal	2,083,630
Total Thermal	**5,477,225**
Residential Electric	729,483
Commercial & Industrial Electric	872,505
Total Electric	**1,601,987**

Source: Municipal Consumption Worksheet Department of Public Service- ACS 5 Year Estimates

Each sector, thermal, and transportation, and electric is discussed below first in terms of current use, and then in terms of regional targets and key discussions.

Thermal Sector- Residential

Heating homes in Central Vermont is our greatest energy use. Together oil and propane were reported in 78% of the region's households (82% of renter-occupied homes and 77% of owner-occupied homes). Wood/biomass is used in approximately 14% of the region's homes (18% owner-occupied and only 4% renter-occupied homes). Variation across our region is high; however, in a quarter of the towns in our region wood is used in 34-43% of homes (see supplement and some discussion below, page ##). Approximately 6% of homes report electricity as their heat source, this is a slight increase from the previous plan; the increase in electricity is likely newly adopted heat pumps while some of the baseline is residual electric resistance heat. Although electric resistance heating has very low upfront and installation costs, it is one of the most expensive heating options for Vermonters. Low-income renters are disproportionately burdened by this inefficient equipment (EAN Annual Progress Report p28). The adoption of air sourced and ground source heat pumps may be partially obscured here and, in the future, if only primary heating sources continue to be reported and included. The predominance of fossil fuel in the residential heating sector is a cost burden to our region's residents and contributes a relatively small amount of in-state labor to our economy (in comparison to cordwood or even electricity which keep more jobs and dollars local); there is a clear opportunity and responsibility across the region to consider fuel-switching (primary heating source or entirely), weatherization and other efficiency measures which will reduce fuel use and emissions contributions (see below).

Commented [KP60]: This section is a shortened version of the Thermal Sector - Residential section from the 2024 Readoption Energy Element. It contains they key data points necessary for statute.

Current Regional Residential Fuel Use

(see supplement for expanded data and Town breakout)

% of Fuel Use by Tenure	2022 Regional Estimate					
	Owner Occupied		Renter Occupied		Regional Total	
	Totals	%	Totals	%	Totals	%
Utility gas	238	1%	337	5%	575	2%

Bottled, tank, or LP gas	5,108	25%	2,252	32%	7,360	27%
Electricity	548	3%	986	14%	1,534	6%
Fuel oil, kerosene, etc.	10,355	51%	3,021	43%	13,376	49%
Coal or coke	15	0%	0	0%	15	0%
Wood	3,613	18%	262	4%	3,875	14%
Other Fuel	491	2%	165	2%	656	2%
No fuel used	15	0%	19	0%	34	0%

Source: 2016-2020 5 Year American Community Survey; 2011-2015 ACS; DPO4, B25117, B25010

Current Regional Residential Heating Cost Estimate

Fuel Type	Standard Unit	BTUs/Unit	Cost/Unit	Total Regional Current Costs	Source (cost/unit)
Fuel Oil, kerosene, etc.	Gallon	140,000	$4.133	40,869,208.29	Vermont Average Residential-EIA (March 2024)
Bottled, tank, or LP gas (propane)	Gallon	91,000	$3.575	30,470,927.14	Vermont Average Residential-EIA (March 2024)
Coal or coke	Ton	19,590,000	$500	44,949.46	VT newspapers and quote VT&NH suppliers
Wood (seasoned)	Cord	20,000,000	$350	7,709,887.50	(275 green-450 kiln dried) VT newspapers and quoted VT suppliers
Wood Pellets	Ton	16,400,000	$405		Vermont wood/pick-up; Energy Co-op of VT
Electricity	Kilowatt hour	3,412	$0.2109	3,939,594.36	VT State Energy Profile, US Energy Information Administration
Other				4,142,353.99	
Regional Total Cost				$87,176,920.74	

Tables # and # are based on total occupied units, but there are many seasonal, recreation, and/or occasional use (2nd) homes across the region. Table #, in the supplement, supplies an additional adder to take into consideration thermal use in these homes: 4,137 additional homes across the region account for approximately 97,201.5 additional MMBTUs of energy use (conservatively).

Thus far, fewer low-temperature degree days in the winter have yet to result in reduced fuel consumption in the winter (without stable declining temperatures, residents may not adjust as naturally to cold temperatures).

Furthermore, more frequent high-temperature degree days are associated with increased heat-related health issues (VDH Climate Dashboard) including Central Vermont where few have adopted air conditioning and the threshold for health impacts is lower (86F as compared to 90F in Burlington). The increased use of air conditioning and associated electricity will need to be assessed in future updates as we continue to experience increasingly extreme storms, loss of stable seasons, and overall warmer, wetter conditions associated with Climate Change.

Thermal Sector- Commercial

Commented [KP61]: This paragraph remains unchanged from the 2024 Readoption Energy Element.

Current Regional Commercial Thermal (Heating) Energy Use

# Commercial Establishments	Average Thermal Energy Used Per Establishment (MMBTUs)	Regional Commercial Thermal Energy Use (MMBTUs)
2231	934	2,083,630

Source: Municipal Consumption Tool, CVRPC & Department of Public Service using data from the Department of Labor

Most of the region's commercial/industrial energy usage can be attributed to space heating and process heating. There is less distinction between many of our region's business buildings and the residential sector, though in more developed towns we do have more conventional commercial premises. Many of our region's schools are on wood heat, and several of our larger businesses have championed net-zero buildings and practices. Harnessing the expertise and capacity of our region's experts to mentor and support small commercial businesses to do the same may be a keyway to implement our targets.

Transportation Sector

Commented [KP62]: This section is a condensed version of the 2024 Transportation Sector section in Energy Element.

Transportation is the second largest use of energy in Central Vermont, accounting for a little less than a third of total usage measured in MMBTUs (see Table #). Fossil fuels account for approximately 94% of the energy statewide we currently use for transportation- a much higher share of fossil fuel dependence than in the other energy sectors.

The Table # below provides an overview of light duty (passenger) vehicles and use in the region. The vast majority of residents in the state, including

Central Vermont, use personal vehicles for their daily travel needs. Approximately 3.5% of the 43,506 light duty vehicles in Central Vermont are electric vehicles (including all electric and plug-in hybrid electric vehicles registered by January 2024 (Drive Electric Vermont[14])). The total number of vehicles in the region has decreased slightly, while the number of EVs (Electric Vehicles) has increased quickly in the last few years, increasing by approximately 40% in 2023 alone coincident with the expansion of state, utility, and federal incentive programs. Light Duty Fleet Electrification and EV charger planning is covered in the Transportation Chapter of this plan (pages ##-##).

Current Regional Transportation Energy Use

Transportation Data	Regional Data 2022 5-YR ACS			Regional Data 2011-2015 (ACS)
Fuel Type	Internal Combustion Engine (ICE)	Electric Powered (EV)	Total	Internal Combustion Engine (ICE)
Total # of Light Duty Vehicles	41,989	1,517	43,506	45,584
Average Miles per Vehicle	12,500	9,000		287,500 (12,500/vehicle)
Total Miles Traveled	524,862,500	13,653,000	538,515,500	567,650,000
Total Use per Year	23,857,386 gallons	4,551,000 kWh		30,518,817
Transportation MMBTUs	2,701,858	15,528	2,717,386	3,396,000
Average Cost per unit	$3.37/gallon	$0.2109/kWh		$2.31
Cost per Year	$80,399,391	$959,806	$81,359,197	$70,488,465

Source: Municipal Consumption Tool (Department of Public Service) which uses Table DP04, 2022 ACS 5-Year Estimate used to estimate the count of vehicles associate with area housing units, and State DMV data averages; cost per gallon of gas was taken from EAN Annual Progress Report 2023. EV data was provided by Drive Electric based off DMV registrations as of January 2024. Comparable public transportation and medium and heavy-duty vehicle data is not available, additional information is provided in the Transportation Chapter.

EV Registrations

	EV Registration Jan. 2023	EV Registration Jan. 2024	Increase 2023-2024

[14] http://www.driveelectricvt.com/buying-guide/why-go-electric

	AEV	PHEV	Total EVs	AEV	PHEV	Total EVs	Count	%
REGIONAL TOTAL	588	497	1085	921	596	1517	432	40%

According to the 2024 Energy Action Network Annual Progress Report on Emissions, Energy, Equity, and the Economy, nearly 70% of Vermont's transportation climate pollution comes from the use of motor gasoline for on-road use of light-duty passenger vehicles. Thus, reducing our reliance on fossil fuels used for personal vehicles presents a key opportunity to reduce GHG emissions from fossil fuel use overall. However, land use choices are inextricably linked with our transportation system, the transportation sector cannot be effectively nor sustainably addressed at the individual scale alone, instead, it is important to recognize that Vermont's dispersed pattern of development is a key reason why our transportation energy demand (and burden) is so high. Vermont's historically dispersed settlement pattern still holds much appeal for many moving to and in the state, however, communities have been working hard to designate and develop small villages and downtowns, promote infill housing development, and improve walk/roll-ability to shift residential development to intentional growth areas and focus infrastructure investment. The Land Use and Transportation chapters in this regional plan detail these priorities.

Commented [KP63]: This paragraph is new to help meet EEP requirements.

Electric Sector-Current Use

Commented [KP64]: This section remains unchanged from the 2024 Readoption Energy Element.

The Central Vermont Region currently uses approximately 469,522[15] Megawatt hours of electricity on an annual basis across the residential, commercial, and industrial sectors (see Table below for use by sector and supplement for use by town and by sector).

Current Regional Electricity Consumption

CVRPC Electricity Consumption	2016 CVRPC Regional Plan	kWh Usage by Year (Efficiency VT)		
Sector	2016 Plan	2020	2021	2022

[15] incomplete demand data is known at least for Woodbury from Efficiency Vermont's annual regional data report; strengthening relationships with our Distribution Utilities directly will ensure more accurate and comprehensive data will underlie future planning efforts. This total is thus an underestimate of total demand (use).

Commercial & Industrial	353,117,000	239,531,296	247,455,287	255,723,111
Residential	241,268,000	203,571,494	211,580,064	213,799,098
Total	594,385,000	443,102,791	459,035,351	469,522,209
Average Residential Use		6,520	6,734	6,765

Data Source: Efficiency Vermont Regional Summary Report for CVRPC, June 2023.

As a comparison to Central Vermont's 6,765kWh per year, the US average residential electricity usage was 10,632kWh in 2021, an average of about 886kWh per month (EIA). Electricity consumption is expected to increase as electrification continues to be a central approach of the State to meeting GWSA targets and transitioning away from fossil fuels given that Vermont is rapidly decarbonizing its electric sector resources. Fuel switching in the thermal sector and switching to alternative fuels and electric vehicles in the transportation sector are both discussed in the following sections. As electric consumption is projected to rise, the most useful targets include those around energy efficiency and conservation, critical to ensuring electrification has the intended outcome from the ground up to the State's legally binding GWSA goals. It is of note, however, that since the 2018 Enhanced Energy Plan, reported electricity consumption in central Vermont has declined by approximately 20% overall (approximately 11% decrease in the residential sector and 28% in the commercial and industrial sectors)- it is difficult to know if this is associated with changes in usage over the pandemic, a lack of consistent reporting from the DUs to Efficiency Vermont, or evidence of the successful implementation of efficiency and conservation measures (see below). Most likely, it is a mixture of all three.

Existing electricity infrastructure is detailed in the Utilities, Facilities and Services Chapter. Efficiency and conservation measures are integrated into the previous two sections. Electricity efficiencies were embedded into the 20-year load forecast used in the updated LEAP model and, thus are not an output of their own (and why the Public Service Department removed the Electric Sector tab of the Analysis & Targets Tool). CVRPC did not find it necessary to add additional targets pre-empting a statewide, RPC-supported, approach being developed, given especially the focus on weatherization and

efficient residential heating systems above that fits well with the region's vision and current approach.

Sector Targets

As part of Vermont's Comprehensive Energy Plan (CEP) and Climate Action Plan (CAP), developed to meet our legally-binding greenhouse gas emissions reductions goals (per the Global Warming Solutions Act), state wide targets for energy use have been established. These targets provide a sense of scale overall by sector and for key types of actions that will get us to our goals- they are not binding requirements and regions and towns are encouraged to customize them to better suite their circumstances. While a summary of results is included below and referenced throughout this chapter, a walkthrough of the methods, data sources, and steps are included in the supplement and accompanying tools and supporting resources hosted by the Department of Public Service. Furthermore, full details of the LEAP Model methods, data sources and assumptions may be found as Appendix D to the 2022 Comprehensive Energy Plan[16]. Municipal analyses and targets will be made available on the CVRPC website and in the supplement. Priority targets discussed below are accompanied with data, as available, of recent progress in each measure.

Weatherization

Commented [KP65]: This section is a condensed version of the Weatherization section from the 2024 Energy Element.

A portion of Central Vermont's housing stock is older and was constructed at a time when no specific codes existed for energy efficiency. Residential Building Energy Standards (RBES) and the Commercial Building Energy Standards (CBES) for new construction set minimum thresholds for energy efficiency. This will encourage new construction to address energy efficiency, however a lack of enforcement may hinder implementation.

[16] https://publicservice.vermont.gov/content/2022-cep-analysis-greenhouse-gas-emission-reduction-pathways-vermont

Weatherization of our buildings across sectors is one of the most important pathways for our region; it is not only a key conservation of electricity and emissions reduction strategy but also has significant health and financial benefits Energy-burdened Vermonters spend disproportionately more of their income on energy, especially heating, heating (and increasing cooling) that escapes through leaky windows, cracks in the doors, and poorly insulated building envelopes. Recent research on energy burden and the need for integrated low-income housing and energy policy shows multiple, interrelated health risks are linked to and intensified by energy burden.[17] For example, high and/or overdue energy bills can contribute to stress and mental health concerns, which can exacerbate adverse decision-making about heating/cooling, which can then further exacerbate health issues such as asthma, heart disease, and malnutrition, as well as physical inactivity.

> *"The largest barrier to low-income home weatherization continues to be the presence of vermiculite insulation, a material known for containing asbestos. Unfortunately, there are also many other structural issues present in Vermont's older housing stock which can prohibit Weatherization such as leaky roofs, wet basements, knob and tube wiring, and other structural issues. Historically, these issues would "defer" weatherization of a home indefinitely. Vermont's Weatherization Program has adopted a "zero deferral" policy in recognition that addressing non-energy related issues that otherwise prevent weatherization is a critical equity policy. OEO secured $125,000 of Vermont Low Income Trust for Electricity (VLITE) funds for vermiculite remediation and continues to leverage Zonolite Trust Funds. Additional funding to address deferral issues comes from the Vermont Community Foundation, as well as ARPA State Fiscal Recovery (SFR) funds."*
> **Performance Indicators for the Weatherization Assistance Program Report to the Vermont Legislature 2022**

Most weatherization assistance funds in Vermont are available to homeowners, and some to commercial properties as well. Renters have been identified as a group underserved by the health, comfort, and financial savings associated with weatherization (see Energy Action Network Working

[17] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4819257/

Group on Renter Weatherization led by Rights & Democracy for more[18]). Rental housing represents about 30% of Vermont's housing stock- including 25% of occupied units in Central Vermont- and almost 75% of people who rent their homes have incomes under Vermont's median household income of approximately $63,500. Tenants often cannot weatherize their homes because it is cost-prohibitive, but also because major structural changes to a building must include a willing landlord to participate. Both "weatherization-ready" and rental programs have been identified by the current Climate Action Plan update as priorities. CVRPC works closely with Capstone Community Action, Efficiency Vermont, THRIVE partners, state programs and partners, and with municipal committees to develop, implement, and provide resources, support, and programs to address these needs.

Residential Weatherization Targets

Regional Residential New Retrofits (Number of Housing Units)			
CAP Mitigation Scenario	2025	2035	2050
Housing Units to Weatherize	7,758	16,767	27,125
% of Homes Weatherized*	28%	56%	85%

Table # identifies the number of existing residential structures in Central Vermont that would need to be weatherized by each of the target years to meet the State's energy goals (CAP Mitigation is our target and Baseline Scenario indicates business as usual). Targets are cumulative.

In Central Vermont, there are 2 main entities involved with weatherization: Capstone Community Action provides weatherization for lowest-income residents (see table below for number of homes weatherized per year in recent years), while Efficiency Vermont provides weatherization services and income-based incentives for other residents and businesses. (see supplements for savings and breakdown). Capstone Community Action administers Vermont's Weatherization Assistance Program in Central VT which aims to help low-income Vermonters save fuel and money by improving the energy efficiency, health, and safety of their home while reducing carbon emissions. On average, the program makes about $10,000 worth of improvements per home, installs about 1,500 square feet of insulation, and reduces drafts by about 40%[19] (see table below for project

[18] https://eanvt.org/network-action-teams/tenant-wx/; https://eanvt.org/network-action-teams/weatherization-at-scale-action-team/

[19] https://legislature.vermont.gov/Documents/2022/WorkGroups/House%20Appropriations/Reports%20and%20Resources/W

counts). The data below indicates the number of weatherization and energy efficiency projects completed per year across Central Vermont via these two key partners, while this is not comprehensive, it provides some indication of progress. The supplement includes a more detailed summary including savings. At the current rate, weatherizing between 300-700 homes a year the region is on pace to meet the baseline scenario provided in Table # but falls short of our regional CAP target.

There are several likely contributing factors to the near doubling of projects this past year including severe residential damage in the July 2023 flood event that prompted additional state incentives/rebates for affected properties, as well as the launch of major federal incentives provided via the Inflation Reduction Act. For example, the Home Energy Performance-Based Whole-House Rebates (HOMES) Program will provide eligible households with rebates of $2,000 to $8,000 for whole-home energy-saving retrofits and weatherization such as improving insulation and methodically sealing air leaks. The region has a key opportunity through 2031 to support weatherization and draw down investments which will substantially improve the condition of our housing stock, improve health and wellbeing, and reduce energy burden on top of reducing fossil fuel use and GHG emissions. Additionally, affordable and expanded housing is a key priority for our region and municipalities, building these to energy code (and better yet, to stretch code or higher energy standards) will contribute to the region's weatherization targets.

Summary of 2020-2023 Residential Weatherization

Year	Total	Capstone (Homes)	Efficiency Vermont (Projects)
2020	262	78	184
2021	333	143	190
2022	264	112	152
2023	173	173	

Efficiency Vermont projects include Home Performance with Energy Star, other weatherization projects, and residential new construction projects; their total savings include all measures) (see supplement for expanded table by region and by town)

Weatherization of commercial and other buildings will also play a role in meeting our energy goals; focusing on municipal buildings and facilities,

~Department%20for%20Children%20and%20Families~Performance%20Indicators%20for%20the%20Vermont%20Weatherization%20Assistance%20Program~1-28-2022.pdf

schools, and other key community buildings will also support community resilience and health. CVRPC is in the process of developing custom targets for the region based on municipal participation in the Municipal Energy Resilience Program and similar programs.

System Conversions (Fuel Switching)

Many of our regions buildings have outdated and inefficient mechanical systems that can be replaced and updated in tandem with weatherization (or after). These often include oil-based heating systems, propane, or inefficient wood-fired units. With advances in technology, cold weather heat pumps, high-efficiency wood stoves, and other mechanical systems can provide significant efficiency improvements for existing buildings that reduce fuel use and thus cost and significantly improve the health of occupants. System conversion, and the building modifications sometimes required to do so, can however be a challenge for residents with low and fixed incomes.

Vermonters face on average a thermal energy burden of roughly 4%, while some communities face even higher upwards of 6-7%, with individual Vermonters greater still. Research by Efficiency Vermont shows that towns identified as most severely burdened by thermal costs tend to show low overall thermal spending but have household income well below the statewide median. Furthermore, Efficiency Vermont reports that household fuel use is correlated with income and whether a home is owner or renter-occupied, with lower-income households disproportionately using fuel oil and inefficient resistance heating systems while owner-occupied homes are much more likely to heat with wood and less likely to heat with inefficient aged electric resistance than rental properties (163 CEP). Spending is relatively inelastic- consumers do not have a lot of control over the amount of energy they use on an ongoing basis.

As discussed above, there are a considerable number of income-based incentives, rebates, and programs for residents and business owners alike (Efficiency Vermont, Capstone Community Action, and now substantial federal programs- see the State Comprehensive Energy Plan or reach out to your local energy committee for a comprehensive overview). Increasingly, distribution utilities offer programs for income-eligible Vermonters to help lower the cost of energy and take part in the energy transition, this includes incentives for heat pumps, efficient wood stoves, and more for homes, businesses, schools, and municipalities.

Commented [KP66]: This section is a condensed version of the Systems Conversion section from the 2024 Energy Element.

CVRPC continues to provide information and support to municipalities to promote these programs and opportunities while working with administrating bodies to remove barriers for lowest-income Vermonters and renters. As noted previously, new construction will generally include these high-efficiency systems which will help address energy conservation. Additional Efficiency Vermont Efficiency Measures include appliances, lighting, motor controls, etc., and future, continuing these measures also important contribute to our targets as outlined below and for total residential demand as included in the supplement.[20]

Efficiency Vermont Regional Summary Selected Measures

	2020	2021	2022	Total
Heat Pump Water Heat Installations	260	321	307	888
Cold Climate Heat Pump Installations	618	711	817	2146
Wood Heating Installations	178	240	82	500
Total Regional Quantity Additional Efficiency Measures provided in supplement				

Heat Pumps

Based on Table # above and the current pace of projects is maintained, CVPRC is likely on track to meet the heat pump target (approximately 1270 a year needed per year over the next 25 years to make the target), but only at around 1/3 of the adoption rate needed to meet the heat pump water heater target. While on target for heat pumps, rising electric rates and particularly the ability of existing infrastructure and systems to integrate a large electric demand increase from the thermal sector are major concerns (see below for grid and infrastructure conditions and limitations). Ground Source Heat Pumps are more efficient and can help reduce the thermal load while we electrify it; they are a critical component of heat pump targets.

[20] The High-Efficiency Electric Home Rebate Program will be another additional residential energy program run by the Department of Public Service through 2031 (IRA) to support existing incentives and technical assistance. This program will provide point-of-sale rebates to low- and moderate-income households for a variety of electric technologies, including heat pumps for space heating and cooling, heat pump water heaters, electric stoves and ovens, and electric service upgrades. Eligible households will be able to receive up to $14,000 for installing energy-efficient electric equipment, including up to $8,000 for heat pumps, $1,750 for heat pump water heaters, and $840 for electric stoves. Complementary programs including Energy Efficiency Contractor Training Grants to support workforce development, tax credits, and direct pay options for homeowners, municipalities, and other eligible participants for energy efficiency home improvements, on-site renewable generation, and storage, up to 30% are also available through 2032.

Furthermore, CVRPC supports the combined use of high-efficiency cord wood and heat pumps, especially in homes (see Wood Heat below).

Tables #- # Provide Thermal Targets for new Residential and Commercial Heat Pumps and Heat Pump Hot Water Heaters; the regional LEAP targets provided by the Public Service Department showing the Baseline trajectory and the Climate Action Plan Mitigation State approach (CAP) are available in full in the supplement.

Full Regional LEAP results in the supplement, and municipal target breakouts on CVRPC's website.

Thermal Targets for New Residential Heat Pumps

Regional Residential New Cold Climate Heat Pump Target (number of new heat pumps- cumulative)						
Technology	2020	2025	2030	2035	2040	2050
ASHP 2 Head	423	2,549	4,686	6,836	8,995	10,093
ASHP Central	658	3,964	7,311	10,705	14,155	15,727
ASHP HE	622	3,743	6,882	10,039	13,210	14,821
GSHP HE	77	463	851	1,241	1,633	1,832
Total	1,780	10,720	19,730	28,820	37,993	42,473

Regional Residential New Heat Pump Water Heater Target (Number of Units)						
Scenario	2020	2025	2030	2035	2040	2050
CAP Mitigation	483	7,046	15,213	23,465	31,809	32,196

Thermal Targets for New Commercial Heat Pumps

CAP Mitigation Regional Commercial New Cold Climate Heat Pumps						
	2020	2025	2030	2035	2040	2050
New Cold Climate Heat Pumps	316	5,682	11,298	17,184	21,120	21,977

Wood Heat

Original targets overemphasized the electrification of the thermal sector for the region and undervalued the role of efficient wood stoves. CVRPC supports the transition from fossil fuel heating fuels using not only heat pumps (air and ground sourced), but also strongly supports the conversion of inefficient wood stoves to advanced wood heat stoves to reduce air pollution emissions, reduce heating costs, amount of wood fuel used, and provide an accessible option for many Vermonters- our targets for the thermal sector reflect this commitment. These targets were adjusted for the region (methodology and discussion on wood heat in the supplement).

Targets for Residential High Efficiency Wood Heat Conversions

	2025	2030	2035	2040	2050
Existing Wood (homes)	4000	3200	2400	1600	800
New High Efficiency Wood Heat (homes)	0	800	1600	2400	3200
% converted	0%	20%	40%	60%	80%
Total Cords Used	22730	19725	16691	13656	10621
Thousands MMBTUs	454.608	394.507	333.813	273.120	212.427

Transportation & Land Use; Community Scale Decarbonization

Commented [KP67]: The following sections are condensed from the 2024 Energy Element Readoption.

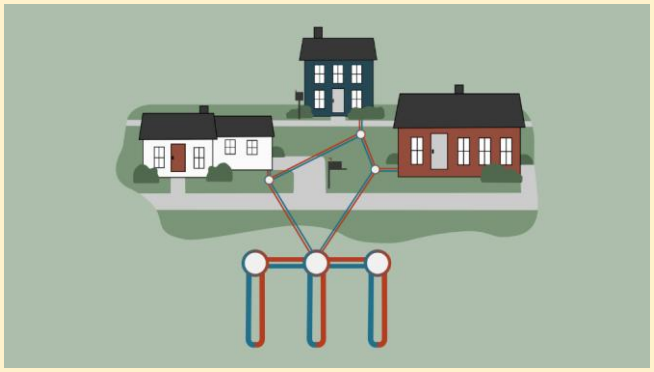
Weatherization and fuel switching are two core components of CVRP's multi-pronged approach to meeting thermal and electric sector goals but there is a key gap between statewide policy and building specific targets: municipal and community scale infrastructure.



Act 172 Municipal Energy Resilience Grant Program: Regional Analyses in Progress

- Establish Energy Use Baseline for each town (municipal buildings & facilities)
  - Annual Energy use across sectors
  - Building Audit results
- Town and Regional Goals
  - Cost Savings
  - Resilience
  - Future Demand
  - GHG Emissions
- Resident Uptake Efficiency Measures

Maximize Infrastructure Investments: Wasteheat Recovery



Many Vermont communities have taken advantage of state and federal funding to install, expand, and/or upgrade local water and wastewater systems. Integrating wasteheat recovery into wastewater systems is a terrific way to maximize the benefits of such an investment by recovering heat from wastewater to make potable hot water and to heat buildings (wastewater can also be used as a heat sink to cool buildings). Wastewater is a continuous and existing source of thermal energy; the average residential wastewater temperature is 70°F while commercial and industrial wastewater can be up to 140°F or higher. Heat recovery systems are simple, low maintenance, offer lower, predictable customer heating and cooling bills, and are scalable from one building/facility to much larger community or district thermal energy networks.

For more on how Thermal Energy Networks can be key opportunities to meet local infrastructure needs while reducing energy burden, GHG emissions, and thermal sector energy demand visit Vermont Community Thermal Networks for toolkits and more information.)

Transportation Sector Targets (pages ##, Transportation Chapter)

CVRP's Multi-Pronged Approach to the Transportation Sector includes Smart Growth, and Walk, Bike, Roll initiatives in addition to fleet electrification/EV adoption (see Land Use, Transportation, and Health Communities Chapters for more detailed discussion of smart growth and walk, bike, roll).

The following land use and mobility principles encourage not only reduced transportation energy consumption, but also offer important health equity benefits:

- Encourage the location of new development in or near traditional village and city centers to reduce both sprawl and the number of vehicle miles driven.
- Support transit-oriented development that fosters the expansion of public transportation, micro-mobility (e.g., bikes, e-bikes/scooters), and rail use.
- Encourage the construction of Park and Ride facilities to support carpool and rideshare efforts.
- Encourage the expansion of bicycle and pedestrian facilities such as safe sidewalks and bike lanes, as well as secure parking options for micro-mobility.
- Promote the development of EV charging stations (also known as electric vehicle supply equipment, or EVSE) in Central village centers and downtowns. Especially where resilience benefits can fill backup power gaps.

Additionally, improved telecommunications infrastructure in this region has the potential to reduce annual vehicle miles traveled (VMTs) by allowing more workers to telecommute.

One key factor that impacts the amount of energy being used is land use. Land use directly impacts and influences our choices, especially as they relate to transportation. When land use patterns focus on density, compact development, or mixing of uses, the result can be an area that is walkable, bicycle friendly, or promote public transit use.

Commented [KP68]: The remainder of this section largely came, unchanged, from the 2018 Enhanced Energy Plan.

Land use planning and management can have a direct impact on how much energy is used and consumed in regard to transportation. As development density decreases (creating fewer lots or uses per acre), the impacts associated with that decrease in density will rise. This includes both costs and consumption of resources including energy to move people from place to place. As land uses are spread further from one another, more resources are

required to link those uses together. This includes infrastructure such as roads or utilities; needs for emergency services such as police, fire, and ambulance, and increases in municipal service needs such as road maintenance.

In order to reduce the costs and needs for energy related to transportation and land uses, changes in land development will need to occur. One significant way that this can be addressed is through amendments to land development regulations such as zoning or subdivision. Changes to land development regulations that require pedestrian facilities such as sidewalks or multi-use paths to connect uses or activity centers is one technique that can be used to help create alternative transportation options in a community. Additionally, smaller changes could be implemented that can have larger impacts. Examples of this include reducing lot sizes, reducing parking requirements, adjusting setbacks, implementing traffic calming measures, or increasing building heights are all ways to maximize development potential within the framework of existing land development regulations.

If a municipality does not have land development regulations, there are still avenues that can be explored from the non-regulatory side that would impact land development practices. For example, developing a capital plan for public utilities and services that is consistent with a municipal plan can identify and prioritize where public funds should be spent. This could include sidewalk connections, park & ride facilities, or water and wastewater services. Expansions to emergency services or road maintenance equipment can also be a way to signal intended growth. Through FLU areas, specifically Downtown and Village Centers, Planned Growth Areas and Village Areas, it can provide the basis for growth management and the tools necessary to regulate development. Finally, having clear goals, policies, and action items identified in municipal plans will impact how a community grows and therefore how the connection between land

Currently, 19 of the 23 municipalities in the Central Vermont Region have some form of development regulation. Six of the 19 only have zoning regulations in place while the other 13 have zoning and subdivision regulations.

While the techniques noted herein can help provide avenues for changes to support development density and create compact development patterns, a primary factor that will influence development density is adequate infrastructure to accommodate water and wastewater. Water and wastewater infrastructure is critical to provide a development pattern that includes density, mixed uses, and alternative transportation options. This is done by moving the supply and treatment of water and wastewater off-site therefore, reducing the need for land to accommodate these facilities on-site. Doing so creates opportunities for smaller lots, denser development, increased building heights, and mixed uses. All of these are positive steps to reducing the need for infrastructure to accommodate single-occupancy vehicles such as parking areas, but also begin to support the critical mass that is necessary to support public transit.

As noted previously, regulatory and non-regulatory approaches can have an impact on energy use due to the future development patterns in a community. While there isn't a single approach that will address all of the Region's energy needs, municipalities are encouraged to identify what programs or actions will work best to implement their community's future transportation and land use planning. Specific actions from the Region that can assist with municipal transportation and land use priorities can be found in the Energy Goals and Strategies. Ultimately, positioning the municipalities to take control of their energy futures while working collectively as a region could be a successful outcome for all.

Ultimately, to achieve our comprehensive energy goals, transportation energy use must be reduced by embracing smart growth that directs development into existing centers, providing cost savings for households and municipalities, reducing the extent of development pressure on the environment, and building physical and social infrastructures to support thriving communities.

Renewable Energy Resources and Siting Energy Infrastructure

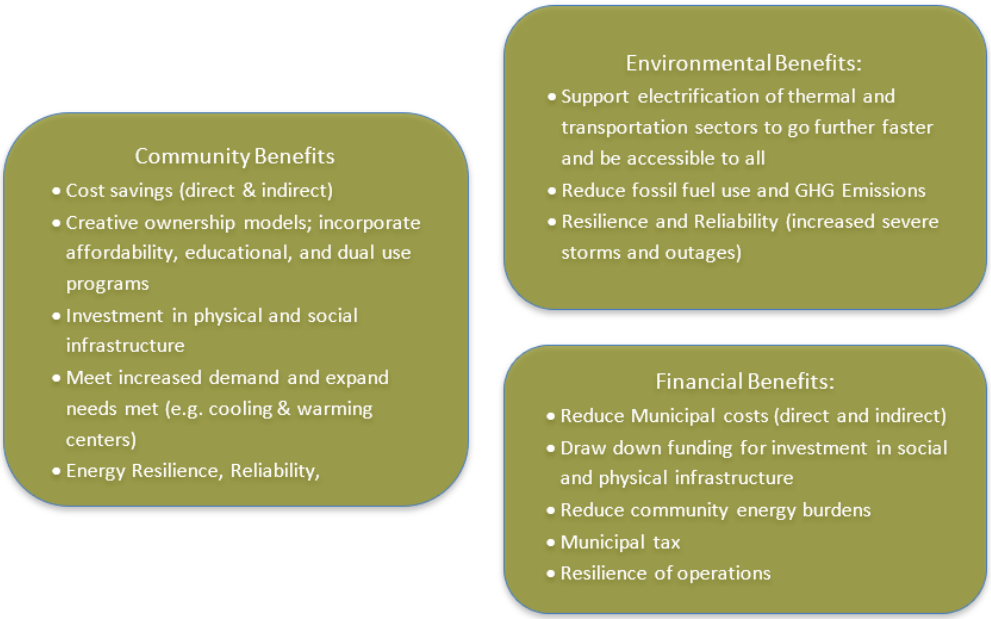
Commented [KP69]: This section condenses the text from the Mapping Resources and Siting Energy Infrastructure section of the 2024 Energy Element.

This section and the supplement allow the region to consider land and resource availability for different types of renewable energy generation and thus their suitability based on size, type, and proximity to demand in

addition to location-based environmental and social considerations. The supplement combines resource information with specific known and possible constraints to support the development of renewable energy generation at the state, regional, and local levels (including guiding the region's participation in the Section 248 process). The mapping section also provides the opportunity to identify preferred locations for renewable energy development and areas that are unsuitable for development of any kind. In addition, the maps identify existing infrastructure to support renewable energy development. Preferred sites (types), preferred project characteristics, land use policy, renewable energy generation targets, key issues, and community priorities will be discussed below after a review of known and possible constraints. While this chapter largely refers to renewable energy generation throughout this section, often in combination with storage, these discussions also extend to transmission and distribution infrastructure more broadly.

Several over-arching goals frame this section and supporting analyses. CVRPC acknowledges it has a role to play in providing its share of renewable energy generation to meet State goals of meeting 25% of demand with renewable energy generated in the state. CVRPC integrated an assumption of 25% energy demand in-state generation into its analyses underpinning this section of the plan.

This plan is intended to be a starting point, and not the only basis for siting, and project development. CVRPC intends for these mapping products and targets to catalyze collaboration; CVRPC encourages municipalities and communities to take an active role in project development to support their needs and demonstrate the types of projects that work well for them within their existing and future visioning for their community. Furthermore, CVRPC encourages developers and distribution utilities to reach out early and often when considering developing a project within the region and to work with communities and their priorities which may favor resilience and reliability concerns (integration with storage, ability to function as a micro-grid), alternative site choices, community benefit agreements to support municipal and/or residential energy programs, educational opportunities, dual-use opportunities, etc. There are significant local benefits if distributed energy projects are developed with intentionality and community collaboration:



The siting and generation of renewable resources is a critical part of how successful the region will be in meeting our share of the state's renewable energy goals by 2050. The analyses described in the supplement determine where energy generation resources are available throughout the region to work towards optimizing our regional resources but also to ensure no one municipality is unduly burdened with supporting more than should be reasonably anticipated. Finally, this information will better position the region and its municipalities to evaluate the renewable energy generation options that are available to meet these goals while reducing costly grid infrastructure investment and maximizing co-benefits for our communities to ensure access to affordable and reliable local energy.

New Renewable Energy Generation

CVRPC's objective is to ensure that energy generation, distribution, and transmission facilities are located, designed, and correctly sized to support the Region's community and economic needs, which increasingly means it must be reliable, resilient, and affordable as well as sustainable to reduce operational costs and Green House Gas emission contributions (further reducing long-term costs). At the State level, supporting policies and

programs are being revisited to consider key issues including adequate electricity, affordability of rates, cost-effective and efficient use of resources, economic vitality, environmental justice and energy equity, reliability, security, sustainability, and limiting negative environmental impacts. Many, if not all of these, apply to the regional and municipal, as well as the state level. However, priorities may differ, given the unique characteristics of each region.

Long-term energy resilience (adaptability, affordability, and, crucially, reliability) is critical to supporting thriving communities in Central Vermont. CVRPC advocates for the regional and municipal scales to be considered in the planning of local generation and energy transformation policies, especially as local communities increasingly experience:

- Increasing duration and frequency of outages (especially in our rural communities),
- Increasingly disparate electric rates and opportunities to invest in on-site renewable generation and storage alternatives based on distribution utility territory and proximity to energy infrastructure,
- Increased reliance on municipal and community hubs to provide critical care and resources.

Investing in infrastructure choices that maximize co-benefits and energy efficiency in complementary infrastructure such as capturing waste heat and/or creating thermal energy networks will reduce demand on existing electric infrastructure and further support cost and emissions reductions.

Siting: Known & Possible Constraints, Preferred Site Types & Project Characteristics

Act 174 outlined a set of land characteristics that would make a site:

- likely unsuitable for development including renewable energy development (known constraints),
- potentially suitable for the development of renewable energy resources but only after additional analysis (possible constraints),
- preferred for renewable energy development (preferred sites).

In addition to the State's known and possible constraints, and preferred site types; CVRPC identified additional regional possible constraints, preferred site types, and preferred project characteristics consistent with the region's land use policies and orderly development. The supplement provides detailed definitions, discussions, and mapping methods of known and possible

constraints, preferred site types and project characteristics (page ##). The tables below provide the overall summary.

State and regional constraints are integrated into resource potential area maps which identify where basic technical suitability conditions are met for the development of renewable energy resources. These map products are intended as a starting point in early project development and foremost to assess the region's ability to meet renewable energy targets and integrate energy planning into broader land use planning (see below). In coordination with the RPCs, the Department of Public Service, Vermont Center for Geographic Information, and the Agency of Natural Resources have created statewide layers that represent the best available known and possible constraints detailed in the Act 174 Energy Planning Mapping Standards for Regional and Municipal Plans (available in the Act174 tab of DHCD's Vermont Planning Atlas). State and regional constraints, as well as preferred sites, also provide a core framework for evaluating 248 projects more generally and their consistency with regional and municipal plans (see supplement, page##). Furthermore, preferred site types, preferred site parcels, and preferred project characteristics serve to explicitly provide regional and local input up front to project developers and stakeholders.

Summary of State Known and Possible Constraints

State	
Known Constraints	Possible Constraints
• Vernal Pools (confirmed) • DEC River Corridors • FEMA (Federal Emergency Management Agency) Floodways • State-Significant Natural Communities and Rare, Threatened and Endangered Species • National Wilderness Areas • Class 1 and Class 2 Wetlands • Regionally or Locally Identified Critical Resources	• Vernal Pools (potential and probable) • (Prime) Agricultural Soils • FEMA Special Flood Hazard Areas • Protected Lands (State fee lands and private conservation lands) • Act 250 Agricultural Soil Mitigation areas • Deer Wintering Areas (DWA) • Highest Priority Interior Forest Blocks, Connectivity Blocks, Physical Landscape Blocks, Surface and Riparian Areas (ANR) • Hydric Soils • Regionally or Locally Identified Resources

See Supplement for Descriptions of State Known and Possible Constraints; Act 174 Planning Atlas for layer sources.

Summary of Regional Possible Constraints

Regional Possible Constraints
• Elevations Above 2500 ft: excludes rooftop and associated with existing development • Slopes Greater than 25%: excludes rooftop and associated with existing development (unless presents new concerns for landslides) • 250ft Lake Shore Protection Buffers, excludes rooftop and hydroelectric facilities

See Supplement for definitions and consistency with Regional FLU

While the regional constraints are considered possible constraints; they were integrated unilaterally into all map products and layers as they did not unduly constrain the resource potential layers. CVRPC intends to conduct further analysis in collaboration with municipalities to refine these regional constraints and clarify local constraints for comprehensive integration.

Thus far regional and municipal plans have not generally identified sites to the parcel level as preferred for renewable energy generation, instead defining site types[21]. With the first round of the municipal enhanced energy plans entering their first update phase and several towns developing new plans, CVRPC is working with municipalities to best maximize the opportunity to define and map additional preferred sites to shape the form and benefits of implementation in our region. We anticipate that this additional specificity of these planning efforts to connect stakeholders and have lasting impacts on investment in and across our region and thus the reliability, resilience, affordability, and independence of our energy infrastructure.

Did you know?
Proposed projects between 150kW-500kW must be a preferred site to participate in net-metering.
CVRPC strongly encourages all projects, especially those above 150kW, to incorporate preferred site types and project characteristics into their planning and design.

[21] Although several draft plans, including Worcester's, identify municipal parcels and projects.

Most Regional and Town Plans use the State Preferred Site list as their "base". The Region adopts the state's preferred site list and provides additional preferred site types and project characteristics below. These are in line with the region's broader land use approach to reducing GHG emissions and conserving energy while investing in shared community infrastructure including encouraging smart and intentional growth; reducing dispersed development that would disrupt forest blocks and wildlife corridors, working lands, and further exacerbate rural infrastructure gaps. Regional preferred sites and project characteristics also prioritize projects that would be collaborative with local communities and meet existing needs especially regarding resilience and reliability. This includes encouraging projects sited at or near critical social and physical infrastructure, paired with storage, and structured to either directly engage with a local off taker or have explicit community benefit agreements[22]. Limiting vegetation impact and encouraging projects to employ construction techniques to reduce the embodied carbon of projects are further in line with regional and state energy and conservation goals.

State and Regional Preferred Site (Types) and Project Characteristics

State Preferred Sites	Additional Regional Preferences
• Rooftops and Impervious Surfaces (e.g. Parking Lots) • Gravel Pit, Quarry, or Similar Mineral Resource Extraction Site (Lawful and Reclaimed) • Brownfield Sites • Sanitary landfills • National Priorities List (e.g. Superfund Sites) • On same parcel or directly adjacent to customer allocated more than	• Proximity to use: density centers including designated downtowns, village centers, new town centers, growth centers, and neighborhood development areas; commercial and industrial areas; adjacent to large farms • Schools, Libraries, Municipal buildings facilities, and critical community spaces, • Solar Carports

[22] Dual land use opportunities (agrivoltaics), educational opportunities, community solar, low income programs, component of lease payment to community revolving loan fund to support upfront costs of residential weatherization, integration of meter adaptors to add micro-grid operation options.

50% of the net-metering system's electrical output • A site identified in municipal plan or joint letter of support from municipality and RPC (Regional Planning Commission)	• Location served by existing roads and energy infrastructure (e.g. 3 phase) OR addresses existing gap • Designated a preferred site in Town Plan or by Town leadership (as consistent with broader planning)
Preferred Regional Project Characteristics	
• Minimize vegetation impact especially forest clearing and fragmentation; plant screen trees & pollinator habitats • Combined with storage; micro-grid potential or functions • Creates dual land use opportunities (e.g. agrivoltaics) • Includes design/build techniques that reduce embedded carbon of program (e.g. alternatives to concrete pylons) • Engage community in development process (early) • Local off-taker and/or community benefit agreement	

Local Siting and Regional Policy

Commented [S[70]]: This section both integrates language from the 2018 Enhanced Energy Plan AND provides a novel summary of our municipalities' policies to better integrate them into our regional plan and planning processes (mapping, 248 review, etc)

Commented [S[71R70]]: the table covering all municipal plans will be in the supplement; the mapping will be in the next update (so we can work with municipalities to identify specific map layers for incorporation)

Local (municipal) constraints, preferred sites (types and parcels), and preferred project characteristics have been established as towns have drafted and approved enhanced energy plans (or move towards doing so). While state resources have yet to capture these in their mapping products; CVRPC is working to integrate them directly into the regional plan and associated breakout municipal draft maps, analyses, and targets.

As of the writing of this plan Barre Town, Middlesex, Northfield, Plainfield, Waitsfield, and Waterbury all have had Enhanced Energy Plans approved; East Montpelier and Moretown have plans pending regional approval; Worcester, Berlin, Calais, Marshfield, Williamstown, and Barre City have plans in progress or most components already integrated into their approved plans; while Montpelier has a distinct Net-Zero by 2030 plan.

More nuanced work is needed to balance conflicting priorities regarding cost (and to whom), land use impacts, historic and aesthetic considerations, technical conditions, and the constraints presented by our existing infrastructure gaps. Ongoing energy planning at the municipal level will help us develop a clearer sense of where preferences and potential resource areas align, as well as the potential land use impacts of different scenarios.

CVRPC is committed to integrating mapping tools into both town planning processes, as well as project review (248) and the project development to support evaluations of existing and potential constraints, the identification of preferred sites (types and parcels), mapping existing preferred site types and project characteristics, etc.

The supplement provides an extended table by town documenting local constraints, identified unsuitable locations, preferred sites, preferred project characteristics, siting policies, and municipal generation projects identified in current town plans (as of the writing of this plan). A summary is provided below to reflect how local considerations inform and/or elaborate on regional siting policy.

Local Constraints and Unsuitable Locations include:

- High elevations e.g. Barre City high elevation protection zones, some municipalities have lower elevation maxima than the region's 2,500ft due to varying topography of the region e.g. 1800ft in Northfield, and 1700ft in Waitsfield; while others simply note highest elevation with limited development (e.g. Fayston).
- prohibit development in specific conservation, forest reserve, and historic districts (Fayston, Northfield, Waitsfield), active farmland (East Montpelier, Northfield, Waitsfield), bear habitat (Barre Town), and flood hazard areas and river corridors (East Montpelier, Barre City), +
- prohibit development in Town Forests, parks, and recreation areas (Northfield, Worcester)

Additional local considerations, preferences, and policies:

- Repeated commitment to regional and state energy goals with an emphasis on off-setting municipal, resident, and local business needs and demand (Barre City, Worcester, +)
- Variation across municipalities in approach to technology types and scale (balancing potential impacts and costs of many, smaller projects, with one or two industrial-scale projects; e.g. Barre City and Montpelier take a project-by-project approach including consideration of industrial scale across all technology types, while others prohibit solar arrays above 500kW (Barre Town), or support only residential-scale use, while still others take a stepped approach with few policies for residential scale up to 25kW, some for commercial and community

scale projects up to 150kW, and more stringent policies for projects above 150kW or 500kW (e.g. East Montpelier, Worcester).
    - Some municipalities have explicitly less stringent or specifically set no limitations on residential scale projects to encourage access for all residents (Worcester, Berlin), while others have more narrow conditions based either on location or project scale(e.g. Calais includes wind towns less than 50ft in height, with blades less than 20ft in diameter and not on a ridgeline, and rooftop solar or ground mount less than 10ft tall for residential use).
- Distinction between agricultural soils and co-location with farms is not always made within a given plan but agricultural soils comes up as a local constraint (prime Barre City, Calais, East Montpelier, Northfield, Waitsfield,) while co-location with large farms building is a preferred site (East Montpelier) and agrivoltaics (dual-land use) can be a preferred site characteristics (Worcester).
- Earlier plans emphasized screening and reducing visual impact, more recent plans tend to emphasize mitigating vegetation, forest, and wetlands impacts and co-locating with other forms of development (e.g. housing).
- Consistent support for projects proximate to, and often serving, key community spaces like schools, municipal buildings (e.g. Calais, Middlesex, Worcester).
- Clear balancing act between preference for projects to be proximate to existing infrastructure and demand and co-located with intentional growth areas (designated areas), while not taking up important "developable" footprint space served by existing or planned infrastructure (unless co-developed) and in some cases, concern regarding aesthetic impact in historical villages.

Implications for Regional Siting Policy:

- **Forest Blocks and Habitat Connectors:** CVRPC recognizes the importance of protecting forested lands as a key element of the regional environment. Forests play a crucial role in sequestering carbon from the atmosphere, and the state's 2025 Climate Action Plan accordingly places significant emphasis on protecting forest blocks and habitat connectors to achieve statewide goals of greenhouse gas

Commented [KP72]: This section and the following table pulls in direct language from the 2018 Regional Enhanced Energy Plan.

emissions reductions and carbon sequestration. Avoid development that fragments forest blocks and habitat connectors.

- **Development on wetlands, steep slopes of 25% or more, and ridge lines should be avoided**. Avoid or limit development and investment in identified flood hazard areas where feasible. Upgrades or repair to existing infrastructure in these locations should consider relocation or minimizing continued impact to these areas; CVRPC would support accelerated regulatory proceedings for projects which address vulnerable critical infrastructure to increase resilience and reduce ecosystem impact (e.g. moving lines from wetlands or out of special flood hazard areas and river corridors).
- Rural and Resource Land Use Policies to be updated with Future Land Use Chapter
- Energy infrastructure should be planned to optimize co-development opportunities (e.g. housing, sidewalks, and road work), contribute to community needs and benefits, and follow dig-once principles.
- Dual Land Use (e.g. agrivoltaics), meeting local demand and/or addressing local infrastructure gaps, and community benefits are strongly encouraged, especially for grid-tied utility-scale projects.
- Increasingly more interest in intentional islanding/microgrid capabilities, back-up power as part of host agreement (depending on location and outage frequency), and interest in on-site generation and storage integrated at the community scale in housing and housing-ready infrastructure projects (heat recovery, thermal storage, etc.).

Changes to regional priorities, as well as municipal and state priorities, are likely to impact constraints (and preferred sitting) in the future as we comprehensively reassess how to maximize meeting our goals associated with housing needs, forest and land conservation, and flood and climate resilience in addition to renewable energy development. If, through the development of a local energy plan consistent with Act 174, a municipality identifies a community supported resource and/or project, the CVRPC may revise or amend this plan to consider the location(s) that has been identified. Prior to any amendments, the CVRPC will consider and balance regional planning goals, mitigation of any identified constraints, and compatibility with the plans of adjacent municipalities in aggregate.

Technology Type	Considerations
Solar	While there is a strong preference to minimize land use impacts especially on undeveloped land, rooftop and small-scale projects do increase costs overall and hasten costly grid infrastructure investment. General building (and roof) condition and age in region also present a major barrier to the buildout of rooftop solar. Thus the distribution of the region's incremental renewable energy target has been set as 25% rooftop and 50% ground mount. This distribution also limits the number of towns who experience distribution and transmission constraints to meet their municipal share of the regional target (see page ## next section and supplement for more). As the dominant source of renewable energy in our region, solar projects must be right-sized for our communities; wherever possible co-located (onsite generation and storage) with housing and mixed-use development to maximize community benefits and infrastructure.
Hydroelectric	While hydroelectric generation makes up a significant portion of the region's current generation (approximately 1/3), the feasibility of establishing new projects (dams, pumped, in-line, etc) is low. There is a lack of state programming support, high up-front costs, the capital gap to maintain our existing aging infrastructure, and the administrative gap to navigate the FERC certification process. Optimization of existing generation facilities, while balancing flooding mitigation priorities and ecosystem impacts, remains a regional priority. Thus the regional target is set at only 5% of our incremental renewable energy target. Energy generation must be balanced with flood mitigation priority, minimize or remediating negative ecological impacts of infrastructure, and consider recreation.
Wind	There are a limited number of small-scale wind turbines in Central Vermont and no projects established in recent years. While some municipalities and communities have expressed interest in wind to increase the resilience and reliability of their renewable energy portfolio (wind is stronger at night and during the winter and thus a complement to solar which is plentiful in the day and summer), there are also significant concerns regarding the ecosystem and aesthetic impacts of wind projects throughout the region as well as some strong opposition. A state-wide sound ordinance limits the siting of wind projects. Furthermore, analyses of locations with the proper conditions for wind generation in Vermont do not highlight Central Vermont as

	an attractive potential resource area for industrial wind. The 2018 CVRPC Enhanced Energy Plan determined, and this plan maintains, that industrial-scale wind development is not compatible with the future land use patterns of Central Vermont (defined as any wind turbine with a hub height greater than 125ft excluding blades[23]). Further conversation around smaller-scale wind is warranted with those communities where significant prime and base resource potential exists, especially along the eastern portion of our region. Further, new types of wind generation (such as roofline) or additional options at the household and community-scale may prompt the region to reconsider the general preference of other technology types in the coming years. The potential to have a more diversified and reliable energy portfolio in our region is the main reason the recommended target is maintained at 20%.
Biomass	Currently no new biomass fueled energy production is proposed. We do not currently have this type of electric generation in our region; given the closure of the only plant in this category, it is assumed this is not a likely reliable source of future generation. Combustion based renewables include methane gas, anaerobic digesters, biodiesel, combined heat and power, compost heat, and woody biomass. While wood heat is a significant renewable for thermal heating (mostly residential), combustion based renewable facilities are not for electricity generation. Although, Washington Electric Cooperative receives a majority of its energy generation from the Coventry Landfill outside of our region which does serve our region. While biomass has a high level of annual output per installed megawatt, the source is important. Locally sourced biomass will have the greatest benefit to the community. To limit secondary impacts associated processing and transportation costs and energy, as well as ecological impacts of invasive species that impact woody biomass need to be considered.

[23] This height restriction is maintained from the 2018 CVRPC Enhanced Energy Plan and was intended to reduce the visual impact of wind generation facilities while still permitting commercial and residential land uses to incorporate wind generation as appropriate. Additionally, it was intended, in combination with the regional constraints regarding steep slopes and lands above 2,500 feet in elevation which are identified as a regional resource, to help maintain the sensitive natural resources throughout the region where industrial-scale wind resources might be identified.

	While CVRPC supports the use of local cord wood for space heating (especially residential), the use of biomass otherwise, especially for electricity generation is not consistent at this time with current nor future land use. If a project were to be proposed and supported by the host municipality, the board would consider a future amendment to this plan. Thus, the recommended target for generation is set at 0%.
Other	There is no natural gas infrastructure in the Central Vermont region. The establishment of new infrastructure would not be in line with current nor future orderly development within the CVRPC region. CVRPC does not consider nuclear as a renewable resource this is currently supported by the State definition of renewable energy as *energy produced using a technology that relies on a resource that is being consumed at a harvest rate at or below its natural regeneration rate* (30 V.S.A §8002(21)A) this includes solar, wind, and hydro-power, as well as biomass, and excludes nuclear power. The establishment of new infrastructure would not be in line with current nor future orderly development within the CVRPC region.

Technology Type and Scale

Commented [KP73]: The following paragraphs and text boxes come from the Preferred Sites section of the 2024 Energy Element.

CVRPC acknowledges there is a tendency for preferred sites at all scales to favor small and medium projects, while this is in line with many municipal and community preferences and many regional priorities, it requires new models for how projects may be aggregated to take advantage of economies of scale, for local and state investment, as well as increased capacity at DUs for interconnections and load demand management (which may be viewed as both an opportunity and burden). It is also important to remember that preferred site designation is required for projects 150kW-500kW to participate in net metering. While there are comparatively few projects at this scale in the Central VT region (see below, approximately 23) they do provide approximately 10% of our region's existing generation. Not having a preferred site status does not prevent the project from being implemented, it just excludes it from the financial incentives provided via the net-metering program.

Potential Municipal Roles

- Participation in Section 248
- Enhanced Energy Plan
- Policy: update zoning and plans to incentive preferred projects and integrate priorities
- Community Outreach: support local partnerships and share information; develop committee/coordinator role; project working groups, etc.
- Investment: participate/host project
- Ownership/Project Development

CVRPC and ACRPC Energy Planners led a three-part workshop series in 2023 on Municipal Solar- see for more information and resources: https://centralvtplanning.org/programs/energy/webinars-and-workshops/

The best way for projects of this scale (and all projects but especially this scale and larger) to attain preferred site status is to reach out early and often to the town and community including local energy committees and coordinators. Furthermore, CVRPC does encourage municipalities to work with local landowners and the broader community to consider potential and parcel-specific opportunities for large projects- only 23 projects out of the region's 2,463 and counting renewable energy generation projects are 500kW and more, yet they contribute 1/3 of our region's total nameplate generation. As the state continues to electrify and move towards 25% of demand produced by in-state renewable energy generation, it is important to consider and direct where these large-scale projects may be located and how they fit into local and regional visioning of our communities. To this end, CVRPC has begun to analyze potential resource areas (Figures below) to identify contiguous areas that may meet basic technical requirements and facilitate community conversations around the development and use of renewable energy generation.

So where are projects being located?

Many of the projects in terms of numbers are small residential scale (many rooftop but not all)- important to consider that siting guidelines are best developed with clear references to different scales.

Total from State Energy Programs	MW	# Projects	
Generation <15kW Category I	14.69856	2233	Many are rooftop as residential scale
Generation 15kW to <150kW (Category II)	6.56739	184	Generally includes Municipal/Community Scale (not limited to)
Generation 150kW to <500kW (Category III)	6.18665	23	Currently have to be preferred sites to participate in net metering
Generation 500kW+	22.944	23	Most Standard Offer projects are 1-2.2MW
Total (not regional total):	50.3966	2463	

Noted trends in current project development (Figure to be added)

- projects that have been co-developed by municipalities/schools are often preferred site types and are typically smaller from residential to community scale,
- projects that are developer/DU led typically are larger, many do develop at least some green field space, some are on landfills/gravel pits

CVRPC thus identifies a critical need to connect stakeholders and their planning processes:

- work with Distribution Utilities to establish annual data updates for local and regional planning processes, understand short, medium, and long term infrastructure improvement plans, and provide regional summaries for integration into integrated resource planning efforts
- encourage towns to highlight opportunities and mechanisms for project development in town plans and websites; encourage DUs and developers to consult towns and town plans early on in project development
- offer educational and workshop opportunities for municipal project development and implementation

New Regional Renewable Energy Generation Potential & Targets

Commented [KP74]: This is a shortened version of the Renewable Energy Generation Targets and Resources Available section in the 2024 Energy Element.

Table # provides an overview of the potential renewable energy generation for Central Vermont based on the prime and base resource potential areas that have been identified (see mapping section in supplement). These resource potential areas take into account both basic technical considerations for each technology type as well as state, regional, and local constraints and unsuitable areas. Resource potential is mapped for solar and wind, as they are locationally constrained. Potential hydroelectric sites identified in prior state programs have also been included. Other renewable energy generation such as woody biomass, biogas, and other renewable technologies do not require specific conditions for the location of the generation facility, however, they do require resources such as wood or other organics to provide the needed fuel- there are no existing such plants for renewable electricity generation nor plans for them. Note that wood for electricity generation is significantly different than that for space heating; as noted in the thermal section above, wood does play an important role in, especially residential, space heating across our region.

Potential New Regional Renewable Energy Generation

	Existing Renewable Generation (MW)	Multiplier (distribution across technology type)	Incremental Regional Capacity Target (MW) 25% In- State			Resource Available (MW)	Prime Land Available (Acres)
			2025	2035	2050		
Ground Mount Solar	47.17	50%	10.3	37	62.7	1500.4	10,503
Rooftop Solar		25%	5.3	19.1	31.8	162.7	244
Wind	0.24	20%	2.7	9.9	16.3	867.6	34,795
Hydroelectric	26	5%	0.3	1.1	1.9	1.9	N/A
Biomass (Wood, methane, farm biogas)	0	0%		0		0	0
Totals	73.42	100%	18.6	67.1	112.6	2532.7 MW	45,452 Acres

Potential Vs. Target: Land Use Impact

Region-wide	Prime Solar (Acres)	Base Solar (Acres)	Prime Wind (Acres)	Base Wind (Acres)
Resource Potential Areas (Acres)	10,503	49,744	34,705	116,892
Possible (MW)	1500		867	
2050 Targets (MW)	112.6		16.3*	
Targets (Acres)**	Approx 788.2 or 4% of prime solar resource areas; 0.09% total acreage in region		Approx 163-652 or 1.8% of resource potential area; 0.13% total acreage in region	

Commented [S[75]: updating with maps- this is extremely conservative scenario (as in larger acres/MW required and only comparing to primary resource potential areas)

The constraints outlined above have been evaluated to ensure sufficient resource area exist to meet the region's share of the state's renewable energy targets. The distribution of new generation across technology types was set based on precedent for the type in the area, technical difficulty and cost, as well as community preference- CVRPC has found community members and municipalities to be open to a diverse range of technology types, with especially scale but also project location and community benefits to be key determinants of support (see in-depth discussion Fall 2023 CVRPC SAY WATT: The Future of Vermont Electricity Report).

Incremental Regional Targets for New Renewable Electric Energy Generation (MWh)

Target Year	2025	2035	2050
New Renewable Electric Energy Generation (25% In-State) (MWh)	26, 957	97,196	163,094

Source: Central Vermont Regional Planning Commission & Department of Public Service (via Generation Scenarios Tool, see methodology in supplement). Municipal breakouts available online May 2024.

Central Vermont has more than sufficient potential renewable energy resources available, even with a conservative estimation, to meet 25% of the demand met by in-state renewable generation. This includes sufficient resources available for each technology type for most municipalities. For

town-specific distribution and transmission capacity limitations see supplement.

Staff is working with the Public Service Department to update the Generations Scenario Tool to ensure the 2024 and upcoming 2027 Long Range Transmission Plan (LRTP) updates are integrated into these analyses. It is important to note that based on the 2024 LRTP, Central Vermont is constrained in meeting our incremental renewable energy target by transmission capacity, or *headroom*, according to the solar-optimization scenarios previously run. In future updates, this is anticipated to improve (see below).

While regionally, Central Vermont has more than double the distribution headroom required to meet our 2050 incremental renewable energy generation target, this is not evenly accessible throughout our region. Notably, Cabot, Calais, Orange, Plainfield, Washington, and Williamstown may be unable to meet their share of the targets, requiring infrastructure investment, offset by other towns, and/or increased emphasis on reducing future electricity demand growth. Currently, the best estimate of needed grid investment to meet the demands of a network of dispersed energy generation (like rooftop solar) is roughly $41 million. This number will be updated with the new LRTP, but it provides a magnitude of the level of investment needed that need to be kept in mind when we talk about the mix of technologies used to meet our renewable energy production goals.

It should be noted that these analyses do not take into account storage, flexible load management programs, and offsetting electric demand from the thermal sector via cordwood, waste heat recovery, and geothermal which are all key pieces of Central Vermont's approach to the energy transition. These would reduce the incremental energy targets required and total new renewable energy generation capacity needed which further emphasizes CVRPC's confidence that as a region we can not only achieve but comfortably exceed our goals.

Grid Capacity and Infrastructure Needs

Commented [KP76]: This section is a slightly shortened version of the Key Issues: Grid Capacity and Infrastructure Needs section from the 2024 Energy Element.

The following section summarizes some of the primary known issues our electricity infrastructure presents in terms of existing and new renewable generation (and electrification).

Some Central Vermont communities have extremely limited or no three-phase power but do have prime resource areas to support renewable energy development. While, as previously noted, smaller generation projects (including residential and some municipal and small businesses) can typically be accommodated by single transmission even when not located close to load, medium and larger scale projects rely on three-phase power. In data provided by the Public Service Department, Central Vermont's transmission capacity is limited to approximately 65+MW with transmission grid upgrade costs estimated at $40.1 million (see supplement). Again, there are significant and rapidly evolving opportunities to mitigate some, but certainly not all, of these upgrades and costs. While CVRPC conducts further analyses to help municipalities understand how these limitations may impact their energy planning, the region also recognizes that significant investment in our energy infrastructure is required to support thriving communities in our region and these costs should not be borne by those who are already most burdened by infrastructure challenges which furthermore limit their access to draw down federal and state funds to participate in a just transition. CVRPC again emphasizes the importance of integrating energy into land use planning and working with energy stakeholders to ensure that energy planning not only is consistent with local regulations and visioning but also accounts for targeted growth and likely demand. Further engagement with VELCO's Long Range Transmission planning process, our Distribution

Resilience and Reliability
The State's "Electrify Everything" approach does raise specific concerns for some of our municipalities and communities given these interconnection limitations, rural infrastructure gaps, and annual longer-term outages.
CVRPC continues to advocate for wider scale policies and programs to address reliability and local resilience (the most recent Renewable Energy Standard Update included a series of technical analyses, none of the scenarios modeled yielded significant reliability benefits).
CVRPC also supports municipalities, affordable housing partners, community groups, and businesses to consider integrating on-site energy generation, storage, and back-up power into their capital improvement planning.

Utilities' integrated resource planning processes, and the State's energy planning will strengthen these efforts at all scales. The Department of Public Service highlights this, including the role of RPCs, in the 2022 Vermont Comprehensive Energy Plan (pg. 87).

Several substations presently pose significant barriers to expanding renewable generation in our region (summary below). For the substations in GMP territory, substation transformer capacity can be viewed on their Solar Interconnection Map[24] which highlights circuits based on having at least 20%, less than 20%, less than 10%, or severe limitations (higher costs and delayed interconnections)(although two GMP feeders that serve Roxbury, Northfield, and Woodbury are blank due to lack of data from municipal utilities). For other distribution utilities, it is harder to plan in real time based on potential technical limitations due to the lack of publicly available data. Our region has approximately 267.5MW of Distribution Headroom according to data supplied by the Department of Public Service in the Generations Scenario Tool which is well above our Capacity Target for 25% in state generation. While this headroom is ample at a regional glance, there are issues at the municipal scale including, as noted above, that Calais, Orange, Plainfield, Washington, and Williamstown have capacity targets that exceed their distribution headroom. These town's capacity targets exceed provided distribution headroom by less than 1MW in 3 cases (Calais, Orange, and Plainfield), by 1MW in Washington, and by 4.2MW in Williamstown which hosts 2 of the region's largest solar arrays (utility-owned). Depending on the size of the proposed projects, these may or may not present significant interconnection barriers but are representative of the longer-term challenges we face in implementing our energy goals. Distribution headroom is not provided for Northfield, Roxbury, and Woodbury. CVRPC continues to work with DUs on data gaps and to integrate their Integrated Resource Planning into regional and municipal planning and project development and to advocate that regional and municipal energy planning and goals in turn are considered in their Integrated Resource Planning Processes. Key issues included:

- Many substations across our region, regardless of utility territory, must be upgraded to address transmission ground-fault overvoltage (TGFOV) concerns (see figure below), these are subject to an

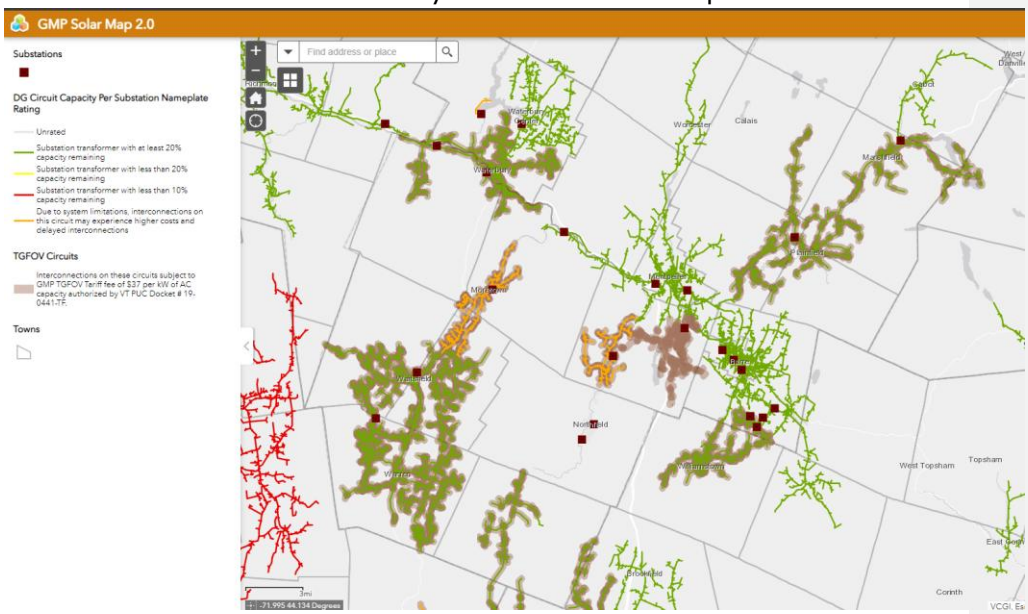
[24] https://www.arcgis.com/apps/webappviewer/index.html?id=4eaec2b58c4c4820b24c408a95ee8956

additional Tariff fee of $47 per kW of AC capacity authorized by VT PUC Docket #19-0441-TF.

- Two such systems in WEC (Washington Electric Coop) territory have issues that are so severe that they are currently objecting to any further interconnection and the risk that it could adversely affect system stability and reliability. This severely impacts the portions of Barre Town, Berlin, Northfield, Orange, Roxbury, Washington, and Williamstown that are in WEC territory. Existing substation voltage regulators and transformers have to be upsized which in turn requires support structure adjustments. A timeline has not been established for such a project.
- Summer loading in the Woodbury Lakes area creates a sizeable circuit imbalance and an imbalance on the Hardwick Substation transformer for several months of the year, converting from a V-phase to a full three-phase feeder along with additional reliability improvements is included in Hardwick Electrics 2021 Integrated Resource Plan.

In the short term, costs of additional renewable energy infrastructure will be lowest in areas that do not have TGFOV tariff fees and with substation transformers that have at least 20% capacity remaining (although the tariff fees are a key mechanism for paying for necessary updates to DU infrastructure). In the long term, many of these infrastructure upgrades are necessary and inevitable; again, better coordination among planning efforts can help our region transition and make sure no one is unduly burdened by cost or left out.

CVRPC Territory via GMP's Solar Map



Snapshot of CVRPC territory via GMP's Solar Map- lines circuits with brown shading have transmission ground-fault overvoltage (TGFOV) concerns, those in yellow have less than 20% capacity remaining.

Changes in Technology

Storage is a key and rapidly changing area for future planning.[25] At the grid scale, most storage is generally currently 3-6hours of very big amounts of energy, while critical to keep continue power supply at the transmission and distribution scales, these don't address many of the reliability and resilience, not to mention seasonal, challenges we face in Central Vermont. Diversified and complimentary generation sources- for example, solar with daytime and summer peaks paired with wind with night and winter peaks- are one component of planning for seasonality and reliability and important to keep

Commented [KP77]: Text comes from the Key Issues: Grid Capacity and Infrastructure Needs and Changes in Technology sections from the 2024 Energy Element.

[25] The Vermont Public Utility Commission had an excellent series of Energy Storage Systems Workshops in late Fall 2023, for an excellent introduction to energy storage technologies, the role of energy storage in transforming the grid, storage policy at the state and federal level, interconnection, and more access them at https://energy.sandia.gov/programs/energy-storage/policy-and-outreach/regulatory-webinars/vermont-public-utility-commission-energy-storage-systems-workshops/.

in mind when thinking about the types of infrastructure to plan for. Distributed storage, smaller scale typically chemical storage (battery) tied to renewable generation is currently the dominant approach in our region. DUs are integrating grid-tied storage systems at the customer scale; ensuring that this approach allows for the provision of backup power in outage events for those with on-site generation is a keyway that Central Vermont can enhance resilience in our region and ensure every community can meet critical needs and operations.

As noted previously, the state's comprehensive energy plan and subsequently the Central Vermont Regional Energy Plan are both written with electricity as the primary power source. As technologies change and advancements are made in both efficiency and sources of renewable energy generation, the region's municipalities will need to be flexible and adaptable to these changes.

With this in mind, the Central Vermont Regional Energy Plan acknowledges and recommends consideration for changes in technology that do not limit renewable energy development to known sources. This concept will need to be continually revisited to ensure current technologies are considered and outdated technologies are not recommended. Examples of CVRPC's commitment to working on solutions that fit well for different communities in our region include our emphasis on exploring the role waste heat recovery and geothermal can play in energy conservation and reducing thermal electric demand, continued emphasis on cordwood and efficient wood stoves over pellet and wood chips as key accessible and affordable sources of residential heat, and a fierce determination to emphasize the need for local reliability and resilience considerations at the broader scale of state and NE regional energy planning. CVRPC is committed to helping municipalities explore fossil fuel-free alternatives for back-up power which can leverage funding to meet a common municipal demand that lacks existing funding. Technologies including bi-directional EV chargers, power storage, mobile solar generators, and Meter-Socket Adapters can be integrated into existing and new energy systems across our region at all scales to transform our region into one dotted with micro-grid capabilities. This is key as we face increasingly extreme weather and storm events, resulting in many of our communities experiencing outages of longer duration (up to 8 days) annually (See Climate Chapter for the role of on-site

generation and storage in municipal buildings and facilities and Community Resilience Hubs).

Key Issues

Commented [KP78]: This section is a collection of various themes and information presented in the 2024 Energy Element.

Energy Resilience, Reliability, and Independence

The increasing severity, frequency, and unpredictability of extreme weather in Vermont has greatly exacerbated existing rural infrastructure gaps, leaving many Vermonters, and the physical and social infrastructure they rely on, without reliable access to electricity. Washington County is tied for the second most disaster-prone county in the US in terms of federal disaster declarations due to extreme weather (Rebuild by Design). While extreme flooding is at the forefront currently, many of those events are localized winter storms characterized by high wind and heavy wet snow that cause up to 8-day outages in some of our most rural towns. Major electric utility companies have active, ongoing programs to improve system reliability and protect facilities from damage by ice, severe winds, and other hazards. Typically, these programs focus on trimming trees to prevent encroachment of overhead lines, strengthening vulnerable system components, protecting equipment from lightning strikes, and placing new distribution lines underground. Other major problems include closed roads and restricted transportation. The costs of these events are worrisome, and CVRPC promotes working with DUs to harden infrastructure and build local reliability at the community level.

Outages are a significant barrier to electrification in many of our communities and generators are one of the most common unfunded requests we hear from municipalities. Despite this, our communities are dedicated to climate and resilience planning, recognize the role of distributed renewable energy and storage, and support robust energy and GHG emissions goals. In 2023 19 out of the 20 municipalities in Washington County have received investment-grade energy audits of 2 or more municipal buildings via the State's Municipal Energy Resilience Program. As we develop and phase these key community facility projects (first building envelope/weatherization & HVAC, second on-site renewable energy & storage), we have repeatedly heard concerns about increased costs associated with electrification without on-site renewable energy. Addressing this gap will be critical for a just transition in Central Vermont.

Energy Conservation (and Reducing Future Electric Demand Growth)

Given our aging building stock and inconsistent record of compliance with the Residential and Commercial Building Energy Standards (RBES and CBES respectively), weatherization and equipment efficiency and conversion remain critical pathways towards energy conservation and steps to reduce our GHG emissions as well as energy operating costs. Energy efficient building designs provide benefits to the owners and occupants by reducing the amount of energy needed to heat, cool, and maintain the mechanical systems within the building. Establishing and promoting energy efficiency in design, construction, retrofits, and renovations will ensure new and existing buildings and building practices will be more efficient into the future. These efficiencies promote conservation of energy resulting in cost savings and increased affordability for owners and renters.

There is a disjoint, however, between our ambitious State's goals and the building-by-building focused implementation programs. The region has an important role to play in planning for and implementing community scale conservation and efficiency projects, which while may have higher upfront costs, have significantly reduced long term costs especially for system users (Central Vermonters). Furthermore, community scale thermal networks and district heat systems and waste heat recovery systems for example, have an important role to play in ensuring that electrification can go further, faster, in our region without severely stressing our existing electric infrastructure and triggering costly investments by reducing the amount of energy demand from the thermal sector that needs to be electrified in the first place. Such strategies, along with energy storage and load management at the household to utility scale, also importantly reduce our estimated future electric demand growth, reducing required investments in renewable energy generation and associated land use impacts.

While we will certainly have to invest in and expand our electricity infrastructure, by better integrating and prioritizing energy conservation measures at a larger scale, we can ensure our long term and user costs remain lower while reaching our goals faster.

Did you know?

Black, Indigenous, People of Color, (BIPOC), as well as low-income, and rural Vermonters have largely been left out from major economic, social, and environmental benefits associated with investments in climate resilience and renewable energy infrastructure. BIPOC Vermonters were seven times more likely to have gone without heat in the past year, over two times more likely to have difficulty affording electricity, and seven times less likely to own solar panels than white Vermonters (Act 154 Sec 1.10), while rural and low-income communities consistently carry the highest energy burden.

Siting location, project characteristics, and renewable energy generation programs can either help to address these gaps or continue to widen them. Municipalities can reinvest revenue from hosting larger-scale projects into community weatherization or fuel switching programs or to support community resilience hub operation. Municipalities can incentivize on-site generation and storage integration into multiunit and novel housing developments; invest in shared heating and cooling infrastructure; and work with utilities to highlight gaps in reliability. State and utility programs can lower barriers to participation in programs significantly by covering upfront costs instead of using reimbursement models.

Energy Justice & Accessibility

CVRPC has approached this plan, including supporting analyses, with an explicit priority on access, affordability, and participation considering those most burdened by the impacts of climate change and the costs of energy in Vermont *first* (including those with low or fixed incomes, residents of color, renters, electrically dependent residents, some of our rural communities, etc.). Implementation of this plan should maintain this approach to ensure that no community nor community members are left without access to the energy transition. CVRPC has adapted the guiding principles and assessment

rubric[26] from the Just Transitions sub-committee of the Vermont Climate Council for use in future planning as well as project development and prioritization processes. Near-term costs can present equity challenges for programs and policies that deliver positive outcomes in the medium and long term while barriers to access and incentive structures (e.g. reimbursement, loans, tax incentives), perpetuate existing disparities. CVRPC, in partnership with THRIVE Community Health partners and our energy committees and coordinators, works with income-based and recovery adder programs (e.g. with Efficiency Vermont) and the State to develop programs like ChargeVT, that cover upfront costs, allow sliding scale match. Furthermore, municipal and regional energy project savings can be optimized to establish revolving loan funds and/or community funds to lower barriers and/or support future projects with community benefits.

At all scales, the time frame used to determine the least cost affects analytical outcomes and resulting decisions: longer-term cost horizons are critical when considering the benefits and costs of a just transition. Clean, affordable, resilient, and reliable energy is a critical component of building social as well as physical infrastructure and community resilience. To leverage federal and state funding opportunities the region must build administrative and procurement capacity, establish community benefit agreement models, and foster community expertise sharing. Transitioning away from fossil fuels, promoting energy efficiency, weatherization, and renewables, while addressing energy burden will have direct and positive impacts on all Vermonters.

Community asset inventories, needs assessments, engagement, and related efforts will be necessary to drive frontline community identification for prioritization. An iterative process at the project scale is an effective strategy for ensuring that projects align with community needs and priorities, fostering more equitable outcomes and sustainable development in the long run. This approach allows for continuous feedback and adaptation, enabling stakeholders to respond to the evolving challenges and opportunities within the community (see Equity Metrics in Supplement). The implementation actions identified in this section focus primarily on integrating these considerations into existing local land use, transportation, environmental, and health equity planning activities.

[26] Vermont Climate Council's Guiding Principles for a Just Transition

Economic Needs & Opportunities

While Central Vermont is home to key members of the Clean Energy Industry, not only in Vermont but nationally, workforce constraints are a significant challenge in the implementation of the region's energy goals. Supporting workforce development at a rapid rate must become a key priority for all those engaged with climate and energy planning. The Clean Energy Industry Report has tracked Vermont's employment in the clean energy sectors since 2014. As of 2020, clean energy jobs made up about 6% of total employment in Vermont. Generally, the median wage for clean energy jobs (approx. $27/hour) is much higher than the statewide median wage (approx. $19/hour). Meeting our climate commitments via investments in energy efficiency and clean energy can be a win for Vermont consumers, the Vermont economy, and Vermont workers.

Land Use and Balancing Regional Priorities

Commented [KP79]: This text draws from the Land Use Policies section in the 2024 Energy Element.

Towns and regions have experience with, and see the direct local impacts of, land use planning. This includes planning for shared and beneficial infrastructure of many kinds, such as roads and industrial and commercial developments. Energy infrastructure similarly serves a public purpose, while also creating both costs and benefits that are not distributed evenly. Energy planning is not just about siting electricity generation. Over half of Vermont's energy use is for heat and transportation, and local and regional decisions regarding buildings, roads, and other built infrastructure also have significant energy implications. For example, building a home or commercial building in a particular location will have implications for the energy required to travel to and from that building for decades. Given the pressing economic and environmental challenges associated with the use of fossil fuels, all aspects of planning must be undertaken with energy implications in mind. Municipal and regional planning that better integrates energy and resilience as it does economics and conservation will improve Vermonters' quality of life. See sections about on Transportation and Land Use and Local Siting and Regional Policy.

Energy Goals and Strategies

Conservation and Efficiency

Goal: Increase conservation of energy by individuals, organizations, and municipalities. Reducing the amount of energy needed to support existing and future systems is critical to reducing GHG emissions, operations costs, and energy burdens, while optimizing the use of renewable generation and storage.

Strategy
Connect municipalities, including residents, businesses, and other interested parties, with organizations, state programs (including Weatherization Assistance Program), incentives/rebates (Energy Efficiency Utility and Distribution Utilities), and best practices in weatherization, HVAC, efficient design, appliances, lighting, decarbonization, etc. • Programs and opportunities included in CVRPC weekly newsletters, and quarterly digests. • Updated materials in town buildings. • Collaborates with partners to increase regional participation and facilitates training and information sessions for municipalities and local energy champions. • Support drawdown of IRA and other federal monies • Maximize participation in income-based programs (Partners Efficiency Vermont, Distribution Utilities, Capstone Community Action, VEEP (Vermont Energy Education Program), BGS (Buildings and General Services) (Buildings and General Services), PSD (Public Service Department), VLCT, VCLN, VCRD (Vermont Council on Rural Development))
Coordinate and support municipal residential weatherization campaigns including WindowDressers Community Builds, Button Up!, establishment of revolving loan funds to cover up front costs for residents, etc. • streamline outreach and recruitment • connect municipalities and communities to existing resources and partners • maximize incentive and rebate use; federal funding drawdown • establish town: town leadership development for program expansion • connect to stable funding sources (Partners include WindowDressers, Efficiency Vermont, Capstone Community Action, ReSOURCE)
Support existing, and the development of, municipal energy committees and coordinators to establish and implement municipal energy goals.

Commented [KP80]: The first part of this goal comes from Policy A-1 of the 2018 Central Vermont Regional Energy Plan. The latter half was added from the 2024 Readoption of the Enhanced Energy Element.

Commented [KP81]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategies 1, 2 and 3 from the 2018 Energy Plan.

Commented [KP82]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategy 2 of the 2018 Energy Plan.

Commented [KP83]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses strategy 4 of the 2018 Energy Plan.

Provide technical assistance to municipalities and encourage municipal bylaws that promote energy conservation and the development of renewable energy resources
Support State, utility, and other energy and conservation program development to facilitate weatherization, fuel, switching, and increased energy savings and comfort within Central Vermont housing and other buildings stock • Advocate for models that are most accessible for underserved residents especially low-income households, those on fixed incomes, and renters- that cover up front costs, minimal eligibility requirements and administration, and can meet acute needs (at point of failure) • Promote program commitments for allocating program funds and benefits based on energy equity metrics
Develop a summary of needs and measures across municipal buildings and facilities via the Municipal Energy Resilience Grant Program assessment reports: • Establish municipal energy use baselines • Model project development and developing funding stacks • Support implementation

Commented [KP84]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategies 2 and 3 from the 2018 Energy Plan.

Goal: Promote climate-ready, resiliency, and energy efficiency in the design, construction, renovation, operation, and retrofitting of systems for buildings and structures.

Commented [KP85]: Corresponds to policy A-2 from the 2018 Regional Energy Plan.

Energy efficient building designs provide benefits to the owners and occupants by reducing the amount of energy needed to heat, cool, and maintain the mechanical systems within the building. Establishing and promoting energy efficiency in design, construction, retrofits, and renovations will ensure new buildings and building practices will be more efficient into the future. These efficiencies can also lead to conservation of energy which can promote cost savings and affordability for owners and renters.

Strategy
Promote Vermont's Residential and Commercial Energy Building Standers (RBES/CBES) for new construction and existing building additions, alternations, renovations, repairs, and retrofits. • provide education and support to interested municipalities to adopt stretch code, hire code officials, and/or host educational training • support regular state code updates and update necessary materials/trainings/best practices to newest adopted standards • Host and facilitate building science/standards training and education opportunities for local officials, zoning administrators, and relevant workforce development groups to promote the

Commented [KP86]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategies 1 and 5 from the 2018 Energy Plan.

distribution of code information to permit applications and ensure code compliance. • Promote benchmarking for commercial buildings.
Work with municipalities to develop local energy codes, education programs, and/or promoting energy efficient site design, "net-zero ready"[7] best practices (e.g., solar/EVSE ready), and renewable energy generation and energy storage use in new construction projects that require an Act 250 permit (or writ large) ○ Review local zoning bylaws and offer technical assistance to development review boards when evaluating the energy, climate, and health implications of site plans for proposed developments. ○ Work with housing and energy efficiency organizations to promote and improve the regional supply of affordable, high efficiency manufactured housing, such as Zero Energy Modular homes. ○ promote the use of landscaping for energy efficiency ○ promote the use of incentives (e.g., density bonuses) to developments located in identified growth areas that exceed stretch code
Support municipal building and facilities to establish energy use baseline and tracking, identify energy efficiency, fuel switching, EVSE, renewable energy & storage, and resiliency measures, and support implementation
Support the identification of waste heat recovery opportunities, thermal resources, and the siting of infill development in proximity to maximize capture and use to reduce electricity load from electrification of heating sector • Wastewater systems • Grocery Stores, Ice Rinks, IT centers, food, and drink production/processing, etc.
Work with community organizations or existing businesses to identify available information regarding the use of landscaping for energy efficiency including the importance of tree canopies, pervious surfaces, and similar design practices.

Goal: Identify ways to decrease the use of fossil fuels for heating.

Strategy
Decrease fossil fuel heating and increase affordable electrification by working with Energy Committees and other Central Vermont Energy Network partners to raise awareness among homeowners, renters, landlords, developers, etc. on the benefits of fossil-fuel-free technology such as cold-climate heat pumps, advanced wood heating and geothermal systems. Examples include thermal-led combined heat and power (CHP),

Commented [KP87]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategies 2 and 3 from the 2018 Energy Plan.

Commented [KP88]: Corresponds to policy A-3 from the 2018 Regional Energy Plan.

Commented [KP89]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategies 1 and 2 from the 2018 Energy Plan.

biomass district heating and biogas generation (capturing the methane produced by landfills or farms and using it instead of fossil fuels).
Support upgrade and trade-out programs and incentives for retiring outdated, higher-emission, polluting wood burning stoves and boilers.
Identify potential locations throughout the region that could benefit from district heating projects based on building density, proximity to resources such as biomass, or status as a use by right where applicable.
Work with interested municipalities to evaluate and amend, as necessary, local regulations to ensure district heating or similar centralized renewable generation facilities such as biogas or bio-digesters are permitted in appropriate locations.
Identify sources of renewable materials such as biomass, farm waste, or food waste (such as schools, restaurants, or food processors) to determine supply of alternative fuels that may be available for district heating or other heating alternatives for homes or businesses.
Work with state agencies to identify and inventory known sources and supplies of woody biomass that do not contribute to the spread of Federal or state identified invasive species, nor conflict with conservation and climate resilience goals, and make this information available to the public as appropriate.
Identify opportunities to integrate energy storage technologies such as batteries into capital planning projects to support micro-grid systems and diversify emergency back-up power resources. • Provide opportunities for community education and engagement around the role of renewable energy generation and storage in emergency management (recovery & response) as well as the costs, benefits, and challenges associated with these technologies.
Due to the rural nature of Central Vermont, identify and map large farm operations that may provide a sustained source of materials that could be used for bio-digesters.
Develop regional GHG emissions inventory.

Commented [KP90]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategies 1 and 2 from the 2018 Energy Plan.

Commented [KP91]: Corresponds to strategy 3 from the 2018 Energy Plan.

Commented [KP92]: Corresponds to strategy 4 from the 2018 Energy Plan.

Commented [KP93]: Corresponds to strategy 5 from the 2018 Energy Plan.

Commented [KP94]: Corresponds to strategy 6 from the 2018 Energy Plan.

Commented [KP95]: Corresponds to strategy 7 from the 2018 Energy Plan.

Commented [KP96]: Corresponds to strategy 8 from the 2018 Energy Plan.

Reducing Transportation Energy Demand and GHG Emissions

Goal: Promote the shift away from single-occupancy vehicle trips to reduce congestion, impacts to local facilities, and support alternative options for transportation needs.

Commented [KP97]: Corresponds to policy B-2 from the 2018 Regional Energy Plan. Strategies to address policy B-1 are now incorporated in this section as well.

Strategy
Promote Transportation Demand Management (TDM) and Ridesharing Programs: • Promote and support the Go!Vermont program that links travelers to a

Commented [KP98]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of B-1 strategy 2 and B-2 strategies 1, 2, 3 and 4 from the 2018 Energy Plan.

variety of transportation resources and mobility options

- Develop recommended criteria for supporting public and ridesharing infrastructure integrating health equity recommendations such as curb cuts, cross walks, raised and sheltered bus stops/benches, accessible transit stop sitting, etc.
  - identify key gaps in accessibility of existing public transit infrastructure
- Work with regional partners such as VTrans to ensure inventories of park & ride locations and conditions are up-to-date and are consistent with the State Park & Ride Plan. This may include occupancy studies or user surveys to assess specific needs
- Identify Park & Ride facilities that are near or over capacity to ensure future planning will accommodate expansions, upgrades, modifications, or alternative locations are identified as appropriate
- Support employer programs to encourage telecommuting, carpooling, vanpooling, walking, and biking for employee commute trips (including flexible work hours, remote work options, discounted transit fair, health bonuses, etc.)
- Work with utility companies and municipalities to inventory and map infrastructure such as fiber optic cable to identify gaps that may prohibit information accessibility or telecommuting options

Follow the 2023 Vermont Transportation Equity Framework to help decision makers plan for and prioritize projects, ensure accurate representation in decision making, and enhance the equitable delivery of services.

Support regional infrastructure projects that provide commute alternatives including rail, multi-town greenways/paths, etc. Ensure continued support for inter-municipal and inter-regional public transit.

- Work with municipalities to evaluate and determine the feasibility of intermodal transit facilities in appropriate regional locations that can be supported by infrastructure, population, and resources.

Work with VTrans and Green Mountain Transit to identify future growth areas or development centers to ensure public transit will be accommodated in these locations including access to park & ride locations when appropriate.

Work with public transit providers and other partners to identify underserved communities including unhoused community members, rural areas, low-income neighborhoods, night shift work sites, etc. to identify transit opportunities in these locations (and connected to critical services).

Commented [KP99]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It contains B-1 strategies 7 and 8 from the 2018 Energy Plan.

Commented [KP100]: Corresponds with B-1 strategy 3 from the 2018 Energy Plan.

Commented [KP101]: Corresponds with B-1 strategy 4 from the 2018 Energy Plan.

Assist municipalities, regional partners, state agencies, and development community to identify incentives that encourage the inclusion of public transit in land development plans such as reduction in parking requirements, reduced local permit fees, or the like.
Develop clear policy to require large scale developments to consult transit providers regarding the need to include transit, multi-modal, and EVSE infrastructure within development proposals.
Work with regional partners and municipalities to establish a comprehensive transportation plan that incorporates policies and implementation regarding the expansion of public transit that considers locations of park & ride facilities; public facilities such as schools, libraries, health services, wrap around services (shelters, food banks/pantries, addiction recovery services) and government buildings; or other activity centers and uses throughout the Region and identifies possible funding sources to support implementation and the Region's future land use planning efforts.
Provide technical assistance to transit providers as appropriate regarding land use, infrastructure, and future planning considerations to help plan for service needs.

Commented [KP102]: Corresponds with B-1 strategy 1 from the 2018 Energy Plan.

Commented [KP103]: Corresponds with B-1 strategy 5 from the 2018 Energy Plan.

Commented [KP104]: Corresponds with B-1 strategy 6 from the 2018 Energy Plan.

Commented [KP105]: Corresponds with B-1 strategy 9 from the 2018 Energy Plan.

Goal: Promote the shift away from gas/diesel vehicles to electric or non-fossil fuel transportation options to reduce dependency on non-renewable fuel sources for transportation. GWSA (Global Warming Solutions Act)

Commented [KP106]: Corresponds to policy B-3 from the 2018 Regional Energy Plan.

Strategy
Work with municipalities to ensure land use regulations do not prohibit the installation of electric vehicle supply equipment (EVSE, aka charging stations) or similar alternative fuel technologies (such as biodiesel) and identify model language that can be considered by municipalities to support these uses
Promote EVSE ready building practices and retrofits (electrical panel needs); promote the use of EV Meter Socket Adapters to mitigate common obstacles to adoption and enable bidirectional EVSE for charging, vehicle to grid configurations, connection to solar and stationary storage, etc.

Commented [KP107]: Corresponds with strategy 1 from the 2018 Energy Plan.

Consult with Vermont Energy Investment Corporation's Drive Electric program and other regional/state partners including VTrans, Vermont Clean Cities Coalition, and EmPower to coordinate multi-scale funding, program development, and implementation and stay up to date on current technology trends and opportunities to provide guidance to municipalities. • Disseminate Drive Electric fleet electrification resources, funding, and technical assistance opportunities; participate in quarterly stakeholder meetings • Conduct outreach and provide technical assistance to municipalities to participate in State EVSE and fleet electrification programs (via support to ACCD and DHCD (Department of Housing & Community Development), VTrans, and Drive Electric) • Promote EPA (Environmental Protection Agency) Clean School Bus Program with schools and municipal champions; provide technical assistance around bi-directional options which can be integrated into back-up and emergency power plans • Support and expand the use of electric powered buses and vans among the public and private transportation providers serving the region ○ including Meals on Wheels, MyRide, Gopher, and other rural transit programs centering frontline communities' needs
Identify businesses and municipalities in the region that operate large fleets of vehicles to provide assistance evaluating the possibility of integrating electric, low-emissions, and/or alternative fuel vehicles into their fleet
Provide training to local zoning and development review boards to consider infrastructure for alternative transportation in their review of site plans.
Support and encourage municipalities and businesses to install EV charging stations at convenient and desirable locations, such as in front of restaurants, stores, tourist and recreational destinations, and community sites like Town Halls and libraries, where users would want to park for several hours. Explore and pursue incentives to defray the cost of installation and administration so that users pay only for electricity. • promote the integration of EVSE with solar generation including but not limited to solar carports
Support municipal transportation asset sharing and procurement: • develop equipment and culvert inventories • develop study and plan for regional sand/gravel resources to reduce costs and vehicle miles traveled especially in high demand conditions

Commented [KP108]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategies 4 and 5 from the 2018 Energy Plan.

Commented [KP109]: Corresponds to strategy 2 from the 2018 Energy Plan.

Commented [KP110]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategy 6 from the 2018 Energy Plan.

(mud season, disaster recovery, etc.)
Support DriveElectric and VTrans to maintain inventory of existing EVSE, condition, and recruit potential site hosts; identify infrastructure gaps and facilitate region-wide access for EV operators • develop template criteria for EVSE location prioritization to improve access and equity
Support and expand access to fluid biofuels for use in commercial vehicles and heavy equipment in addition to electrification
Consider regulations that would EVSE to be included in large scale developments as appropriate

Commented [KP111]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategy 3 from the 2018 Energy Plan.

Commented [KP112]: Corresponds to strategy 6 from the 2018 Energy Plan.

Goal: Facilitate the development of walking, biking, and rolling infrastructure to provide alternative and multi-modal transportation options for communities and to promote interconnection within the region's transit systems.

Commented [KP113]: Corresponds to policy B-4 from the 2018 Regional Energy Plan.

Walking, biking, and rolling provide critical alternatives to motorized vehicle travel. Ensuring a safe, efficient, and convenient infrastructure exists to promote walking/biking/rolling is essential to the future growth and sustainability of the Region's municipalities. Furthermore, in addition to decreases in fossil fuel use and GHG emissions, there are substantial co-benefits to this infrastructure related to public health, accessibility, and emergency management.

Strategy
Provide technical and grant writing assistance to municipalities who plan for multi-modal transportation and better connectivity with alternative transportation modes. Prioritize implementing the strategies and priorities identified in the Vermont Health Equity Planning Toolkit that are relevant to the region. • develop project prioritization criteria that integrate health equity considerations
Working with municipalities to update municipal road standards (for maintenance and new construction) to reflect Complete Streets principles. • evaluate local regulations and recommend changes as needed to come in line complete streets legislation (19 V.S.A §309d) (done?) • provide regular updates and training to municipalities • review state transportation projects to ensure Complete Streets are implemented
Develop model regulations to be evaluated by municipalities that require

Commented [KP114]: This strategy was added from the 2024 Readoption of the Enhanced Energy Element. It addresses elements of strategies 1 and 3 from the 2018 Energy Plan.

Commented [KP115]: Corresponds with strategy 2 from the 2018 Energy Plan.

walk/bike/roll infrastructure in downtowns, village centers, growth areas, or locations that propose high density development patterns • Ensure that site plans include adequate bike and pedestrian infrastructure and safety measures, through participation in the Act 250 hearing process
Work with municipalities and regional partners to developing a walk/bike/roll master plan: • conduct gap analyses and high priority projects that connect residents with diverse needs to food assets, schools, public transit, libraries, etc. • identifies implementation strategies and matching funding stacks • coordinate with and integrate existing community-supporting organizations and non-profits; center underserved communities in decision making, prioritization, and planning (Key partners include Capstone, Central Vermont Mobility Committee; Center for Independent Living, PrideRidesVT, FreeRide, LocalMotion, GMT, etc.)
Evaluate land use patterns to ensure walk/bike/roll connection feasibility between key land uses such as schools, parks/greenways, commercial areas, and neighborhoods
Work with cycling advocacy groups such as Local Motion, FreeRide, and PrideRidesVT, by hosting safe on-road cycling workshops and raising awareness about the viability of micro-mobility (such as electric bikes and scooters).

Commented [KP116]: Corresponds with strategy 4 from the 2018 Energy Plan.

Commented [KP117]: Corresponds to strategy 5 from the 2018 Energy Plan.

Development and Siting of Renewable Energy Resources

Policy: Evaluate generation from existing renewable energy generation by municipality including the identification of constraints, resource areas, and existing infrastructure by energy type.

Commented [KP118]: This policy and the following actions correspond directly to policy D-1 from the 2018 Regional Energy Plan.

Identifying and mapping existing renewable energy generation facilities throughout the region will provide a baseline to determine the generation that currently exists. This information can provide a better understanding for where developments are currently being established and can help prioritize assistance that may be needed at the municipal level. Additionally, mapping existing constraints

will provide municipalities with a better understanding of resources that are available within their community.

	IMPLEMENTATION ACTION	RESPONSIBILITY	PRIORITY/ TIMELINE	MEASURE OF SUCCESS
1	Provide regular updates to municipalities regarding existing generation facilities to maintain an up-to-date inventory of locations.	CVRPC, Department of Public Service, Distribution Utilities	On-going	Updated maps provided as requested
2	Provide regular mapping updates to municipalities regarding known and possible constraints to ensure consistency with state guidelines on renewable energy siting.	CVRPC, State Agencies	On-going	Updated maps provided as necessary
3	Update regional maps to reflect changes at the municipal level regarding preferred or unsuitable locations for renewable energy generation.	CVRPC, Municipalities	On-going	Maps and information updated as necessary
4	Work with state agencies to map locations of woody biomass to evaluate cord wood acquisition for residential heating and ensure it is in line	CVRPC, State Agencies	On-going	Specific locations are identified and mapped

	with conservation and forest corridor priorities			

Policy: Evaluate generation from potential renewable energy generation by municipality including the identification of constraints, resource areas, and existing infrastructure by energy type.

Commented [KP119]: This policy and the following actions correspond directly to policy D-2 from the 2018 Regional Energy Plan.

Identifying and mapping potential renewable energy generation throughout the region will provide municipalities with information regarding available land area where renewable energy generation could be located. This information can be used to help municipalities prioritize and evaluate where future renewable generation could or should occur based on municipal land use policies and constraints to meet their own, regional, and state needs and goals.

	IMPLEMENTATION ACTION	RESPONSIBILITY	PRIORITY/ TIMELINE	MEASURE OF SUCCESS
1	Evaluate known, possible, and regionally identified constraints to ensure up-to-date information is available for future planning purposes.	CVRPC, State Agencies	On-going	Constraints will be evaluated and mapped as necessary
2	Update information on utility infrastructure including existing and proposed transmission facilities to ensure accurate data exists.	CVRPC, Utility Providers	On-going	Utility information s updated and mapped as necessary
3	Evaluate and update preferred and unsuitable locations for future renewable energy generation siting as needed based on state,	CVRPC, Municipalities, State Agencies	On-going	Preferred and prohibited locations are evaluated and mapped as necessary

	regional, and municipal policies and plans.			
4	Update generation potential based on future land developments, changes to land uses, or updates to priority areas as identified by state, regional, or municipal actions.	CVRPC, Municipalities, State Agencies	On-going	Generation potential is updated as necessary
5	Work with municipalities, as requested, to evaluate and prioritize future renewable energy generation technologies and locations to best suit municipal needs and policies.	CVRPC, Municipalities	On-going	Locations and technologies will be evaluated and prioritized

4. TRANSPORTATION ELEMENT

~~The Central Vermont Regional Planning Commission also adopted the Central Vermont Regional Transportation Plan in its entirety. That Plan addresses all the requirements of State statute and is adopted, by reference, as part of this document. The following is an overview of the Regional Transportation Plan and its major goals and policies. The complete text is available upon request.~~

~~Executive Summary~~
~~The 2016 Regional Transportation Plan (RTP) was completed by staff with technical support from a consultant under the direction of the CVRPC Transportation Advisory Committee. Preparation of the 2016 RTP occurred simultaneously with the update of the CVRPC Regional Plan. The 2016 RTP has a planning horizon and is based on the same land use assumptions and economic and demographic forecasts used in the Regional Plan.~~

~~The 2016 RTP is organized into five chapters and an appendix. Chapter One presents an overview of the Plan's purpose and process. Chapter Two presents the transportation goals developed specifically for the Regional Transportation Plan. Chapter Three contains descriptive material on the Region's land use patterns, on current and forecast population and employment in the Region, and on current work trip travel patterns in the Region. Chapter Four describes the existing transportation system, its performance, and projected future performance of the highway system. Chapter Five presents Regional, and corridor level recommendations. The Appendix examines ways existing and future transportation and land use planning can be better coordinated, project prioritization methodology, and detailed safety, bridge, and survey analysis.~~

~~The 2016 RTP is too large to present in the Regional Plan. This section presents the 2016 RTP's vision statement and goals, summarizes the key findings on transportation demand and system performance, and briefly describes the types of recommendations included in the RTP. Refer to the 2016 Central Vermont Regional Transportation Plan for more detailed information.~~

Commented [KP120]: Executive summary was cut because it references the 2016 RTP which was never finalized.

The Central Vermont transportation system provides access to jobs, homes, recreation, commerce, and entertainment, with links to regional, statewide, national, and international networks and destinations. There is little in the daily lives of Central Vermonters that is not reliant on some form of transportation. The collection of highways, streets, trails, sidewalks, and bus routes that make up the regional transportation system structures and enables the rhythms of daily life. Additionally, our region is globally connected via Knapp State Airport (MPV) locally, Burlington International (BTV) in neighboring Chittenden County, two Amtrak stations, and an active freight rail line with a spur serving Barre.

The Central Vermont transportation system largely functions as intended, though with room for improvement in multiple areas, as detailed below. For example, the Region generally experiences low traffic congestion, but commuters tend to drive long distances in single-occupancy vehicles and many residents do not feel safe using active modes of transportation on existing roads. The low density, high dispersion development pattern that predominates in the region also leads to limited transit service with low ridership and automobile dependency with its attendant impacts on climate, air, water, land, and wildlife. This plan discusses existing and proposed initiatives to improve on these shortcomings, along with considerations of funding and implementation.

Maintaining the parts of the transportation system that function well has always been expensive and complex, and climate change is projected to worsen those challenges. Much of the Region's critical transportation infrastructure is already vulnerable to flooding and will become more so as flood frequency and severity increase. Increased road repairs, interruptions to commuting and freight, and isolation of rural communities are some ways that climate change's effects on transportation will impact Central Vermonters – especially the Region's frontline communities. Where possible, federal, state, and local agencies should invest upfront in transportation resilience to save money later and help ensure the continued function of the transportation system that we all rely on.

Commented [KP121]: From new draft Transportation chapter. Added in to serve as the new introduction to the chapter. Some of the language in the new introduction is also helpful for EEP standards review.

Discussion: Trends

~~If current settlement trends continue, households will disperse throughout the Central Vermont Region while employment and services concentrate in a growing central core consisting of Montpelier, Barre City, Barre Town, and Berlin. Smaller concentrations of employment are anticipated in the Waterbury, Waitsfield/Warren, and Northfield areas.~~

Commented [KP122]: Based on comments from the LURB on NRPC Pre-application, staff are concerned that language around housing dispersal could negatively impact review. As well, the statement does not align with State Goal 1, which calls for compact village and urban areas.

Driving alone to work is the dominant mode choice for Central Vermont workers and will likely continue to dominate as households disperse and employment concentrates within a few areas of the Region. Ride-share also plays a significant role in the journey to work and will remain a viable option as households continue to disperse and workers are imported from outside of the Region. Driving alone and ride-share account for ~~87%~~ 76.8% of the work trips in the Central Vermont Region[27]. According to Vermont Public Service, road transportation accounts for 95% of transportation energy use.

Commented [KP123]: Updated data.

Walking has a significant mode share in Montpelier and Northfield and is also an important mode for non-work trips in those communities.

Similar to national trends, the largest growing age cohort will be people over the age of 65. This age group will continue to fill jobs as noted above, and may also have special transportation needs. (See map: Transportation.)

Transportation System ~~Performance~~

Highways

~~During the 2000's bridge conditions improved, but pavement conditions have declined. Congestion was limited to the Barre, Berlin, Montpelier, and Waterbury areas of the Region.~~ Maintaining the condition of roads and bridges in the future will require sustained levels of funding for system preservation projects. ~~Assuming no changes to the highway system, congestion is projected to spread to the rural areas of the Region.~~

Commented [KP124]: The pavement and bridge trend discussed is outdated and is too broad to be representative of the entire region.

Commented [KP125]: Updated congestion data below with trends.

Roadway Classification – Function and Jurisdiction

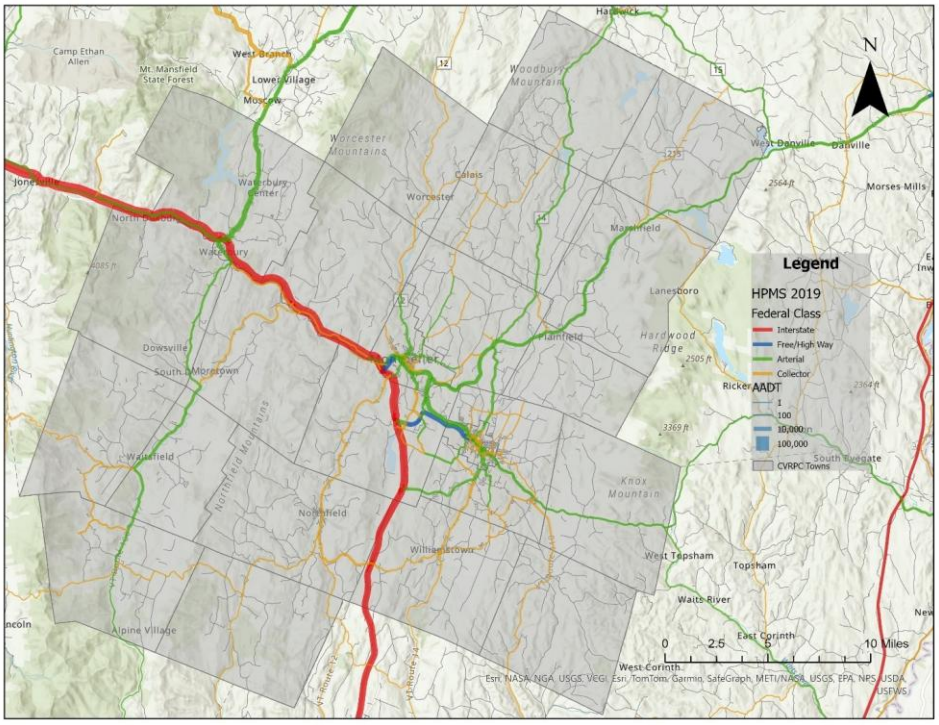
[27] US Census Bureau DP03 - Census Bureau Tables

Roads in the Region are classified either by function (long-distance mobility vs. access to adjacent land) or by jurisdiction (which government entity owns the facilities and is responsible for their operations and maintenance). The two classification systems are related – larger roads tend to be under the jurisdiction of larger government entities – and both ways of classifying roads are important considerations in transportation planning.

In Vermont, roads are owned and maintained either by the State of Vermont or the municipality in which they are located. Local roads make up most of the road network in terms of road miles, while State roads are In Vermont, roads are owned and maintained either by the State of Vermont or the municipality in which they are located. Local roads make up most of the road network in terms of road miles, while State roads are generally larger facilities that carry the most traffic. The Federal-Aid Highway Program provides funds for State roads but not for local roads. Figure 1 shows the region's roadways classified according to the federal system.

Federal Class by AADT Map(Source: HPMS 2019)

Commented [KP126]: The text and map below were added from the new draft Transportation chapter. Statute for the Transportation Element requires a statement and map of present and prospective transportation and circulation facilities. Given that detailed information was previously contained in the RTP, the map and corresponding description support this requirement.



Congestion

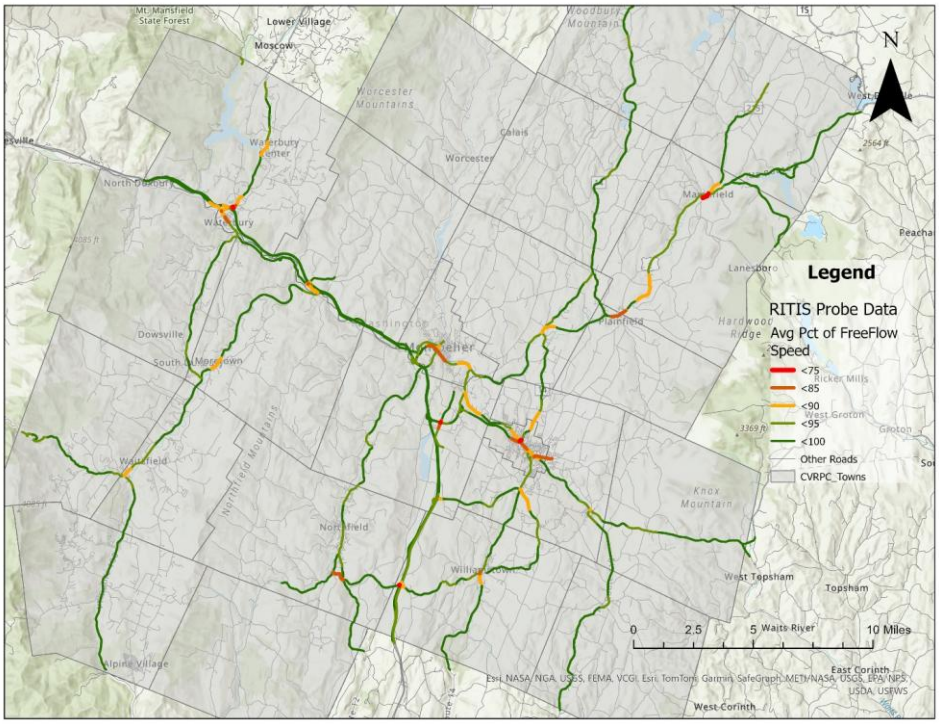
Central Vermont experiences very limited travel delay from congestion. To the extent that congestion occurs, it is generally in activity centers (downtowns and villages) during business hours. This is the outcome we expect when looking at dense, high-activity areas where access is maximized and there are many conflicting movements occurring. As a general pattern, what delay does exist tells a story of successful communities rather than failing roads. Where extreme congestion and queueing, be it recurrent or episodic, that present safety concerns (e.g. seasonal peak volumes at Exit 10 in Waterbury) efforts should be made to reduce, manage, and mitigate delay and danger.

As the Region continues develop, transportation impacts of new development will need to be considered both in the siting of new

Commented [KP127]: Text and figure below were added from the new draft Transportation chapter. In the Transportation Element, discussing anticipated points of congestion is required. Previous data was out of date. In VTrans comments for the NRPC Pre-application, they stated that "The plan currently does not identify potential areas of congestion that may develop based on future land use designation and planned growth." The second paragraph helps to address this concern.

development and the prioritization of highway projects to handle increased volumes. Locating residential development near commercial and employment centers will limit new congestion by limiting new demand for driving.

Average Percent of Free Flow Speed by Segment for Average Weekday 2023 Map (Source: RITIS Probe Data)



Safety

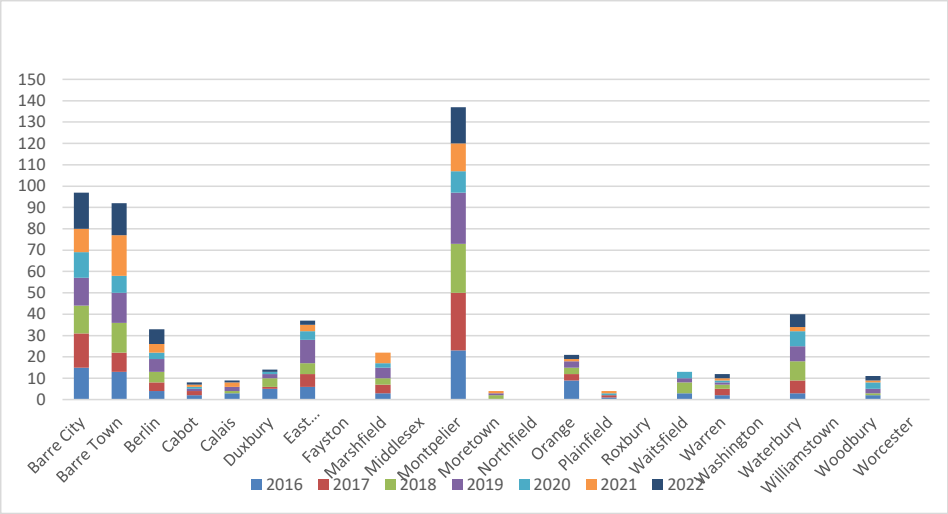
Intersections are the most dangerous components of the Region's highway system. ~~The intersections and road segments with the highest crash rates are located in the Barre City, Barre Town, Fayston and Northfield areas. Out of the twelve intersection high crash locations, seven have been studied, and four are included in projects.~~ The figures below show crashes with injury or fatality resulting from 2016 through 2022 by town for arterial and collector roads respectively. From the data it is clear that the higher speed and

Commented [KP128]: The data is outdated and does not fully encompass current trends. The red text and bar charts below have updated data from the new draft transportation chapter.

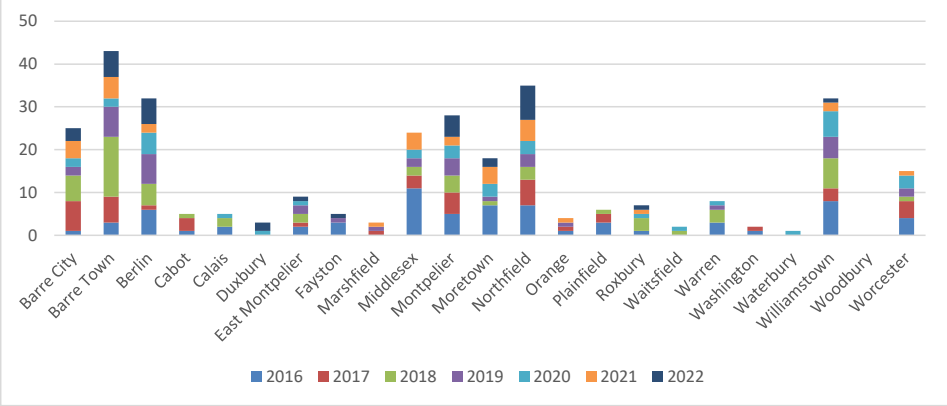
volumes on arterials are associated with higher occurrence of injuries and fatalities. As well, towns with higher activity levels (i.e. – more trips due to concentrations of population and/or employment) have higher incidence of these crash types.

Of crashes where a fatality occurred roughly 65% involved some form of driver impairment from drugs and/or alcohol. This points to the need for enforcement to be a component of future Vision Zero efforts in the region. The Region will continue to conduct planning studies, and participate in State programs to address high crash locations.

Crashes With Injuries on Arterials 2016-2022



Crashes with Injuries on Collectors 2016-2022



Transit

Public transit is an important modal choice in the Central Vermont transportation system. It facilitates the pooling of trips between important origins and destinations and provides basic mobility to any user regardless of access to private vehicles. Public transit provides access to jobs, medical and social services, education, childcare, shopping, recreation, and other essential services.

By pooling trips in vans and buses and moving individuals out of single occupancy vehicles, transit helps reduce congestion, air pollution, parking needs, and the need for expensive highway improvements. A wide variety of public transit services are available within the Central Vermont planning area, including local, regional, and inter-regional services.

Green Mountain Transit (GMT) is the primary public transit provider for the Central Vermont planning area. GMT is a full-service public transportation provider offering fixed route, deviated fixed route, demand response, commuter route, shopping shuttle, Medicaid transportation and transportation services for the elderly and disabled. As of the writing of this plan, ridership in Washington County will transfer from GMT to Tri Valley Transit. This process is anticipated to be completed by July 1, 2026. ~~Transit ridership increased significantly over the years due to expansion of service.~~

Commented [KP129]: This text was added from the new draft transportation chapter to support State Goals 4, 6 and 7.

Commented [KP130]: Updated information from the new draft Transportation chapter.

Commented [KP131]: Added in to reflect upcoming changes to transit system.

~~Since 1995, ridership grew by 46%. The most notable recent addition was the Link Express service between Montpelier, Waterbury, and Burlington. A recent statewide assessment of all Vermont public transit providers found that Central Vermont's transit system had mostly positive use and cost performance measures for its various routes. The increases in transit ridership underscore the desirability of continued transit service in the Region.~~

Commented [KP132]: Outdated.

Freight Movement

The important products transported from the Region are specialty and dairy food products, granite, and wood. Most of these commodities are shipped by truck, with rail transporting a much smaller but significant share (7% statewide). Truck travel in the Region is constrained by highway geometry deficiencies and the hilly terrain. Arterials that carry truck traffic also pass through village centers creating safety and quality of life issues for residents. Rail plays an important role in the Region's trade with Canada. Preventive maintenance is needed to preserve the existing New England Central rail line that serves that international trade connection.

Air Transportation

There are two airports located in the Central Vermont Region; the Edward F. Knapp State Airport in Berlin, and the privately owned Warren-Sugarbush Airport. The Region's public-use airports provide opportunities for public access to the National Airspace System, airfreight, emergency medical services, search and rescue operations, business aviation, recreational flying, and flight training. Knapp Airport is equipped for night operations and precision instrument landings. Since 1996, improvements at Knapp Airport have included runway rehabilitation, installation of navigational aids, and construction of jet fuel farm, hangars, and a taxiway. Future improvements have been



identified that will preserve and enhance how the Airport functions.

Bicycle and Pedestrian

There are a variety of bicycle and pedestrian facilities in the Central Vermont Region including sidewalks and cross walks in most cities and villages, paved shoulders in rural areas, and separated bike paths in various locations. Existing deficiencies include discontinuity of adequate shoulder widths in rural areas, constant need for maintenance of existing urban/village sidewalk networks, and a lack of sidewalks in the growing suburban commercial areas. ~~Since 1995,~~ There has been significant progress in planning and implementing bicycle and pedestrian facilities at the local and Regional level. This incremental progress, if continued over the next twenty years, will help the Region develop an interconnected network of bike and pedestrian facilities.

The design of community infrastructure, including roads, sidewalks, and public spaces, influences the physical activity levels of residents. Walkable neighborhoods with well-designed infrastructure encourage physical exercise, reduce reliance on motorized transportation, and contribute to lower rates of obesity and related health issues. Conversely, poorly planned infrastructure can hinder active lifestyles and compromise community health.

Complete Streets are designed for all roadway users and are accessible whether driving, riding, walking, bicycling or rolling (using a wheelchair or pushing a stroller). Not every street is expected to be a "complete street", but Complete Streets policies are those that consider the needs of all users and, when appropriate, meet these needs.

Housing density complements walkability and bikeability, access and preservation of green spaces, access to amenities, including food access and access to social infrastructure. Mixed-use developments are encouraged in Village and Growth Areas to allow commercial, business, low-intensity industrial, and residential uses. Mixed-use allows for goods and services to be accessible to all and encourages walkability, bikeability and community

health.

Commented [KP133]: Text is from the new draft Transportation chapter. This section was added because discussion of Complete Streets helps to support State Goal 4. Complete streets and transportation planning were also highlighted as important components in NRPC plan.

Transportation Demand Management

Transportation Demand Management (TDM) seeks to reduce the number of single occupant vehicle trips by encouraging people to share rides, shift travel to off-peak hours, tele-commute or use other modes such as walking, biking, or transit. Most of the ride-sharing in the Central Vermont Region occurs on an informal basis. The Park & Ride lots in the Region facilitate informal ride-sharing and the location, capacity, and average usage of these lots are noted in the table below. ~~and have experienced a 79% increase in use since 1998.~~ In the future, transportation demand management associations could help facilitate further use of TDM programs.

Commented [KP134]: Previous data was outdated. Updated table provided below from the new draft Transportation chapter.

Park and Ride Utilization by Season

State Lots		Winter		Summer		Autumn	
Location	Total Spaces	# of vehicles	% full	# of vehicles	% full	# of vehicles	% full
Montpelier DOL	170	81.5	48%	39	23%	44.3	26%
Montpelier MJSH	55	29	53%	24	44%	37.7	68%
Waterbury	69	53	77%	50.5	73%	52.3	76%
Middlesex	28	12.5	45%	12.5	45%	13.7	49%
Berlin	81	42	51%	58.5	72%	49.0	60%
East Barre	10	2	15%	3	30%	3.0	30%
Barre Town	34	14	40%	10	29%	9.3	27%
Williamstown	25	12	46%	15.5	62%	17.3	69%
Roxbury	8	1.5	19%	0.5	6%	0.3	4%
Plainfield	22	4	18%	2.5	11%	4.0	18%
Marshfield	6	2.5	42%	0.5	8%	1.0	17%
Orange	26	4	15%	0	0%	3.0	12%
Warren	12	2	17%	5.5	46%	2.7	22%
East Warren	15	3	17%	1	7%	0.7	4%
Cabot*	19	1	5%	15.5	82%	9.7	51%
East Montpelier	6	4	58%	1.5	25%	1.7	28%

* Cabot PnR values reflect regular use associated with foodbank/historical building

Climate Impacts and Vehicle Emissions

Commented [KP135]: This section is pulled from the new draft Transportation chapter. This section is needed to meet Act 174 (Comprehensive Energy Plan) Standards: 4A, 4C, 5, 7A-7D, 8A, 8B and 10. Elements of this section also support State Goal 15 (EJ and the distribution of environmental benefits and burdens).

The Region's critical transportation infrastructure is already vulnerable to flooding and will require significant investments in maintenance and/or upgrades as flooding increases due to climate change. Figure # shows roads and structures classified by vulnerability to 50-year flood and criticality (a

measure of network access provided), structures represented on the map score above 5 on both measures. Note that there are no roads in the region scoring high on criticality while scoring low on vulnerability; this is a result of historical development patterns responding to the constraints imposed by the topography of the region that led to settlements and major thoroughfares being located on the flat ground adjacent to watercourses.

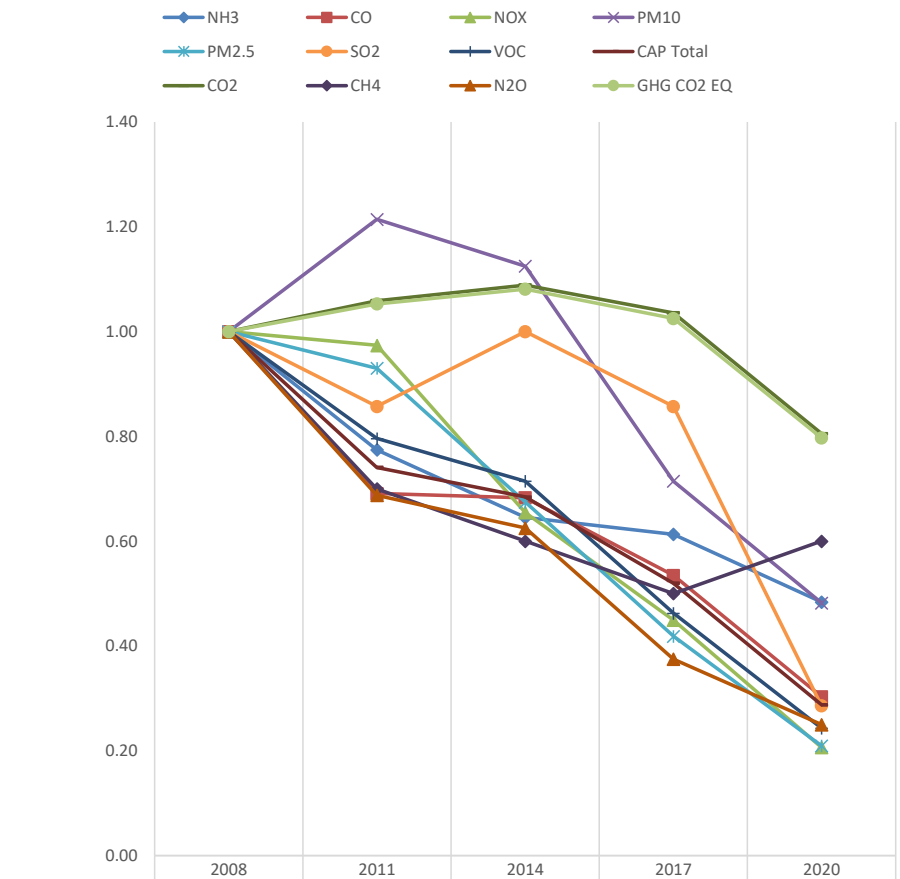
If repeated replacement or repair of a facility or settlement is determined to be unsustainable, consideration will need to be given to retiring and relocating right of way (ROW). CVRPC recognizes that the costs of ROW acquisition and road building coupled with the potential for eminent domain issues to arise in pursuit of relocating roads is likely to preclude the possibility of such action short of a crisis that forecloses all other options.

Sidebox: The Vermont Agency of Transportation developed the Vermont Transportation Resilience Planning Tool (TRPT), a free and easy-to-use tool for planners "that identifies bridges, culverts, and road embankments that are vulnerable to damage from floods, estimates risk based on the vulnerability, and criticality of roadway segments, and identifies potential mitigation measures based on the factors driving the vulnerability." A brief introduction is at https://vtrans.vermont.gov/climate/trpt and the tool is at https://roadfloodresilience.vermont.gov/#/map

Figure # shows changes in emissions for Criteria Air Pollutants (CAP) and Greenhouse Gases (GHG) from 2008 through 2020, indexed to 2008. GHG emissions saw a pandemic-driven decline of about 14% from 2019 to 2020 from a roughly flat trend for the prior 12 years, however a partial rebound was already apparent in 2021, increasing 7% relative to 2020 levels limits.[28] Over the same period, 2008-2020, CAP volumes have declined drastically due to improved emissions after-treatments.[29] Reliable numbers for more recent years are not currently available, though it is known that there has a been a rebound in trip-making and overall travel from the pandemic-driven decline in 2020.

[28] The Energy Action Network's 2024 Annual Report for Vermont on Emissions, Energy, Equity, and the Economy provides a more detailed high level summary of the statewide transportation sector- check out summary graphics and high level conclusions at https://eanvt.org/2024-annual-report/.
[29] (Winkler, 2018)

Change in Emissions Over Time (Source NEI Data)



	2008	2011	2014	2017	2020
NH3	1.00	0.77	0.65	0.61	0.48
CO	1.00	0.69	0.68	0.53	0.30
NOX	1.00	0.97	0.65	0.45	0.21
PM10	1.00	1.21	1.13	0.71	0.48
PM2.5	1.00	0.93	0.67	0.42	0.21
SO2	1.00	0.86	1.00	0.86	0.29
VOC	1.00	0.80	0.71	0.46	0.24
CAP Total	1.00	0.74	0.68	0.52	0.29
CO2	1.00	1.06	1.09	1.04	0.81
CH4	1.00	0.70	0.60	0.50	0.60
N2O	1.00	0.69	0.63	0.38	0.25
GHG CO2 EQ	1.00	1.05	1.08	1.03	0.80

Electric Vehicles

Alongside reducing vehicle miles traveled, Light-duty and fleet electrification is a key part of the State's plan to reduce GHG emissions from the transportation sector (see Energy Chapter for an overview of State Goals and Policies and full sector targets). The tables below represent Central Vermont's share of the State targets of EV adoption (replacement of fossil fuel vehicles), required to meet our broader State energy and emissions goals (according to the current LEAP pathway model). While Central Vermont is on track for our 2025 goal, and in fact surpassed it, targets increase rapidly thereafter. CVRPC continues to support municipalities and other fleet operators especially schools, and town energy committees to promote education and participation in State, Utility, and Federal incentive programs. See the supplement for additional transportation targets including medium- and heavy-duty vehicles and non-road energy demand and for the baseline (aka business as usual) comparison. CVRPC is working to pull together municipal fleet inventories to better adjust these targets and provide municipalities municipal fleet recommendations.

EV Ownership by Type Targets

CAP Mitigation Regional **Passenger Car & Light Duty Truck EV and PHEV Stock** (Number of Vehicles)						
Vehicle Type	**2015**	**2025**	**2030**	**2035**	**2040**	**2050**
Battery Electric	3	1,163	6,926	16,289	24,669	33,219
Plug In Hybrid	33	122	169	161	107	40
Total	**36**	**1,285**	**7,095**	**16,450**	**24,776**	**33,259**

Want to do a fleet analysis? You don't need a lot to get started:

- Vehicle Inventory (make & model, year)
- Annual data per vehicle: Vehicle Miles Traveled (VMT), Gallons of fuel used, MPG
- Replacement Schedule

To learn more about technical assistance and funding support for fleet electrification and EVSE CVRPC, Drive Electric, VTrans, and Vermont Clean Cities Coalition are all at the ready. Municipalities can develop fleet electrification and EVSE plans, host EV community events, and support local partners as well.

The table below provides an overview of light duty (passenger) vehicles and use in the region. The vast majority of residents in the state, including Central Vermont, use personal vehicles for their daily travel needs. Approximately 3.5% of the 43,506 light duty vehicles in Central Vermont are electric vehicles (including all electric and plug-in hybrid electric vehicles registered by January 2024 (Drive Electric Vermont[30])). The total number of vehicles in the region has decreased slightly, while the number of EVs (Electric Vehicles) has increased quickly in the last few years, increasing by approximately 40% in 2023 alone coincident with the expansion of state, utility, and federal incentive programs.

Current Regional Transportation Energy Use

Transportation Data	Regional Data 2022 5-YR ACS			Regional Data 2011-2015 (ACS)
Fuel Type	Internal Combustion Engine (ICE)	Electric Powered (EV)	Total	Internal Combustion Engine (ICE)
Total # of Light Duty Vehicles	41,989	1,517	43,506	45,584
Average Miles per Vehicle	12,500	9,000		287,500 (12,500/vehicle)
Total Miles Traveled	524,862,500	13,653,000	538,515,500	567,650,000
Total Use per Year	23,857,386 gallons	4,551,000 kWh		30,518,817
Transportation MMBTUs	2,701,858	15,528	2,717,386	3,396,000
Average Cost per unit	$3.37/gallon	$0.2109/kWh		$2.31
Cost per Year	$80,399,391	$959,806	$81,359,197	$70,488,465

[30] http://www.driveelectricvt.com/buying-guide/why-go-electric

Source: Municipal Consumption Tool (Department of Public Service) which uses Table DP04, 2022 ACS 5-Year Estimate used to estimate the count of vehicles associate with area housing units, and State DMV data averages; cost per gallon of gas was taken from EAN Annual Progress Report 2023. EV data was provided by Drive Electric based off DMV registrations as of January 2024. Comparable public transportation and medium and heavy-duty vehicle data is not available, additional information is provided in the Transportation Chapter.

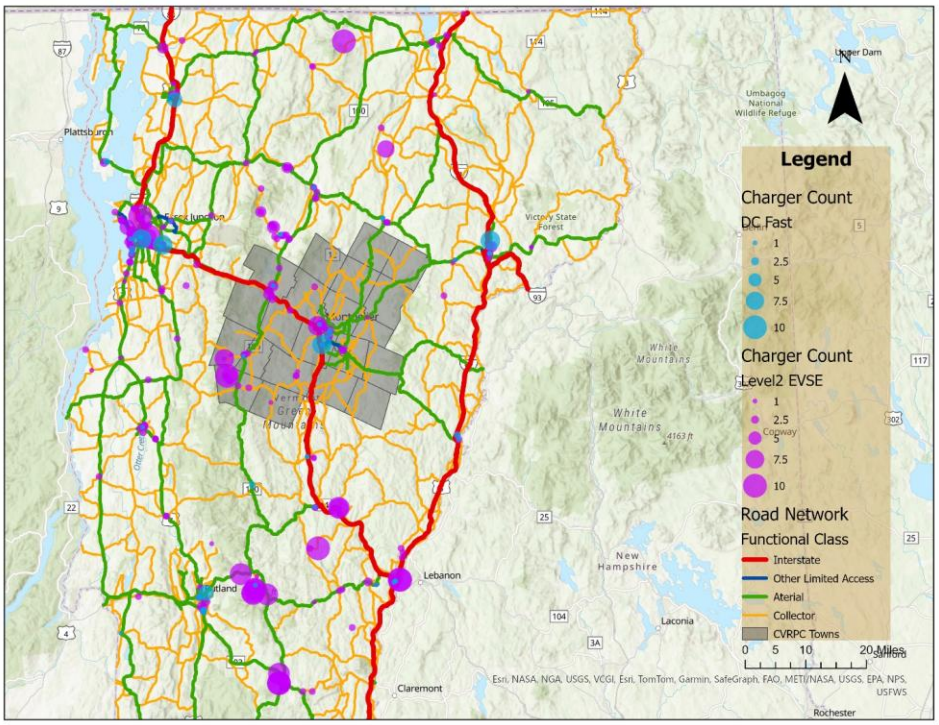
EV adoption rates will continue to be driven by the real and perceived viability of EVs performance in Central Vermont, local electric infrastructure and capacity, and the availability of charging infrastructure. As of spring 2024, there are nearly 400 public EV charging stations across the state[31], though not widely distributed throughout Central Vermont. In Central Vermont public chargers can be found in Cabot, Plainfield, Middlesex, Berlin, Northfield, and Roxbury located at schools, municipal buildings, and food coops; with higher density of chargers located in the Mad River Valley (many at ski resorts), Waterbury, and Montpelier. Figure # shows the locations, numbers, and types of charge points in CVRPC and adjacent regions. While many EV drivers across the state charge at home (typically overnight), increasing workplace and public charging infrastructure has been identified as key to support longer trips/commutes, visitors, or those without charging access at home. CVRPC continues to encourage municipalities and local businesses to install EV charging stations at convenient and desirable locations including workplaces, schools, community centers, recreation sites, libraries, multi-unit buildings, etc., where users could park for several hours in our regional downtowns, village centers, and other designated growth area (e.g. Vt Community Charging program[32]; become a host or solicit community hosts[33]).

The electrification of the transportation sector will require upgrades throughout our energy system. At the residential and commercial scale, panel upgrades are already being integrated into EV and EVSE state and utility programs. Furthermore, meter socket adapters have been developed and now deployed to enable both solar and EV interconnection without a panel upgrade. To minimize costly energy infrastructure upgrades at the distribution and utility scale, demand-management and enhanced coordination via integrated resource planning and long range transmission planning, are critical. Lastly, measures that reduce future electric demand

[31] https://www.driveelectricvt.com/about-evs/charging-map?gad_source=1&gclid=CjwKCAjwtqmwBhBVEiwAL-WAYU8qVxhVDK55M5TSzltPA6SYiVI69Np0Ns-JkkqeFql6e-6UIHCP8xoCsqEQAvD_BwE
[32] https://www.chargevermont.com/
[33] https://survey123.arcgis.com/share/8c15711e4e404a7ca9ed3979640b0121

growth, especially in the thermal sector, will reduce the cost and infrastructure concerns in Central Vermont from EVs (see Energy Chapter and appendix).

EV Charger Location



Continued increasing flexibility in existing programs to address interconnection barriers, and new opportunities to include off-grid chargers and charging to Vermonters with high outage frequencies and duration will be necessary to meet our regional targets. Furthermore, as medium and heavy duty options come on the market, regional or state cohort procurement programs would significantly reduce the difficulty in navigating ever-changing funding programs and allow for the development of best practices suited to local concerns and needs. Increased weight of electric vehicles will also need to be considered in planning and budgeting for roadway maintenance, especially unpaved roads where higher axle weights will increasingly impede traversability during storms and thaws.

Equity considerations must be thoughtfully integrated throughout EVSE planning process to ensure benefits and costs are fairly distributed. Historically, clean energy and transportation innovations have not been deployed evenly across communities -- resulting in higher energy burden, rural, and lower-income communities being left behind. EVSE equity concerns include a project's affordability, accessibility, reliability, location, safety, and related employment and economic opportunities. Drive Electric's Charging Installation Guide provides thorough guidance and workflow for Vermonters and Vermont communities, CVRPC recommends when integrating EVSE into new builds and parking lot upgrades alike, that proximity to electrical panel, zoning setbacks, and other technical considerations are made in addition to including EVSE supported handicap spots.

The VTrans NEVI (National Electric Vehicle Infrastructure) program and the U.S. Department of Transportation's Toolkit for Planning and Funding Rural Electric Mobility Infrastructure offers helpful equity planning considerations and strategies relevant to Central Vermont. When assessing where EV charging stations should be located, engagement with rural, underserved, and high energy burden communities is essential to prevent delayed and diminished access to clean energy and transportation infrastructure vital to a healthy economy. Furthermore EVSE-Ready requirements for new buildings can be explored at the municipal level (see Climate Change and Land Use).

According to the U.S. Department of Energy (DOE), over the long term, EV ownership is typically less expensive than ownership of fossil-fuel vehicles. Additionally, low operation costs make some EVs less expensive on a monthly basis compared to equivalent fossil-fuel vehicles (when the vehicle purchase is financed). Therefore, increased EV adoption in Central Vermont could contribute to community-wide reductions in transportation energy cost burdens. As stated by Drive Electric Vermont, "It costs less to own an EV. Plugging in is like paying $1.50 a gallon, and EVs need less maintenance than gasoline cars." Like fossil fuel vehicles, how cars handle in Vermont's winter and mud seasons varies from make to model. Opportunities for medium and heavy-duty vehicles are expanding; CVRPC strongly encourages municipalities and other fleet operators in the region to consider low-diesel and alternative fuel options when replacing these in their fleet to take

advantage of State and federal incentive programs.[34]

The lowest-carbon modes will always be active modes, including electric-assist bikes (electrocycles or e-bikes). Given the long lead time for full turnover of the residential fleet, it is recommended that a regional trail network paralleling the arterial network be developed to provide safe, conflict-free routes for travelers using active and electric micro-mobility modes. This low-stress arterial network should be paired with local complete streets retrofits in villages and downtowns. At the same time, towns should be leading on the issue by preferentially buying electric when purchasing vehicles for their municipal fleets.

Hidden Resilience Co-Benefits of EVs and EV Charging Infrastructure

Much of the discussion of EVs and EVSE focuses on GHG emissions & fossil fuel use reductions, as well as long term financial benefits to individual households and to the local economy. Perhaps the most appealing co-benefit, however, is that some EVs can provide backup power to communities through vehicle to building (V2B) charging as a microgrid or provide power to grid through vehicle to grid (V2G) charging. Both V2B and V2G can complement other distributed energy resources (DERs), or supplement diesel generators as backup power and a mobile source at that! This is a particularly important aspect of EVs and EVSE for municipal operations (especially town garages), schools, libraries, and other locations that provide critical social and physical infrastructure on a daily, emergency, and recovery basis.

[34] Drive Electric provides the most comprehensive and up to date snap shot of State, Distribution Utility, and Federal incentives, rebates, and inclusions: https://www.driveelectricvt.com/?gad_source=1&gclid=CjwKCAjwtqmwBhBVEiwAL-WAYbmxAzFQ9-5GP2WHd7oP5AzQhS3OPMRCUhERxSZwW2b9d0Fv9rEvyhoCuDIQAvD_BwE , State Diesel Emissions Reduction Assistance Program https://dec.vermont.gov/air-quality/mobile-sources/diesel-emissions/vt-diesel-grant#:~:text=The%20Vermont%20Diesel%20Emissions%20Reduction,diesel%2Dpowered%20engines%20and%20the ; Vermont Clean Cities Coalition provides direct support to municipalities https://cleancities.energy.gov/coalitions/vermont#:~:text=The%20Vermont%20Clean%20Cities%20works,advanced%20vehicle%20technologies%20in%20transportation

Historic and Natural Transportation Assets

Commented [KP136]: Text and table taken from the new draft Transportation chapter. Discussion of scenic roads is needed to support section (C) of State Goal 5 and as a part of the transportation element.

Historic Site Markers

Unveiled in 1947 by the Vermont Legislature, the Roadside Historic Site Marker program has proven an effective way to commemorate Vermont's many people, events, and places of regional, statewide, or national significance. Nearly 310 cast-aluminum green markers, crested with the distinctive gold state seal, are placed throughout Vermont to provide a fascinating glimpse into the past and insights into the present. Vermont's easily identifiable roadside historic site markers commemorate diverse topics. An online map of these markers is available at: http://roadsidemarkers.vermont.gov/

Historic Markers by Town

Town Name	Specific Location
Duxbury	- Views from Route 100, especially those north to Mount Hunger, south the Northfield range, and the views of Camels Hump in South Duxbury - Views of Camel Hump, especially those from Ward Hill and Scrabble Hill and Mountain View - Views from River Road and Duxbury Corner across the Winooski River valley to the Bolton ridgeline
Moretown	- Valley land along the Mad River and Route 100B at the Waitsfield town line - Route 100B is recognized as a Scenic Byway
Warren	- Forest Reserve district - Meadowland Overlay district - Route 100 corridor near Sugarbush
Williamstown	- Waterfall area of Falls Bridge Road
Woodbury	- Nichols Ledge - Ridgeline of Woodbury Range - Surface waters that distinguish Woodbury as the "Land of Lakes and Ponds"
Worcester	- North Branch Cascades Trail - Route 12, especially north of the village through the Worcester Woods - Worcester Mountain Range

"In 1991, through the Intermodal Surface Transportation Efficiency Act (ISTEA), the U.S. Congress created the National Scenic Byways Program as an effort to "identify, designate, and promote scenic byways and to protect and enhance the archeological, cultural, historic, natural, recreational, and scenic qualities of the areas through which these byways pass." (VTrans Byways Manual)

Scenic Byways

A "Vermont Byway" is a road that has been formally recognized by the Vermont Transportation Board as having special scenic, historic, recreational, cultural, archeological and/or natural qualities. For a road to receive "byway" designation, it must be nominated – a process usually

initiated at the municipality level – and subsequently evaluated and certified. Byway designation can be used as a marketing tool, a framework to develop management strategies for natural and cultural resources, and a means of accessing federal transportation dollars. Full background and process for The VT Byways Program can be found in the program manual.

Funding for Town Transportation Projects

Table # shows funding programs available to municipalities for planning and implementation purposes. CVRPC is happy to assist in finding funding from state and federal programs and agencies.

Commented [KP137]: This section was added from the new draft Transportation chapter. Statute requires that the Transportation Element contain "recommendations to meet future needs for such facilities, with indications of priorities of need, costs, and method of financing." As well, in the VTrans review of the NRPC plan, they state that "While those goals and prioritization were identified, there was not a specific identified potential source of funding to accomplish these."

Transportation Funding Programs

Program	Funding Available	Municipal Costs
Bridges		
VTrans- Town Highway Structures Program for short bridges < 20'	State funds-$175,000	80/20 match, may be reduced to 10% w/ requirements (highway study and standards requirement)
Vermont State Infrastructure Bank	1% fixed loans up to 30 yrs., 10-20% borrower equity contribution	Fees for loan, can take up to 5 yrs to begin repayment but still must complete in 30 yrs.
FEMA- Hazard Mitigation Grant Program (HMGP)	15% of Public Assistance w/in ~12 months of a disaster. Must have a benefit cost analysis. Usually 3-5yr time line.	75/25 cost, reimbursement grant
FEMA- Building Resilient Infrastructure and Communities (BRIC)	State allocated 2 million/yr. beyond that nationally competitive	75/25 cost, reimbursement grant.
Town Highway Bridge Program	Varies- coordinate with RPC	Varies-minimum 10% match
Culverts		
VTrans-Better Roads -Category B-road drainage, Cat. C- streambank, shore, and slope stabilization	Up to $60,000 for either 1 large or multiple small culverts	80/20 cost-local match can be covered using labor, equipment and materials
VTrans-Grants in Aid- road drainage	To be determined by program manager and budget for year	80/20 cost-local match can be covered using labor, equipment and materials
Federal- through VTrans-Municipal Highway & Stormwater Mitigation Program-	To be determined by program manager and budget for year	80/20 cost- reimbursement program, usually take 3-5 yrs.
VTrans- Town Highway Structures Program for culverts greater than 36"	State funds-$175,000	80/20 match, may be reduced to 10% w/ requirements (highway study and standards requirement
VTrans- Town Highway Structures Program for class 2 roads culverts under 36"	State funds-$175,000	70/30 match, may be reduced to 20% w/ requirements (highway study and standards requirement
FEMA- Hazard Mitigation Grant Program (HMGP)	15% of Public Assistance w/in ~12 months of a disaster. Must have a benefit cost analysis. Usually 3-5yr time line.	75/25 cost, reimbursement grant.
FEMA- Building Resilient Infrastructure and Communities (BRIC)	State allocated 2 million/yr. beyond that nationally competitive	75/25 cost, reimbursement grant.
Fish and Wildlife Fish Passage: USFW-grant	Contact Regional Fish Passage Coordinator	Match varies from none to 50%
General Transportation		
Municipal Highway and Stormwater Mitigation Program	$1.5 million federal funding annually	80% Federal – 20% Local
Better Roads Program	Varies by purpose	
VTrans Municipal Grants in Aid Program	technical support and grant funding to municipalities to promote the use of erosion control and maintenance techniques that save money while ensuring best management practices	
VTrans Capital Program (VPSP2)	Very high cap	80% federal with 20% State and/or Local match
Better Connections	$260K statewide	90% state - 10% local match for multimodal projects
Bicycle and Pedestrian Grant Program	Varies by purpose	Varies by purpose

Regional Transportation ~~Plan~~ Recommendations

Specific ~~project~~, program and policy recommendations are presented on the Regional and corridor levels ~~to address the issues identified in the performance assessment and during public meetings held in the Central Vermont Region~~. The recommendations also address the need for Regional planning and cooperation on transportation issues, transportation funding, and mitigation of development impacts to the transportation system, and the project development process. ~~The Regional Transportation Plan also recommends ways to improve the transportation- land use connection based on ideas developed during a public workshop, and includes suggested changes to CVRPC policies for defining the Regional significance of transportation projects and how transportation should be considered in growth area planning.~~

Commented [KP138]: Specific projects were listed in the previous RTP but are not listed in the goals/policies below.

Commented [KP139]: Outdated.

Commented [KP140]: References specific components of the old RTP.

Vision and Mission for Transportation in the Region

To emphasize the scope and scale of the Regional transportation issues facing Central Vermont and its communities, CVRPC established a vision and mission statement to guide the development of transportation goals, policies, and action items.

Vision - “To maintain and develop a transportation system that facilitates travel while preserving the Region’s character.”

Mission - "Preserve, enhance, and develop an integrated, multi modal Regional transportation system to accommodate the need for movement of people and commerce in a safe, cost-effective, environmentally responsible, and equitable manner, that conforms with other elements of the Regional Plan."

The vision and mission statements provide an overall direction that CVRPC believes should be followed. To guide these steps, CVRPC established a series of nine goals that further define this direction. These goals are described below, as well as the policies written to provide guidance of how

the goals can be achieved.

Transportation Goals and Policies

Transportation Goal 1:

To achieve a Regional transportation planning process that is comprehensive, multi-modal, and public, and is integrated with Regional and local land use planning as outlined in the Central Vermont Regional Plan.

Policies:

1. Encourage municipalities' analysis of transportation needs at the local level, including the relationships between development patterns and transportation needs, and which considers various modes of travel.

2. Encourage coordination and cooperation in comprehensive transportation planning among the various municipalities in the Region and at the Regional, State, and private levels.

3. Undertake a comprehensive Regional analysis of existing and anticipated travel behavior and multi-modal approaches to accommodating anticipated travel demand.

4. Balance Regional and local decision-making, and flexibility in transportation planning, when conflicts develop between local and State plans.

5. ~~Promote a project prioritization process that takes the goals of the Regional Transportation Plan into consideration.~~

Commented [KP141]: References old RTP.

6. Promote open and inclusive public participation in the multi-modal planning and development of transportation projects.

7. Support the planning and design of the Region's transportation system to encourage development and redevelopment in existing villages, downtowns ~~cities~~, and planned growth and village areas ~~designated growth centers~~.

Commented [KP142]: Updated to reflect changes to state designation program after Act 181.

8. Encourage the full integration of transportation and land use planning at the Regional and local level.

Transportation Goal 2:

To preserve and maintain the existing transportation system.

Policies:

1. Support the necessary steps for evaluating, prioritizing, and implementing preventive maintenance programs for all elements of the transportation system.

2. Promote a funding strategy that realizes maximum use of all available resources to ensure adequate maintenance of the existing transportation system.

3. Encourage development patterns that reflect the planned capacity of the transportation system. Level of Service C will be taken as the preferred condition. Level of Service D should be accepted within the more urban, built-up sectors of the Region (for example: Montpelier, Barre City, Northeast Berlin, South Barre, Waterbury Village, Northfield Village, Waitsfield Village, and Irasville).

Transportation Goal 3:

Enable the transportation system to operate at it's highest efficiency by managing travel demand and encouraging shifts to under-utilized and more efficient travel modes.

Policies:

1. Develop a strategy that encourages maximum use of all available transportation resources and allocates those resources to the optimum functioning of the transportation system.

2. Support the education of the Region's employers in the development of Travel Demand Management Programs (e.g. tele-commuting, flextime, compressed work weeks, ride-share matching, preferential parking, commuter fringe benefit, etc.). Facilitate the establishment of Transportation

Management Associations to organize and administer TDM programs.

3. Educate the public on modal choices available.

4. Encourage preservation of existing rights-of-way for future transportation purposes. In particular, work to retain abandoned railroad rights-of-way for transportation uses such as trails and bike paths.

5. Consider new or expanded public transit services that serve intra-Regional and intercity travel needs.

6. Encourage full accessibility to the Region's transportation services for the Region's residents in need.

7. Establish aggressive, but realistic, targets for modal shares along Regional transportation arteries.

8. Support updating and optimization of traffic signal timings on a regular schedule and coordinate where appropriate.

9. Market public transit to new users.

Transportation Goal 4:

To integrate modes of travel in order to allow for their most effective use and ultimately reduce dependence on single occupant vehicles.

Policies:

1. Encourage the development of park and ride lots for car and van pools, and encourage employers to provide incentives to car and van pool users.

2. Promote physical and operational connections between various modes of transportation.

3. Ensure adequate mobility for all segments of the population, including residents who cannot or do not use private automobiles.

4. Foster a sense of mutual respect among users of the various modes of transportation.

5. Encourage the availability of multiple options for the movement of people and goods.

Transportation Goal 5:

To establish a transportation system that minimizes consumption of resources and maximizes the protection of the environment.

Policies:

1. Support efforts to minimize negative environmental impacts associated with the transportation system (including air quality, noise levels, surface water, vegetation, agricultural land, fragile areas, and historical/archaeological sites).

2. Encourage the preservation and enhancement of scenic views and corridors.

3. Support efforts to minimize energy consumption, especially nonrenewable energy resources, and explore expanded use of alternative fuels.

4. Factor direct and indirect costs and benefits into decision-making. Impacts that are not easily expressed in dollar values should also be considered.

5. Promote public awareness of the environmental impacts resulting from use of the Region's transportation system.

6. Promote a transportation system that encourages concentrated development, allows greater access to residences, employment, and services, and facilitates car pooling, bus and rail service, and non-motorized travel.

Transportation Goal 6:

To make necessary improvements to achieve a transportation system appropriately structured and designed to safely, effectively, and economically move goods and people.

Policies:

1. Encourage the appropriate scale and design of streets, highways, and other transportation infrastructure to serve local traffic, destination traffic, and through traffic.

2. Foster a neighborhood street system characterized by a network of interconnected streets that minimizes through traffic in residential neighborhoods.

3. Promote safety-targeted measures at High or Potential Accident Locations, and promote traffic safety Region-wide.

4. Promote projects that limit the conflicts between the motor vehicle traffic stream, pedestrians, and the rail system.

5. Encourage access management policies that reduce traffic congestion and maintain capital investment.

6. Consider new facilities when demand warrants (e.g. when alternatives to reduce congestion and improve safety have been attempted) and/or when other strategic state, Regional, or local goals apply.

7. Foster a sense of safety and comfort for riders of public transit.

Transportation Goal 7:

Promote a transportation system design that strives for aesthetic and functional characteristics that improve the quality of life.

Policies:

1. Support the design of visually attractive and durable infrastructure such as road- ways, pathways, and bridges.

2. Support high architectural standards for terminal buildings, stations, shelters, garages, and other facilities.

3. Respect and enhance the built environment by restoration of period transportation structures where possible, and maintain the natural environment through architectural, landscaped, and engineered features.

4. Encourage traffic calming efforts to minimize conflicts between traffic and surrounding neighborhoods.

5. When feasible, encourage restoration or preservation of historic bridges.

6. Foster improvements that are contextually appropriate.

Transportation Goal 8:

To promote a Regional transportation system that preserves and enhances residential and economic development potential in growth areas.

Policies:

1. Provide transportation system improvements at locations where they will or can serve growth areas.

2. Foster transportation and commerce links that contribute to the economic health of the Region.

3. Encourage transportation system improvements that renew and improve downtowns, growth areas, and neighborhoods.

Transportation Goal 9:

To promote a Regional public transportation system.

Policies:

1. Provide for basic mobility for transit-dependent persons.

2. Support public transit that provides access to employment.

3. Encourage congestion mitigation to preserve air quality and the sustainability of the highway network. Support public transit that advances economic development with emphasis directed toward tourist areas.

5. UTILITIES, FACILITIES AND SERVICES ELEMENT

Public and private utilities, facilities, and services play a critical role in providing for the health, safety, and welfare of Central Vermont's citizens. All of us depend, in one way or another, upon water distribution systems, solid waste and sewage disposal, police and fire protection, health services, schools, parks, and electric power and information technology.

The location, condition and availability of services and facilities can have a profound influence on growth and development in a region. Homes, businesses, and industry tend to concentrate where utilities and facilities are readily available, while areas remote from infrastructure and services are more costly and difficult to develop (they often contain important natural resources as well). Hence, communities and regions, through the thoughtful placement of infrastructure, may direct growth to the most suitable location, or away from areas where change may have undesirable impacts.

The condition and scale of utilities also needs to be considered. Where facilities are over-sized and under-utilized they may encourage unplanned growth, or operate inefficiently and at unnecessary financial expense to residents. For systems that are at capacity and/or outdated, further development may cause environmental damage. Failure to upgrade urban systems may stall new growth or push it away from growth-designated areas. Communities and regions can avoid the above scenarios through the appropriate timing and sizing of infrastructure improvements.

Electric Power

~~It goes without saying that electric power is a vital component of life in modern America. When our sources of power are lost, even temporarily, as a result of weather conditions or technical difficulty, the result may be chaos and hardship. Perishables perish, business and industry halts, and the rhythms of domestic life are profoundly interrupted.~~

Commented [KP143]: The Electric Power and Utilities sections from the 2016 Regional Plan are outdated. Policy oriented language has been incorporated into the new text added below.

DRAFT

As the Region grows, so does its demand for reliable and affordable electricity, but existing sources of electric power are limited and the costs of developing new ones are dear. Neither is electricity completely benign in its impacts. Its generation, transmission, and distribution raise issues of environmental protection, public health, land use and aesthetics. Fortunately, studies have shown that kilowatt- hours can be saved at an expenditure of far less than it takes to generate them; furthermore, conserving electricity creates jobs, conserves natural resources, curbs pollution, and expands opportunities for self-reliance too.

Vermont has become a leader in the move towards energy independence and is undertaking an ambitious renewable energy program that could at least put it on a path toward obtaining 90% of its energy from renewable sources by 2050.

These facts did not escape the Department of Public Service (DPS) as it prepared its Comprehensive Energy Plan as directed by Executive order # 79. A fundamental theme of the DPS plan is its promotion of "least cost integrated planning" as "a way for electric utilities to plan for a portfolio of supply resources, demand-side management programs, and transmission and distribution improvements that will enable the company to serve its customers at the lowest life-cycle cost, including environmental and economic costs."

Regional electric markets have restructured, and electricity is now sold in a regionally competitive market. Recent narrowing between Vermont retail electric rates and New England rates is due in part to low natural gas prices driving costs down elsewhere in the region. However, challenges remain to carry out transmission upgrades needed in the years ahead and to ensure that long-term electricity needs are met in a cost-effective and environmentally-sustainable manner.

CVRPC's desire to ensure that energy generation, distribution and transmission facilities are located, designed and sized to support the Region's economic and life-style demands with minimal adverse impact, supports, and is supported by, the concept of "least cost integrated planning" and its attendant objectives.

DRAFT

The activities and choices of the area's utility companies can have direct and indirect impacts on land use (both locally and elsewhere). Locally, distribution line extensions can spur residential, commercial and industrial growth. Decisions regarding future power sources will also have regional or even global impacts.

Electric Utilities

Five different utility companies provide power to Central Vermont's homes and businesses. As of 2009, the majority of the electric power they provided came from Vermont Yankee, Hydro Quebec, and the Ryegate and McNeil wood generating systems. Residential users demand about half of this power. (Further analysis of energy uses and sources can be found in the Energy Element.)

Green Mountain Power (GMP) is the Region's largest utility, serving a population of about 26,000 in Central Vermont. GMP's customers are located primarily in the more populous valley areas such as Barre, Montpelier, and many of the Region's villages. GMP is continually expanding and upgrading their facilities to meet new growth. According to Vermont Public Service, GMP's output in 2005 was 2,007 mil- lion kWh2.

GMP also provides electric power to about 500 customers in Roxbury and Northfield and serves 123,048 residential customers and 17,851 commercial customers in total with output in 2005 of 2,300 million Kwh3.

The Washington Electric Cooperative Inc. (WEC) provides electricity to more rural areas throughout Central Vermont. Its service territory covers a larger area in Central Vermont than any other utility with 10,170 customers. Due to the rural nature of WEC's service area, residential users account for an unusually high percentage of total demand. In 2005, WEC's output was about 69 million kWh2.

The Cooperative is committed to the concept of least cost integrated planning as evidenced by its recent initiatives including programs to identify and install electrical efficiency measures in homes demonstrating high and moderate electricity use, such as: dairy farms, schools, small businesses, and new construction, as well as its recently released Interim Integrated Resource Plan. WEC is a member-owned utility run by a 9-person board

~~elected by co-op members.~~

~~A small number of Central Vermonters residing in the Towns of Calais and Woodbury are serviced by the Hardwick Electric Department. This utility serves about 4,300 residential customers and 307 commercial customers total with a 2005 out- put of 32 million KWh3. The department is planning to expand its customer base in both of these towns.~~

~~The Northfield Electric Department serves about 1900 customers in Northfield and part of Roxbury with service to 1,646 residential customers and 254 commercial customers and a 2005 output of 27 million kWh3.~~

~~The Vermont Electric Power Company, Inc. (VELCO) provides the bulk of electrical transmission network (voltages 115 kv and above) for the entire state of Vermont. VELCO serves 14,705 residential customers and 547 commercial customers and 50 industrial costumers throughout the state. In the Central Vermont region VELCO has a 115 kv transmission line which leads from Wilder, Vermont, connecting with sub- stations in Williamstown, Barre, Berlin, and Middlesex before continuing on to Essex with a 1999 output of 1238 million kWh. VELCO also maintains a 230 kv line extending from its Williamstown substation to Comerford, New Hampshire3.~~

~~To reinforce its transmission system VEC installed a static compensator in Essex. VEC in recent years has also increased the voltage the major transmission line be- tween Cavendish and West Rutland to serve the growing electrical load. It is company policy to use existing transmission corridors to accommodate expansion "wherever possible."~~

Energy Infrastructure: Electricity

This section details existing infrastructure including generation, key trends, and challenges (including outages). Energy analyses and targets for the electricity, thermal, and transportation sectors, renewable energy generation siting, and recommendations can be found in the Energy Chapter.

Commented [KP144]: The Energy Infrastructure section was added from the 2024 Readoption to show current trends, updated descriptions of DUs and maps that support statutory requirements of the Utilities Element and the Energy Element.

Energy is a vital component of modern life. When sources of power are lost or interrupted, even temporarily, the rhythms of our lives are profoundly interrupted. Business and industry halt and residents and goods dependent

DRAFT

on electricity and other types of power are at great risk. Our electric infrastructure in Vermont is increasingly vulnerable to extreme weather conditions due to climate change. This comes at a time when we anticipate significant increases in demand for reliable and affordable electricity due to overlapping causes including addressing rural infrastructure gaps, regional growth and development, increasing need for heating & cooling, as well as electrification of the thermal and transportation sectors.

While existing and potential sources of electric power in the region are more than adequate (see Enhanced Energy Element), the region's electric infrastructure is aging and reaching performance limits. While the costs of developing new infrastructure are high upfront, potential long-term cost savings are increasing as technology is rapidly advancing and markets are shifting to match need and the urgency of the climate crisis. Integrating renewable energy infrastructure more comprehensively into all scales of our planning across the region is important to not only maximize associated community benefits but also to minimize negative environmental and land use impacts of electric generation, transmission, and distribution (see Enhanced Energy Element). CVRPC's objective is to ensure that energy generation, distribution and transmission facilities are located, designed, and correctly-sized to support the Region's community and economic needs, which increasingly means it must be reliable, resilient, and affordable as well as sustainable to reduce operational costs and Green House Gas emission contributions (further reducing long-term costs).

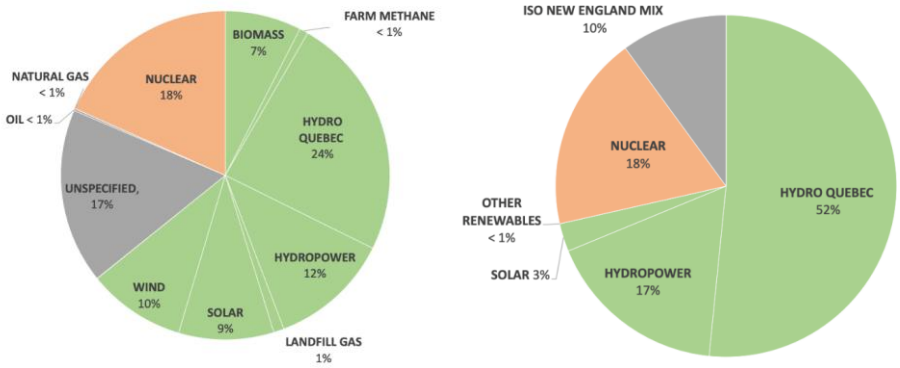
Electric Distribution Utilities (DUs)

In 2021, Vermont distribution utilities purchased over 5.8 million MWh of electricity to meet the demand of their customers, of this 64% came from renewable resources and 18% came from carbon free resources. Also in 2021, Vermont distribution utilities retired just over 4 million renewable energy certificates[35] (i.e. equivalent to just over 4 million MWh of electricity) to meet their obligations under Vermont's Renewable Energy Standards, of this 72% of the electricity Vermont accounted for was renewable; including

[35] Renewable energy credits (RECs) are the accounting system used to track all renewable electricity generation in or sold into ISO New England's regional electric system (ISO= Independent System Operator). These certificates ensure no two entities claim credit for that electricity, and provides a mechanism to buy and retire (aka take credit) for renewable energy generation regardless of their own production and use (or rather to compensate for it).

DRAFT

nuclear, 90% of it was low-carbon[36].



2021 Vermont Electricity Characteristics

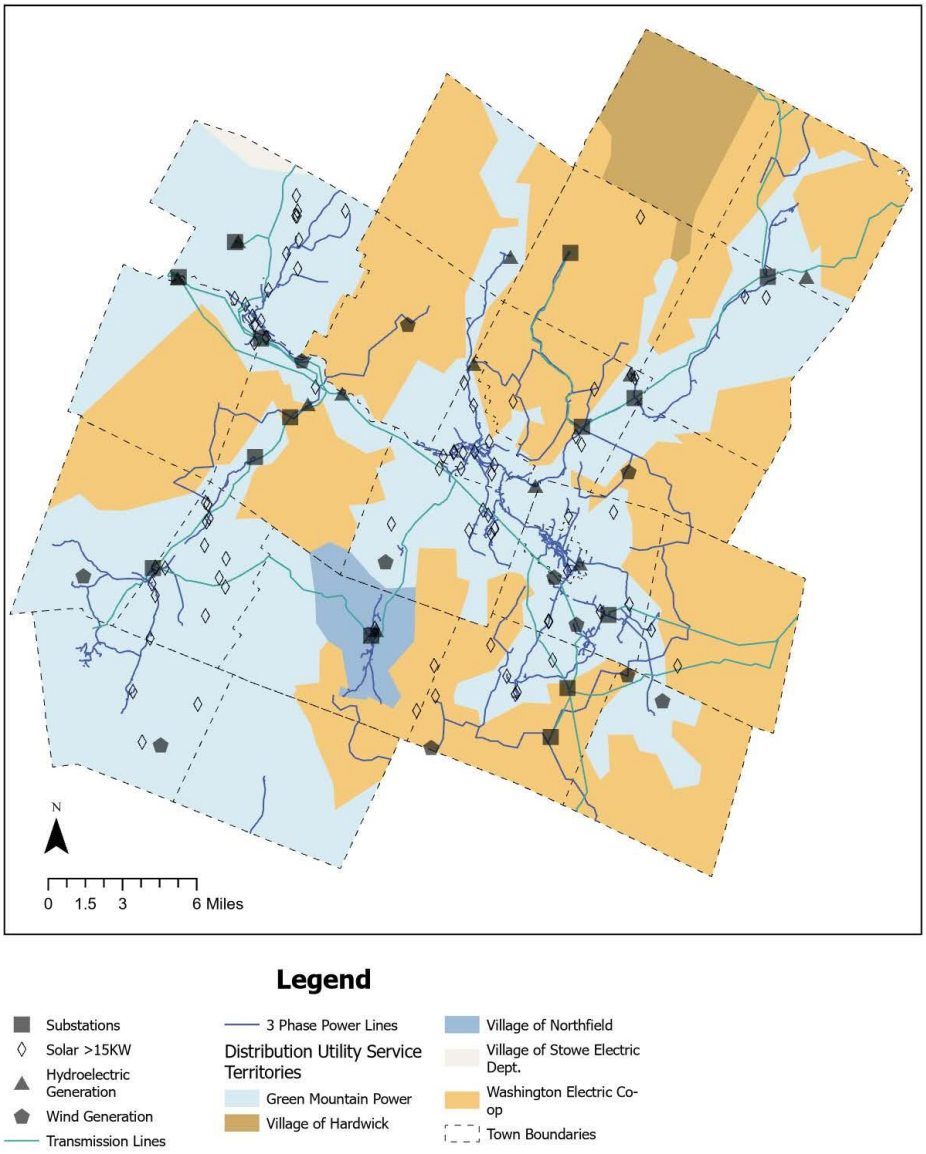
The left shows the electricity Vermont utilities generated and bought to meet demand, the right shows how renewable Vermont's electricity is considered based on renewable energy certificates (Department of Public Service Webinar: Where Does VT Electricity Come From? https://publicservice.vermont.gov/sites/dps/files/documents/Webinar%201%20-%20Where%20does%20VT%20electricity%20come%20from.pdf)

Central Vermont is served by four different distribution utility companies including Green Mountain Power, Washington Electric Cooperative, the Northfield Electric Department, and the Hardwick Electric Department (see Table #, below, for customer counts and types by town; and Figure # for DU territory). Green Mountain Power (GMP) and Washington Electric Cooperative Inc. (WEC) are the region's primary distribution utilities, geographically covering most of the region. Central Vermont is unique in that most municipalities are served by at least two distribution utilities (exceptions are Warren, Waterbury, and Barre City served only by GMP; Northfield, Moretown, Berlin, and Calais are each served by 3 DUs). GMP territory is located primarily in the more populous valley areas such as Barre

[36] See 3 one-page resources for more info: *Where does Vermont's electricity come from*, *Current policies & programs*, *and Tradeoffs between different sources of electricity*- these were made as part of the Say WATT? Regional Event Series in the fall of 2023 during which the Department of Public Service partnered with the RPCs to offer a series of engagement opportunities for Vermonters to weigh in on renewable electricity policies and programs: https://publicservice.vermont.gov/renewables

City, Montpelier, and many of the villages along the major transportation routes (Figure # above); WEC territory fills in the more rural, and primarily residential, areas. Northfield Electric serves part of Northfield, as well as small parts of Moretown and Berlin; The Hardwick Electric Department serves much of Woodbury and a small sliver of Calais. Three phase power is limited in the region to where GMP provides it (see Figure # above), this is important for siting distributed generation projects but not absolutely required for most residential and even some smaller municipal/commercial plants.

DRAFT



Map CVRPC Distribution Utility Territory and Infrastructure (substations, transmission lines, 3 phase power lines)

Customer/Member by Town and Distribution Utility (DU)

	GMP	WEC	Northfield	Hardwick
Regional Total	27,246	7,167	2,200	738[37]
Barre City	4,525			
Barre Town	3,745	412		
Berlin	1,398	83	*	
Cabot	297	508		
Calais	121	733		*
Duxbury	208	471		
East Montpelier	599	753		
Fayston	710	346		
Marshfield	547	202		
Middlesex	306	578		
Montpelier	4,794	18		
Moretown	585	325	*	
Northfield	271	289	2124[38]	
Orange	55	494		
Plainfield	406	355		
Roxbury	269	111		
Waitsfield	1,376	50		
Warren	2,494			
Washington	334	223		
Waterbury	3,072			
Williamstown	901	892		
Woodbury		78		
Worcester	233	246		

Customer/Member by Type and Distribution Utility (DU)

DU	Dairy Farm	Residential	Commercial	Large Power	Total
GMP		22,337	4,909		27,246
WEC	33	6,725	398	11	7,167
Northfield					2,200
Hardwick					738

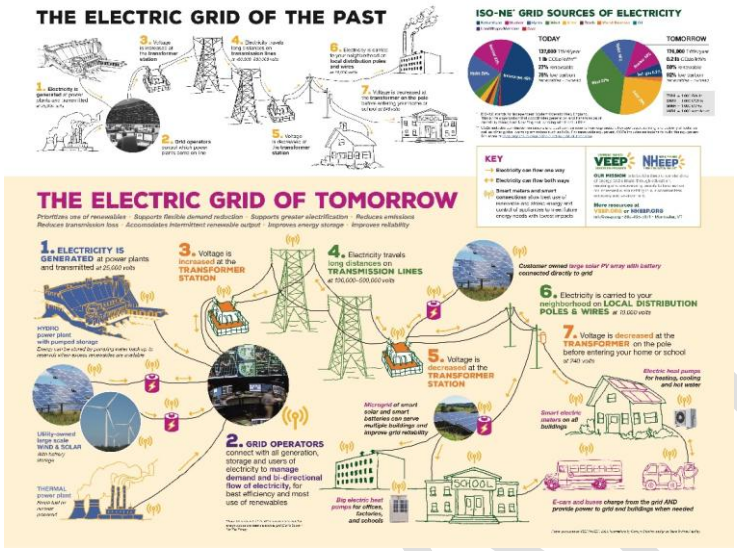
[37] Northfield Electric and Hardwick Electric did not provide updated customer counts by towns, these numbers come from their Integrated Resource Plans and the number from Hardwick Electric specifically reflects the number of customers on the Woodbury Circuit which may or may not reflect the true total customers in the region (a map of their circuits is not available online). Data requests were sent over the course of Fall 2023 and Winter 2024.

[38] Northfield has not provided specific customer counts by town; 2200 customers are served according to the Integrated Resource Plan; Efficiency VT data reported 2,124 residential premises served in Northfield, subtracting those reported by GMP and WEC gives this number although it should be noted that Efficiency Vermont data is simply given as residential premises not customers.

The Washington Electric Cooperative Inc. (WEC), a member-owner utility run by a 9-person member elected board, provides electricity to the more rural areas throughout Central Vermont. Its service territory covers a larger area geographically in Central Vermont than any other utility, serving approximately 7,167 customers. Due to the rural nature of WEC's service area, residential users account for an unusually high proportion of total demand; furthermore, the rural infrastructure is not co-located as often with roads nor hardened (buried), making it both more susceptible to Vermont's increasingly frequent extreme weather and more difficult to maintain and repair.

Central Vermont has 32 substations in 14 of our towns; most towns are at least partially served by additional substations outside the region. Distribution substation location, condition, and headroom capacity are important to consider when proposing distributed generation (DG) projects (see Enhanced Energy Element for a description of barriers and costs). Ultimately, the different distribution utilities in our region have unique challenges and benefits, most towns can utilize coverage by 2 or more DUs to maximize opportunities and minimize limitations, however at the individual scale this is rarely possible. The municipality can thus play a critical role in supporting residents and businesses to access key energy opportunities including renewable generation and storage, EVSE, energy efficiency measures, and more (see Enhanced Energy Element).

DRAFT



Electrical Grid Systems Primer, Poster from Vermont Energy Education Program[39]

Electric Transmission

The Vermont Electric Power Company, Inc. (VELCO) manages the safe, reliable, cost-effective transmission of electric power throughout Vermont and as part of the integrated New England regional network. VELCO updates its Long Range Transmission Plan every 3 years. The 2021 Long Range Transmission Plan[40] highlights that peak demand is forecast to grow due to accelerating electrification of the heating and transportation sectors. While the transmission system has sufficient capacity to serve expected future demand for the first 10-years of the 20-year planning horizon:

- Load management is necessary to serve high electrification loads consistent with Vermont's total energy goals in the 20-year planning horizon;

[39] Vermont Energy Education Program provides resources and curricula including additional posters on Energy Audits and Actions, Heating Vermont Homes, Vermont's Climate Action Plan, VT Electricity Use and Sources, the Climate Impact of Getting to School and more (https://veep.org).
[40] https://www.velco.com/assets/documents/2021%20VLRTP%20to%20PUC_FINAL.pdf

- Currently, DG projects are reviewed on a project-by-project basis without regard to transmission system impact; to prevent further stressing transmission and distribution systems, careful coordinated statewide planning is required to successfully integrate future distributed generation and storage without significant grid reinforcements;
- There are sub-transmission scale reliability issues (categorized as causing high or low voltage, or a thermal overload in which equipment exceeds its rate temperature).

As DUs take on more and more interconnection of distributed energy projects, coordination between VELCO, DUs, the region[41], and municipalities will be increasingly important to ensure not only Vermont and its stakeholders can meet their respective goals, but that we do so in a manner that minimizes negative impacts to our landscapes and natural resources and maximizes benefits to all Vermonters foremost those who have been disproportionately burdened by energy costs and reliability issues to build resilience for all. CVRPC continues to work with DUs to integrate their Integrated Resource Planning into regional and municipal planning and project development and to advocate that regional and municipal energy planning and goals in turn are considered in their Integrated Resource Planning Processes.

Efficiency Utility

Efficiency Vermont is the statewide energy efficiency utility; it provides technical advice and financial incentives to residents, businesses, non-profits, and municipalities alike to reduce their energy use and costs with efficiency buildings, equipment, and lighting. CVRPC works closely with Efficiency Vermont to connect municipalities with opportunities and to provide support to energy committees and coordinators with resources for their communities. CVRPC also works with Efficiency Vermont to provide data on consumption and efficiency measures implemented, as well as to adapt incentives programs and support in recovery situations (e.g. July 2023 floods). More information about energy efficiency and conservation, as well as supporting partners can be found in the Enhanced Energy Element of this

[41] noted also by the Department of Public Service in the 2022 Vermont Comprehensive Energy Plan (e.g. pages 68, 87) https://publicservice.vermont.gov/sites/dps/files/documents/2022VermontComprehensiveEnergyPlan_0.pdf

DRAFT

plan. Additional key partners include Capstone Community Action who provide income-based fuel support, weatherization, and more to community members with the lowest incomes and highest needs.

Existing Generation & Storage Facilities

For an in-depth discussion of future renewable generation in the context of demand and energy planning see the Enhanced Energy Element, this section summarizes existing energy infrastructure including non-combustion-based renewables (solar, wind, and hydroelectric), combustion-based renewables (biomass specifically for electricity generation- for discussion on biomass and the thermal sector see the Energy chapter), nuclear energy, and fossil fuels (as categorized by the 2022 State Comprehensive Energy Plan).

There is one remaining fossil fuel peaking power plant in Central Vermont in Berlin run by Green Mountain Power:

Regional Fossil Fuel Generation

Resource Type	MW	Town	Name	Details
Fossil Fuels	46.5MW	Berlin	Berlin 1	Gas Turbine, 46yo. Largest peaking plant in VT consisting of a gas turbine generator and 2 engines run on low-sulfur kerosene fuels. Full winter output is 50MW; 40MW in summer. Improvements were made in 2008, 2012, 2013, 2019, and 2020[42].

Existing Renewable Energy Generation has noticeably increased since the last plan:

Existing Renewable Electricity Generation

Existing Generation	2024		2016	
Resource Type	MW	MWh	MW	MWh

[42] page 192 of Green Mountain Power's 2021 Integrated Resource Plan https://greenmountainpower.com/wp-content/uploads/2021/12/2021-Integrated-Resource-Plan.pdf

Solar	41.7	53876.4	24	29,919
Wind	0.24	473.04	0.14	486
Hydroelectric	26	134,861.4*	25	88,467
Biomass (wood, methane, farm biogas)	0	0	3	13,091
Total Existing Regional Renewable Electricity Generation	68	189,211	52.14	131,963
Total Storage	7.95MW**			

Sources: Distributed Generation Survey (Distribution Utilities, Public Utilities Commission, Department of Public Service), Distribution Utilities Integrated Resource Plans, Federal Energy Regulatory Commission, Low Impact Hydropower Institute (Hydroelectric), Town Plans, State Comprehensive Energy Plan.
**calculated using constants provided in the supplement (consistent with those used by the Public Service Department and the Generations Scenarios Tool), except for hydroelectric which was taken directly from DUs IRPs, FERC, and LIHI.*

The closure of the Moretown Landfill is a significant change for Central Vermont; while there are thus no longer biomass electricity generation facilities in the region, WEC acquired a significant portion of their power to serve their territories including Central Vermont from the Coventry Landfill facility among others biomass facilities just outside the region. CVRPC does not anticipate biomass becoming an electricity generation source in the region, although it plays a critical role in the thermal sector for both space and water heating and will continue to be a key resource for residential heating in particular (see Enhanced Energy Element).

The region's hydroelectric facilities, though few in number, make up over a third of the region's renewable generation, balancing ecological considerations, flood management, and energy generation potential at these and potential future sites is a high priority topic for future planning efforts (see Map of existing and potential hydroelectric sites in the Enhanced Energy Element). These are not new resources, despite the contrast in the table above, they were not reported in the previous plans assessment which likely was sourced specifically from the distributed generation inventory (DG Survey, see below) based off the Public Utilities Commission which focuses, generally, on smaller projects most participating in the State's net-metering program.

DRAFT

By and large the most change has been solar generation; in terms of numbers most are small residential scale plants (many, but certainly not all, are rooftop- we do not have data specifying the type. Below, in the table of renewable distributed generation in our region (<5MW), there is a clear preference, or at least ability to access and implement, smaller scale projects.

Distributed Generation Projects <5MW (DG Inventory as of 2/2024)

Total from DG Survey (not regional total)	MW	# Projects	
Generation <15kW Category I	14.69856	2233	Residential scale- most solar.
Generation 15kW to <150kW (Category II)	6.56739	184	Generally includes Municipal/Community Scale (not limited to)
Generation 150kW to <500kW (Category III)	6.18665	23	Currently have to be preferred sites to participate in net metering
Generation 500kW+	22.944	23	
DG Total:	50.3966	2463	

Source: Public Service Department 2/1/24, Current DG Survey (<5MW), see Methodology for aggregation below

This is very much in line with the results of community engagement efforts CVRPC conducted in the fall of 2023 in partnership with the Department of Public Service and the other RPCs. CVRPC found that in addition to consistent support for a diversity of renewable resources, that support was bounded by scale- as in support decreased with the scale of the project increasing (see full report[43]). CVRPC has found both in these engagement opportunities and while working with municipalities more broadly, technology type is not generally the key factor except for strongest opposition. Instead scale, location, and perceived community benefits/burdens are important to the region. An emphasis on local, community-scale, generation and storage is paired with other measures including efficiency/weatherization, waste heat recovery opportunities, dual land use, energy independence, and more representing a more holistic view

[43] CVRPC Report on Renewable Energy Standards Update Regional Engagement Events https://publicservice.vermont.gov/sites/dps/files/documents/CVRPC%20RES%20Event%20Summary.pdf

of energy systems that stemmed from a wider variety of perspectives than are often considered. See the Enhanced Energy Element for considerations and discussion of future renewable energy generation and more.

Existing Renewable Energy Generation and Storage by Town

TOTAL EXISTING GENERATION			PROPOSED		EXISTING SOLAR			EXISITNG HYDROELECTRIC			EXISTING WIND		
Town	Total MW	% Regional	Projects	MW	Projects	MW	% Regional	Projects	MW	% Regional	Projects	MW	% Regional
Barre City	1.03	1.50%			138	0.93	2.20%		0	0.00%	1	0.1	42.39%
Barre Town	7.92	11.70%			273	7.79	18.70%	1	0.014	0.10%	3	0.12	51.28%
Berlin	1.32	1.90%	2 solar projects	4.4	79	1.32	3.20%						
Cabot	5.84	8.60%			53	0.84	2.00%	1	5	19.20%			
Calais	0.43	0.60%			54	0.43	1.00%						
Duxbury	9.25	13.60%			51	0.45	1.10%	1	8.8	33.80%			
East Montpelier	3.45	5.10%			148	2.28	5.50%	3	1.16	4.50%			
Fayston	0.48	0.70%			65	0.48	1.20%						
Marshfield	0.61	0.90%			68	0.61	1.50%						
Middlesex	0.75	1.10%			104	0.75	1.80%						
Montpelier	4.71	6.90%			307	3.78	9.10%	2	0.93	3.60%			
Moretown	5.21	7.70%			112	0.81	1.90%	2	4.4	16.90%			
Northfield	0.39	0.60%	16 solar projects, 2 hydroelectric projects	1.26	52	0.39	0.90%				1	0.003	1.04%
Orange	1.19	1.80%			23	1.19	2.90%						
Plainfield	0.53	0.80%			81	0.53	1.30%						
Roxbury	0.26	0.40%			32	0.26	0.60%						
Waitsfield	2.6	3.80%			132	2.6	6.20%						
Warren	1.34	2.00%			140	1.34	3.20%				1	0.003	1.06%
Washington	0.24	0.40%			29	0.23	0.60%				1	0.01	4.24%
Waterbury	9.97	14.70%			338	4.45	10.70%	1	5.53	21.20%			
Williamstown	9.97	14.70%			100	9.97	23.90%						
Woodbury	0.02	0.02%			2	0.02	0.04%						
Worcester	0.42	0.60%			39	0.24	0.60%	1	0.18	0.70%			
TOTAL EXISTING	67.95		5.66		2420	41.7		12	26.02		7	0.24	

	STORAGE		
Town	Total MW	Number of Projects	% Regional
Barre City	0.1367	17	1.72%
Barre Town	5.209	26	65.52%
Berlin	0.09	10	1.13%
Cabot	0.029	3	0.36%
Calais	0.01	1	0.13%
Duxbury	0.039	5	0.49%
East Montpelier	0.069	7	0.87%
Fayston	0.105	12	1.32%
Marshfield	0.08	9	1.01%
Middlesex	0.079	8	0.99%

Montpelier	0.3595	41	4.52%
Moretown	0.097	11	1.22%
Northfield	0.035	5	0.44%
Orange	0	0	0.00%
Plainfield	0.02	2	0.25%
Roxbury	0.075	9	0.94%
Waitsfield	0.3695	41	4.65%
Warren	0.543	60	6.83%
Washington	0.025	3	0.31%
Waterbury	0.539	62	6.78%
Williamstown	0.01	1	0.13%
Woodbury	0	0	0.00%
Worcester	0.03	3	0.38%
TOTAL EXISTING	7.9497	336	100.00%

Key Challenge

Vermont Distribution Utilities, to varying degrees, are implementing programs to smooth energy demand peaks and valleys through flexible load management, incentives, and battery storage. These initiatives are intended to increase system reliability, help address the climate crisis, and lower customer costs. The 2021 Vermont Long-Range Transmission Plan continues to emphasize the importance of thoughtful siting of generation with respect to interconnection and grid capacity, grid automation, deployment of battery storage and flexible load management programs, grid reinforcements, as well as the communications infrastructure necessary to synchronize energy demands with supply across DUs, to ensure Vermont's transmission grid reliably serves expected load growth. The implications for our regional infrastructure, to the municipal and household scales, include the importance of the "get ready" approach to retrofitting/switching over individual systems and components to be in line with, and thus benefitting from these broader investments which includes at times, higher upfront costs and/or more intentional and longer-term phased planning- the Enhanced Energy Element will touch on many specific measures further. CVRPC thus anticipates, the key challenge facing our region is the capacity and coordination to draw down unprecedented funding and invest in not only transforming the energy

sectors to meet legally binding GWSA goals to mitigate future climate change, but to support all our communities down to the local scale so that none are left behind or without options.

The vulnerability of our critical infrastructure including our energy systems to high wind, wet heavy snow, and flooding has become increasingly apparent. In the last 5 years or so, CVRPC has noticed the increased consideration of climate impacts in DU planning, for example GMP has conducted topographical surveys of their substations to assess their location in relation to FEMA-designated floodplains.[44] While the Middlesex transmission station and hydro generation are both located on ground higher than the 100-year and 500-year floodplain, the Waterbury distribution substation was rebuilt outside the 100-year flood plain (moved from 48 Winooski Street, Waterbury to Cloverdale Lane), and the Barre South End distribution substation was raised three feet at its current location (121 South Main Street Barre City) so that it is above the 100-year floodplain (Riverton in Berlin remains in the 500-year floodplain). Again, due to structure, dominant customer type and distribution, not to mention historical development, our region's DUs are not equipped equally to handle large infrastructure projects nor the increasingly demanding recovery efforts in response to extreme weather (see outages table). CVRPC will continue to work with regional and state stakeholders, including the DUs themselves, to identify opportunities for funding and technical assistance, build transparency in planning processes, and promote public data sharing to support municipal and community efforts including Local Hazard Mitigation and Local Emergency Management Planning, as well as the development of projects and programs that promote on-site back-up power and/or the establishment of community micro-grids.

DRAFT

[44] 2021 GMP IRP Appendix I: Substations https://greenmountainpower.com/wp-content/uploads/2022/01/Appendix-I-Substations.pdf;

Wastewater Systems

The proper treatment of wastewater is essential to a safe, healthy environment. Today, we do a better job treating waste than ever before. Treatment plants built in the 60's and 70's reduced the impacts of effluent reaching our streams and rivers, including biological oxygen demand and microbe levels. In general, our surface waters are cleaner now than they were 40 years ago. Improved on-site septic system technology, regulation, and monitoring has had a beneficial impact on our environment too.

There is, however, much room for improvement. The volume of waste treatment byproducts (effluent and sludge) grows with the population. Disposal of these substances poses its own unique set of problems and issues. Though improvements have been made, combined sewer and storm water systems are still releasing raw sewage to receiving waters during heavy rains. In addition, there remain, in spite of new laws, many unregulated or "grand-fathered" on-site systems polluting our environment.

It is important then, that we provide for the safe and efficient treatment of sewage for current and future residents. As communities in Central Vermont plan for the future, wastewater treatment and disposal will continue to be a critical factor, particularly when considering encouraging higher residential densities or in permitting commercial or industrial uses.

Public Systems

There are eight municipal wastewater treatment facilities in the Central Vermont region that serve over 10,000 households and scores of businesses and industries (see Service Area Map). They range in size from the Montpelier Wastewater Treatment Facility with a design of 4 million gallons per day (mgd), to a .045 mgd capacity facility in Marshfield. All provide secondary treatment of effluent. All discharge treated effluent is released into class C receiving waters of the Winooski River or its tributaries. Combined, they retain over ~~4~~ 5 mgd of reserve capacity. A more detailed analysis of each of the region's sewage treatment plants and their implications for future growth and development is shown in Table #, followed by a brief summary of the individual systems.

Commented [KP145]: Updated data from new draft Infrastructure chapter.

DRAFT

Wastewater Treatment Facilities

Facility Name	Permit ID	Permitted Design Flow (MGD)	2022 Monthly Average Flow (MGD)	Unused Flow
Barre City	3-1272	4	2.0838	1.9162
Cabot	3-1440	0.05	0.0175	0.0325
Marshfield	3-1195	0.045	0.0152	0.0298
Montpelier	3-1207	3.97	1.6136	2.3564
Northfield	3-1158	1	0.4469	0.5531
Plainfield	3-0381	0.125	0.0493	0.0757
Waterbury	3-1160	0.510	0.3324	0.1776
Williamstown	3-1176	0.150	0.0901	0.0599
		9.85	4.6488	5.2012

Commented [KP146]: Updated data from new draft Infrastructure chapter.

~~The Barre Wastewater Treatment Facility serves the City and parts of the Town of Barre. It serves a population base of about 16,000. As of 2011, the town had an allocation of 1.5 million gallons per day. There is remaining capacity in the system serve more than 4,000 additional homes. Through an intermunicipal agreement, Barre Town has discretion over if and where new connections will occur within its allocation. The wastewater treatment facility is limited to a maximum discharge of 7,306 pounds of phosphorus annually based on the Lake Champlain Phosphorus TMDL (total maximum daily load) established in 2002. Recent upgrades to the treatment plant have greatly improved the plant's effectiveness at phosphorus removal. The plant currently discharges 4.5 pounds per day or 22% of the maximum allowed~~

~~The Marshfield Wastewater Treatment Facility serves 100 residences, 5 commercial establishments, and 6 "other" users in the Village of Marshfield. The majority of the system was constructed in 2003. Increasing development of the Village sewer system might allow additional development outside of the Village limits; however, this is not the intent of the Village Trustees at this time.~~

~~The Montpelier Wastewater Treatment Facility serves a population of 8,300 in the Montpelier/Berlin area. The City has partially removed combined sewer lines, which previously discharged raw sewage during times of heavy runoff or rain, into the Winooski and North Branch Rivers. Berlin and Middlesex own~~

DRAFT

parts of the distribution & collection system in their respective municipalities and have responsibility for determining new connections to those lines.

The Plainfield Wastewater Treatment Facility serves the village area, Goddard College and some homes that extend beyond the boundaries of the village into Marshfield. It was replaced in 1999 and is approximately halfway through its expected service life. The costs for sludge hauling and disposal have been increasing rapidly, adding significantly to operating costs. The facility is not allocating any additional connections to adjacent areas in Marshfield

Waterbury Wastewater Treatment Facility serves the extent of the incorporated village, including 800 connections and an approximate population of 1,760. The plant has much excess capacity, particularly as flows are down 30-40% from pre-Tropical Storm Irene levels with the scaling back of state workers at the State Office Complex. Substantial upgrades are planned to replace aging collection lines which will coincide with an upcoming Main St. road reconstruction project. The plant has been upgraded to improve its effectiveness at phosphorous removal.

The Williamstown Wastewater Treatment Facility serves about 1200 residents in the village area and could accommodate a little under 100 additional average single family residences. Originally constructed in 1969, the facility is due for major up- grades to address aging components, energy efficiency measures and phosphorous removal. Town voters have approved borrowing $1.7 million for the refurbishment using grants and loans from USDA Rural Development.

The Northfield Wastewater Treatment Facility provides water to 4,000 residents in Northfield and has remaining capacity. A large share of the plant's current flow is dedicated to Norwich University. In 2004 the facility was upgraded, automated, and phosphorous removal incorporated in the process. The stormwater and waste-water collection system is still combined, which allows storm flows to the Wastewater Treatment Facility. The Town is planning to separate the system.

Cabot Village Wastewater Treatment Facility serves 173 connections in and adjacent to the village. Developing an allocation policy for remaining

~~capacity, capital budget for system repairs, emergency preparedness and energy efficiency are currently local priorities for the system.~~

~~A community septic system has been developed for the village of Warren serving 65 connections, including municipal buildings and the Pitcher Inn. The construction project financing for Warren combined EPA demonstration grant funds and traditional grant/loan funds (See Table 2).~~

Most municipal systems in the region are operating under hydraulic capacity. It should not be inferred, however, that the difference between design flow and current average flow represents available capacity. Other factors, such as capacity already allocated and/or being held in reserve, the amount of phosphorous in the treated effluent, and local decisions regarding how close to the theoretical limit the plant should operate, all affect the potential to use any remaining capacity. Generally when a facility is operating at 80 percent capacity regularly, the plant may be required to upgrade.

The needs to address aging wastewater treatment systems are significant. Nearly all municipalities with aging wastewater treatment systems need assistance in man- aging their assets. Many systems must implement improvements to either maintain or attain compliance with state clean water standards to protect public health and the environment. ~~While operators of the Region's larger systems report that their effluent contains well under the current maximums for phosphorous content, some facilities may be required to meet phosphorous reductions as part of the Lake Champlain Total Maximum Daily Load currently underway.~~ Upgrades to address ~~this issue~~ Total Maximum Daily Load of phosphorus have increased the level of complexity and automation in some of the Region's facilities, creating considerations for staff capacity to manage these systems.

Commented [KP147]: These descriptions are outdated and the table above includes all of the information necessary for statute.

Commented [KP148]: Outdated reporting.

DRAFT

Warren Community Septic System. The historic settlement pattern of Warren Village, with houses concentrated at high densities along the Mad River and Freeman Brook, had led to serious problems for continued on-site water and wastewater disposal. The town underwent detailed studies to identify a cost-effective combination of onsite individual and offsite cluster systems tailored to the localized need and conditions which resulted in permits for the first municipal alternative system in the state. The decentralized wastewater management program in Warren included upgrading individual, onsite systems; building an innovative system at the elementary school; and building a small cluster system and large cluster system to which residences can connect.

Lack of wastewater infrastructure has been cited as obstacles to promoting denser development and redevelopment in some of the Region's more rural villages. While new, centralized systems are a cost-prohibitive option, flexible or alternative waste-water solutions such as decentralized treatment systems may be a viable option for rural communities. Decentralized systems can include conventional or advanced on-site septic tank systems with dispersal trenches that serve individual homes and businesses, larger septic systems that serve a cluster of buildings on one or more properties or a sewer system that connects to a neighborhood or community treatment unit.

The decentralized option can be used in a more targeted way so that communities are able to envision their land use and environmental protection goals first, and then develop wastewater management solutions to best serve those goals. As decision-making related to wastewater solutions can be very complex, forming an advisory body or local wastewater committee can be an important first step for a community in understanding the problem to be addressed and planning for local action.

DRAFT

Active public involvement in the needs assessment planning process led to the collection of better information regarding onsite systems, site conditions, and potential effects on drinking water supplies and surface waters. In the long run, this involvement led to public support for proposed solutions in Warren, including passing a local bond vote.

Sub-surface Disposal and Private Systems

Central Vermont is highly dependent upon on-site, underground septic disposal, as about half of our population lives in rural areas outside of the service territories of the above-described systems. Vermont's Indirect Discharge Permit Program regulates land-based systems with design capacities equal to or exceeding 6,500 gallons per day. ~~There are 19 of these larger sub-surface discharge systems in the Region (see Table 2), including a municipally-owned community septic system in Warren and systems serving the Middle and High Schools in Duxbury.~~ ~~These~~ Larger sub-surface discharge systems are predominantly located in the Mad River Valley towns and are otherwise serving resort-related condominiums or facilities.

Commented [KP149]: Outdated data.

Most on-site septic systems require specific soils and site characteristics to enable the effective treatment of wastes. Where soils are impermeable, too permeable, shallow, or wet, or where slopes are steep, conventional septic systems are problematic and potentially hazardous. Accordingly, non-sewered areas displaying such site limitations have generally not been recommended for development.

Restricting such areas, however, intensifies development pressure on those soils that can accommodate septic systems. Unfortunately, prime agricultural land contains such soils. Clustered subdivisions with community septic systems may help overcome site limitations and simultaneously protect resource lands. Historically, many communities in Central Vermont enacted health or zoning bylaws to regulate the installment and engineering of new septic systems.

~~In 2002, Vermont adopted new Wastewater System and Potable Water Supply rules in order to allow for more flexibility in the design of on-site~~

DRAFT

~~systems, assure more consistency in the standards for permitting systems.~~

~~The new rules provided that all local ordinances and/or bylaws regulating water and wastewater would be superseded as of July 1, 2007, creating "universal jurisdiction" over permits for the Vermont DEC Waste Water Management Division. However, while municipalities may no longer adopt or administer local regulations, they may prohibit construction under a zoning permit unless and until a wastewater and potable water supply permit is issued by the State.~~

~~The innovative systems allowed under the new technical standards may allow historically "undevelopable" land to be developed. As such, towns should consider the impacts on land use patterns and associated uses, and plan accordingly.~~

Commented [KP150]: This section is outdated and is not required by statute.

Water Supply Systems

Water is among the most basic of human needs. A clean and plentiful supply of water is essential to our very survival. We need water in our homes to cook, clean, drink and flush waste. Water is critical to our ability to fight fires. Our farms, businesses and industries depend on a plentiful water supply for their operations, as well.

Public Water Systems

Most of Central Vermont's residences and businesses receive their water from public supply systems. Defined by the Department of Health as those systems that have ten or more connections and/or serve twenty or more people, public water supply systems are regulated by that same agency to ensure their compliance with state drinking water standards. ~~In total, there are 15 community water systems (including those operated by fire districts) serving portions of 13 municipalities (some communities have more than one system) and 12 school water supply systems. Most of these systems (87%) rely on groundwater as their source, although the largest systems (Barre City and Montpelier) are supplied by surface waters.~~ Within the region there are 138 permitted public water systems with 12 being permitted to allow expansion; the 12 that are permitted for expansion are listed in the table below.

Municipally-owned community water systems in the Region are displayed below in the table. These systems serve populations ranging from approximately 134 (Websterville Fire District in Barre Town) to 8,700 people (Montpelier Water System).

Commented [KP151]: Updated data from new draft Infrastructure chapter.

Municipally-owned Community Water Systems

System	System Type	Town	County	Population Served	Average Flow (gallons/day)	Number of Sources
WILLIAMSTOWN WATER DEPT	C	WILLIAMSTOWN	ORANGE	985	89,100	2
GRANITEVILLE FIRE DISTRICT 4	C	BARRE TOWN	WASHINGTON	700	108,914	30
BARRE CITY WATER SYSTEM	C	BARRE CITY	WASHINGTON	14,000	1,600,000	3
CABOT TOWN WATER SYSTEM	C	CABOT	WASHINGTON	250	24,650	2
MARSHFIELD WATER SYSTEM	C	MARSHFIELD	WASHINGTON	350	26,000	1
MONTPELIER WATER SYSTEM	C	MONTPELIER	WASHINGTON	8,912	900,000	1
NORTHFIELD WATER DEPT	C	NORTHFIELD	WASHINGTON	5,145	327,000	3
EDWARD FARRAR UTILITY DISTRICT	C	WATERBURY	WASHINGTON	6,003	218,868	12
BARRE TOWN WATER SYSTEM	C	BARRE TOWN	WASHINGTON	1,638	102,000	3
WAITSFIELD WATER SUPPLY	C	WAITSFIELD	WASHINGTON	450	33,000	1
FARMS AT CLUB SUGARBUSH	C	WARREN	WASHINGTON	48		1
BERLIN MUNICIPAL WATER SYSTEM	C	BERLIN	WASHINGTON	300		3
Total				38,781	3,429,532	

~~Table: Municipal Water Systems (Source: VT DEC, local operators; MGD = million gallons per day, * = data not available at this time)~~

Commented [KP152]: This data is outdated and replaced with the data above.

The newest system to come online ~~will be~~ is the Berlin Municipal Water System, a ~~planned~~ $5.5 million community water system ~~intended to supply~~ which supplies drinking water and fire protection to the Fire Department, Elementary School and commercial and residential areas in Berlin Corners. The system ~~will~~ draws from wells drilled into bedrock and consist of 32,000 ft of distribution mains, 40 fire hydrants, a 400,000 gallon water storage tank and a well pumping station. The system ~~will~~ makes municipal water connection available in previously undeveloped areas on the rural urban fringe and it will be important to orient local planning and policies for desired growth.

Commented [KP153]: Language updated to reflect that the Berlin Municipal Water System has been built.

DRAFT

Currently, ~~five~~ four of the municipally-owned water systems are structured as fire districts. Fire districts in Vermont are all political entities (municipal corporations) established by acts of their respective towns under the authority of state law. Historically, fire districts have arisen and been established to meet public needs in a part of a town that the town itself declined to assume. In the past, the need for fire-fighting services often prompted the establishment of a fire district, but more recently the needs for public drinking water or wastewater treatment have been the catalyst.

Commented [KP154]: Updated data.

Reasons for a community to form a fire district or to take over private systems as such include eligibility for various state and federal funding programs and municipal financing rates and terms that are not available to privately owned systems. Disadvantages include the extensive time commitment required from members and the high level of technical, managerial and financial skills required by volunteers to operate a water system.

~~The Region's newest fire district was formed in 2010 by a small group of volunteers in East Montpelier East Montpelier Fire District #1 is exploring the possibility of taking over a private water company's operations servicing East Montpelier Village and the immediate vicinity. While a moratorium on new connections has been imposed by the State, transfer of ownership to the fire district could potentially alleviate that issue and support growth in the Village. Funding has remained a primary barrier to transfer of ownership.~~

Commented [KP155]: East Montpelier fire district has been dissolved.

Many water and wastewater systems operate under direction of the legislative body and a few communities in the Region operate their water and wastewater utilities under the authority of a separate water and wastewater commission. These include Waterbury, Plainfield and Northfield, where powers to determine operational budgets and user fees have been delegated by the Selectboard or the voters to the commission.

In the past, conflicts have arisen between municipalities regarding the shared use of a supply owned and operated by one municipality. The City of Montpelier has advocated for tax-sharing agreements where its system is providing water (and waste-water) service to adjacent communities. Inter-

municipal conflicts have also surfaced where one municipality's source of water is located in or near an adjacent municipality, and thus is potentially affected by activities beyond the control of its users.

The physical components of the municipally-owned water systems range in age from newly installed to approximately 95 years. The most common problem facing communities that have or seek to have public community water systems is obtaining funding to acquire or upgrade water supply facilities. One of the largest needs for water systems is for distribution and transmission infrastructure. This critical portion of infrastructure is often overlooked as it is mainly below ground, however this component accounts for most of a typical system's capital value. Managing hundreds, sometimes thousands, of assets with the staff capacity of most local utilities is a challenge in Vermont and the Region.

A strategy the State is employing to help address ongoing issues of system depreciation is an Asset Management approach geared towards changing the way water and wastewater utilities in Vermont think about their financial management and to aid in making decisions for how to most efficiently use limited resources.

This program provides technical assistance to help local operators inventory and develop a prioritized list of water infrastructure improvement projects. ~~A pilot Asset Management project was conducted in collaboration by the Vermont Agency of Natural Resources and the Village of Waterbury in 2012. The end result was a database of over 2,700 as- sets and their associated condition, location and cost. This is a huge advantage to the Village of Waterbury both from a maintenance standpoint and from a financial standpoint.~~

Commented [KP156]: Outdated example.

What is Asset Management? The Environmental Protection Agency (EPA) defines asset management as "a process for maintaining a desired level of customer service at the best appropriate cost". It is designed to aid water and wastewater systems in making decisions for how to most efficiently use their limited resources. An asset management program is developed to minimize the total cost of asset ownership by helping to determine when to repair, rehabilitate or replace the asset.

The average life of the asset, along with its replacement costs are taken into account when making these choices. Managing hundreds, sometimes thousands, of assets is a daunting task. Many systems will simply wait for an asset to fail before it is replaced. This is not always the best method. Unexpected failures can lead to large debts for a small system. The development of an asset management program will inform the system when certain repairs or maintenance are needed and assist in developing a long-term funding strategy for larger assets. Issues related to aging systems combined with a loss of knowledge from personnel retirements, and public resistance to rate increases, results in a growing need to make every dollar count.

The July 2023 and 2024 floods brought location and hardening of infrastructure into focus for many municipalities, both within our region and in surrounding municipalities. Both water and wastewater facilities and their pipelines were damaged due to erosional forces. Exposing pipes to the floodwaters and inundating necessary infrastructure. This created loss of service and boil water notices throughout the region

Commented [KP157]: Reference to the '23 and '24 floods helps to demonstrate current infrastructure conditions.

Another issue some water systems in the Region struggle with are source yield and the need to identify additional reliable sources. Some systems that provide fire protection are under strain as they weren't necessarily designed with adequate distribution systems/pipes for use in fire protection.

In addition to the municipal systems, there are ~~another 121~~ many other systems in the Region that meet the state's definition of a public water supply system serving facilities like campgrounds, recreation areas, mobile home parks, commercial areas, general stores and private schools. While almost every town in the Region has at least one of these systems, the highest numbers of them are found in the towns with ski-resort related development and in the Town of Berlin, which contains a large commercial and industrial center and has attracted considerable development during the past 40 years. Outside of the service territories of public and private systems, water is generally obtained from on-site wells or springs.

Drinking Water Source Protection

Each public water system has an accompanying source protection area. The Vermont Water Supply Rule defines a Source Protection Area as: *… a surface and sub-surface area from or through which contaminants are reasonably likely to reach a Public water system source.*

All public community and non-transient, non-community water systems must have approved Source Protection Plans. These Plans address the actions the public water system will perform to minimize the contaminant risks to their drinking water supply source. Threats to groundwater and wells in the region include agricultural run-off, nearby salt storage areas, road salting, underground or above-ground storage tanks, contaminated runoff from paved areas, flood events, and failing septic systems. Specifically identified threats in local operating permits for municipally-owned systems primarily include roadways and impervious surfaces within 200 feet of the water source. Two communities respectively identify a nearby sewage treatment line and an adjacent excavating operation as potential threats to drinking water sources.

Within these source protection areas, the VT Dept. of Environmental Conservation reviews Act 250 and wastewater facility applications. VT DEC also requires that towns develop a plan for protecting source areas. Towns are not required to regulate land uses within source protection areas, but some communities in the Region choose to do so.

Solid Waste

The proper management and disposal of solid waste is an important challenge facing the region today. Everyone in Central Vermont generates waste, often without thinking about its ultimate destination or impact. In 2012, the Vermont Legislature passed the Universal Recycling Law (also known as Act 148), which made significant changes to solid waste management throughout the State. The Universal Recycling Law was prompted by Vermont's stagnant diversion rate.

~~In 1987, Vermont's first robust Solid Waste Law (Act 78) encouraged communities to create a new hierarchy of goals for solid waste management: source and waste reduction, followed by re-use, recycling, and lastly, disposal. This law succeeded in increasing the waste diversion~~

~~rate in Vermont to between 30-36%, but by the mid-2000s, that rate had stagnated. This prompted Vermont to pass the Universal Recycling Law.~~

~~The Universal Recycling Law has several key components.~~

- ~~Banning the disposal of certain solid waste~~
- ~~Requiring parallel collection at facilities and curbside pickup~~
- ~~Allowing ANR to monitor rate structures to ensure transparency~~
- ~~Creating a food recovery hierarchy~~
- ~~Phasing in food scrap diversion~~
- ~~Incentivizing variable rate pricing ("Pay as You Throw") for municipalities~~
- ~~Requiring recycling containers wherever there are trash cans in public buildings and on public land~~

~~This law will change a great deal about the treatment of solid waste in Vermont, and the Region is no exception.~~

Commented [KP158]: This section is simply a description of legislation which has since been updated (in 2018 and 2019). It is also not required by statute.

Solid Waste Districts

~~Three~~ Five Solid Waste Districts and one Alliance operate within our Region. The Central Vermont Solid Waste Management District (CVSWMD) is our primary waste entity. CVSWD serves Barre City, Barre Town, Berlin, Calais, Duxbury, East Montpelier, Middlesex, Montpelier, Orange, Plainfield, Washington, Williamstown, and Woodbury. Marshfield and Cabot are served by the Northeast Kingdom Waste Management District. The Town of Worcester is the sole town in our Region participating in the Lamoille Solid Waste Management District. Northfield and Roxbury are a part of the Mountain Alliance Waste Management District. Finally, the Mad River Resource Management Alliance (MRRMA), was formed in 1994 and ~~operates with assistance from CVRPC.~~ MRRMA is responsible for the solid waste planning for ~~Duxbury~~, Fayston, Moretown, ~~Roxbury~~, Waitsfield, Warren, and Waterbury.

Commented [KP159]: CVRPC no longer provides assistance to MRRMA.

Commented [KP160]: Paragraph updated with data from new draft Infrastructure chapter.

~~In 2006, CVSWMD adopted a policy/goal of working to achieve "zero waste" in the Region. CVSWMD believed that "by setting an extreme target for waste reduction, new levels of innovation and efficiency (will be) unleashed." That goal is now supported by the Universal Recycling Law. The economic and social benefits of a zero waste goal are indisputable. The District argues that a zero waste goal can help create new businesses and jobs through waste-based economic development, strengthen existing~~

~~businesses, and protect public health and the environment. It is estimated that landfilling/incineration creates one (1) job per 10,000 lbs of mate- rial, while composting creates four (4), sorting and processing of recyclables creates 10, remanufacturing 25, and reuse business between 28 and 296).~~

Commented [KP161]: Outdated.

Landfills

~~In Central Vermont, residents currently generate about 40,000 tons of waste per year, only about one third of this gets diverted from the waste stream through recycling, reuse, or composting. The rest must be disposed of through land filling (or incineration).~~

~~In their 2007 Solid Waste Implementation Plan, the Central Vermont Solid Waste Management District, estimates that between two and three million dollars is spent annually on the disposal of approximately 40,000 tons of~~ trash~~.~~

~~Of this, most goes to a landfill in Coventry, In the past, solid waste has been disposed of at landfills in Moretown, Williamstown and Washington, but these facilities have been closed.~~

Commented [KP162]: Outdated.

In Central Vermont, most of the trash generated is sent to the landfill in Coventry, the only current operating disposal facility in Vermont. Recycling of appropriate components of the waste stream is one method available to reduce the burdens on disposal facilities. Available data indicate that source separation of recyclables produces a more acceptable market product. In addition, source separation keeps the management of solid waste closer to the point of generation, thus encouraging consumers to participate more fully in the management of their solid waste.

~~Recycling of clear glass, tin and aluminum cans, newspaper, and #2 plastic jugs was made mandatory for households, businesses, schools and municipalities in the CVSWMD in 1995. The Universal Recycling Law added new items to the list of mandatory recyclables, with the law being implemented in phases. After July 1, 2015, all of the above products, as well as all clean paper and cardboard, are prohibited from landfills. Leaf and yard debris and clean wood waste are prohibited after July 1, 2016, and haulers must provide services for those materials.~~

~~Food scraps are banned from landfills as well, with the ban being~~

DRAFT

~~implemented between 2014 (for the largest food scrap generators) and 2020. This ban is discussed further in the "Composting" section.~~

Commented [KP163]: Outdated.

Private waste haulers offer curbside collection of trash to approximately 90% of the households in the region. These materials are brought to private processing facilities. There are several public and private facilities for public recycling drop-off depots. These centers run the gamut between once a week drop off sites to full-time transfer stations.

All transfer facilities perform the same two functions: desired materials are separated from a mixed waste stream, and are processed for further management. Such facilities are generally more cost-effective if operated on the regional rather than local level. Recycling is currently collected at the same transfer facilities throughout the Region that process trash. The 2025 Solid Waste Implementation Plan for CVSWMD outlines the transfer stations and drop-offs, food waste facilities and other recycling materials facilities which serve the region.[45] ~~The recyclables are generally sorted at the Material Recovery Facility (MRF) in Chittenden County. CVSWMD is exploring a public drop-off facility for leaf and yard waste, clean wood materials, asphalt shingles and dry-wall, household hazardous waste, and other materials.~~

Commented [KP164]: Outdated information. The 2025 SWIP is referenced to highlight more current operations.

~~There is a need for facilities for less common recyclables. The MRRMA operates a textiles recycling program at the Moretown Town Office. This program diverts clean clothing, linens, plush toys and shoes from landfills. The CVSWMD operates an Additional Recyclables Collection Center (ARCC) in Barre, which collects "hard to recycle" objects such as prescription bottles, batteries, product packaging, textiles/ clothing, electronics, books, sports equipment, and energy bar wrappers.~~

In our technology-based society, electronic waste is also a growing problem as various devices wear out and must be disposed of. E-waste is illegal in landfills, and the state requires that all electronics manufacturers who sell electronics in Vermont must help pay for their disposal. This makes e-waste disposal free for Vermont residents, as well as small businesses, schools and

[45] CVSWMD 2025 Solid Waste Implementation Plan

charities. Several facilities and businesses collect e-waste throughout the Region. Many towns also collect cell phones and rechargeable batteries at government buildings.

Composting

~~It is~~ The EPA estimated that about ~~40~~ 24% of the municipal solid waste (MSW) waste sent to landfills in 2018 ~~we generate~~ is food ~~and yard~~ waste[46]. ~~Currently most of this is landfilled~~. The State of Vermont Waste Composition Study (~~2013~~2023) found that ~~28~~ 21.8% of ~~residential MSW Municipal Solid Waste (MSW) disposed (after recycling and composting) and about 18% of industrial, commercial, and institutional (ICI) materials~~ Vermont statewide disposed waste (MSW and Construction and Demolition) ~~disposed were~~ was organic material[47].

Commented [KP165]: Updated data.

Composting is a natural process of decomposition of organic materials. It is the biological process that allows leaves and grass clippings to degrade. Composting of the organic component of the solid waste stream could produce an end product that both saves landfill space and provides a useful soil amendment. Source separated organics can be managed locally to produce a compost that benefits local gardeners, farmers and plant nurseries.

~~The Universal Recycling Law made composting mandatory for all residents and businesses in Central Vermont. The law is implemented on the following timeline:~~

- ~~July 1, 2014: Generators who produce 2 tons or more per week must divert their food scraps if there is a certified facility within 20 miles.~~
- ~~July 1, 2015: Generators who produce 1 tons or more per week must divert their food scraps if there is a certified facility within 20 miles.~~
- ~~July 1, 2016: Generators who produce 1/2 tons or more per week must divert their food scraps if there is a certified facility~~

[46] 2019 Wasted Food Report
[47] 2023-VT-Waste-Composition-Study.pdf

~~within 20 miles.~~

- ~~July 1, 2017: Generators who produce 1/3 tons or more per week must divert their food scraps if there is a certified facility within 20 miles.~~
- ~~July 1, 2017: Haulers must offer services for food scraps for all customers.~~
- ~~By 2020, all food scraps must be diverted from all businesses and households, regardless of generation rate or distance to a certified facility. Haulers must also accept food scraps from customers.~~

Commented [KP166]: Outdated.

Vermont Compost Company has facilities in Montpelier and East Montpelier for large-scale source-separated composting. The company receives organic materials and processes them in large quantities to make compost and potting soil, which is then sold in eight states and online. As well. Perfect Circle Farm and Dog River Farm operate in Berlin, offering food waste services.[45] ~~The CVSWMD anticipates the need for a new composting facility in the Region in the coming years. This facility will be needed to process the increased organic waste stream that will be created by the elimination of yard waste from landfills.~~

Commented [KP167]: Updated information.

The CVSWMD is quite active in promoting composting. ~~In addition to producing and distributing the booklet "The Dirt on Composting", the District operates a "Business Organics" and a "School Composting" program. The Business Organics Program works with restaurants and other commercial food waste generators to divert food waste from landfills to composting (as of FY14, over 1,396 tons).~~ The District provides resources and technical support to schools and businesses in the region, assisting them in diverting food waste from landfills to composting. The CVSWMD ~~School Composting Program~~ offers free programming to help with waste reduction at ~~works with~~ school cafeterias and provides other resources for schools. ~~including guidelines for setting up a "Green Team" or environmental clubs to coordinate waste reduction actions such as composting (done on-site or with local farmers or commercial composters), holding clothing or book swaps, conducting waste audits, or taking leadership roles to address environmental issues. The District also promotes household and school level composting of organic waste by providing plans for building compost bins selling pre-made compost bins and "Green Cones." Green Cones are in-ground digesters that facilitate the fast decomposition of~~

Commented [KP168]: Language around specific programs removed because they are no longer ongoing. The ideas in the new red sentence are included to reflect ongoing support offered by CVSWMD.

DRAFT

~~animal byproducts such as meat and bones.~~

The MRRMA also encourages composting by selling compost bins and kitchen collectors for food scraps. Food scraps from the MRRMA's coverage area are collected by Grow Compost, located in Moretown. In ~~2014~~2022, ~~126.5~~ roughly 327 tons of food scraps were collected by Grow Compost of Vermont and Casella in the MRRMA[48] ~~composted at that facility~~. ~~The Highfields Center for Composting provides composting services for the Northeast Kingdom Waste Management District and the Lamoille Regional Solid Waste Management District. The Center runs a pilot project called "Close the Loop!" in both Districts. This project offers composting education and food scrap pickup to residents in both Districts.~~

Commented [KP169]: Updated data.

Commented [KP170]: Highfields Center for Composting closed in 2014.

Re-use

In current society we tend to throw away unwanted or unneeded objects. Many such objects are suitable for other uses or desired by other individuals for their original use. By matching would-be discarded products with those in need of them, we may conserve resources and save valuable landfill space and product production resources. The ReStore in Barre provides an outlet for used office supplies, furniture, household goods and knick-knacks for art projects. The Region also has a variety of used clothing stores and a Salvation Army, which re-sell clothing and furniture. ~~CVSWMD also helps facilitate several events throughout the year, such as "Drop-n-Swaps," coat drives, ski and skate sales, assistive technology exchanges and "Wheels for Warmth," a program that sells donated snow tires for a low cost and donates the money to Capstone Community Action.~~

Commented [KP171]: While CVSWMD still runs the Eco Depot, it is unclear if all of these events are still ongoing.

Business and Household Hazardous Waste Collection Facilities

Although most solid waste is relatively benign, a percentage is hazardous in nature. In fact about ~~1~~ 0.5% of the statewide disposed waste ~~landfilled material~~ ~~(or about 400 tons in Central Vermont)~~ falls into this category[49]. The disposal of even small quantities of certain types of solid waste, including unregulated hazardous wastes may pose a risk to both human health and the environment.

Commented [KP172]: Data updated.

[48] MRRMA Annual Report (2022)
[49] 2023-VT-Waste-Composition-Study.pdf

DRAFT

Unregulated hazardous waste is comprised of two categories; household hazardous waste (HHW) and conditionally exempt generator (CEG) hazardous waste. Even though household hazardous waste exhibits characteristics of hazardous waste, they are exempted from State hazardous waste regulations and, for management purposes, are considered a solid waste. CEG hazardous waste is exempt from most regulations, provided that less than 220 pounds of hazardous waste (or 2.2 pounds of acutely hazardous waste) are generated per month.

The Region's growing population is projected to generate quantities of household and business hazardous waste that will need proper management and disposal. With the likelihood of fewer landfills and solid waste processing and disposal facilities, it is important that both present and future generations be provided with the following: information on reducing the use of hazardous chemicals whenever possible; opportunities for diverting hazardous waste from the municipal waste stream through hazardous waste collection programs; and programs for hazardous waste screening at landfills and other solid waste facilities.

The Central Vermont Solid Waste District, the Mad River Resource Management Alliance, the Northeast Kingdom Waste Management District and the Lamoille Regional Solid Waste Management District put on a variety of special one-day events for household hazardous waste collection. Household hazardous waste includes things such as batteries and fluorescent bulbs. CVSWMD also accepts liquid latex and oil paints at the Additional Recyclables Collection Center, which is open year-round.

Product Stewardship/Extended Producer Responsibility (EPR)

Product Stewardship, also known as Extended Producer Responsibility (EPR), is a system in which producers are responsible for their products when they are no longer in use. The system attempts to encourage producers to create product disposal methods that are more environmentally friendly and easier to dispose. Common industries that use EPR are tires and paints.

~~In Vermont, there are five EPR programs: paint, electronics, batteries, fluorescent lamps and thermostats, and auto switches. There are several~~

Commented [KP173]: Act 58: Vermont's HHW EPR Law has changed some processes. This section is outdated.

~~businesses that offer options for recycling paint in Central Vermont. A Montpelier paint store, True Colors, offers opportunities for latex paint recycling by reprocessing and reselling latex paint. Additionally, PaintCare, a national non-profit organization that runs paint stewardship programs, has many locations for drop-off in Central Vermont, including the CVSWMD ARCC. PaintCare collects paint and then remixes and resells the paint.~~

~~At this time, there is no EPR program for tires. There is one facility for recycling tires in the Region: Budzyn Tire in Barre, and "Wheels for Warmth" is a tire re-use program. However, CVSWMD indicates that there is a significant need for more tire stewardship programs. Wal-Mart and Shaw's grocery stores both independently recycle the packaging from their products. Additionally, they offer plastic bag recycling collection in their stores. Compact fluorescent bulbs (CFLs) are recyclable at many hardware stores throughout the Region. CFLs are also accepted at the ARCC and at HHW events held around the Region.~~

Communications

Our era is often referred to as "the age of communication." Innovations in the way we process and transmit information have made the world a smaller place. Communication networks are rapidly linking the Region's residents, businesses, and governments with the rest of the world. While Central Vermont's existing communication facilities seem adequate to meet current needs, the maintenance and continued development of communications systems can help keep Central Vermont informed and competitive. Many businesses and individuals seek out areas where high speed internet connections and cellular service are available to locate their businesses and buy a house. Ultimately though, such systems may make our current working and living patterns obsolete, as they change the elements of our lifestyle, such as the distinctions between home, the work place, and the marketplace.

Radio

~~Central Vermont is home to seven radio stations. WNCS and WSKI broadcast out of Montpelier; Waterbury is home to WDEV and WGLY; WDEV-FM in Warren, Goddard College's WGDR, and WSNO – WORK in Barre~~

~~round out the field. The Region is also served by Vermont Public radio and several commercial stations broadcasting from locations outside Central Vermont, as well as HAM operators.~~

Twelve radio stations host transmitters within the region of these two are AM, with 10 being FM. These stations have seen an overall loss in listenership due to streaming services but still do play an important role in public messaging and reporting. The Region is also served by Vermont Public radio and several commercial stations broadcasting from locations outside Central Vermont but whose transmitters are located here.

Commented [KP174]: Updated data from new draft Infrastructure chapter.

Newspaper

The Barre-Montpelier Times Argus and the Burlington Free Press are the primary daily newspapers serving the Region and its residents. These publications cover international, national, regional and local news. Weekly papers, covering local and/or sub regional events include; The Valley Reporter (Waitsfield, Warren, Moretown, Fayston and Duxbury), The Hardwick Gazette (Woodbury, Cabot, Calais and Marsh- field), the Northfield News and Transcript (Northfield and vicinity), and the Washington World (all of Central Vermont). In addition, several community papers exist in the region.

Television

~~Most residents of Central Vermont are within receiving distance of signals from affiliates of the major commercial networks (ABC and CBS stations broadcast from Burlington and Plattsburgh, New York is home to an NBC affiliate). In addition, Vermont ETV, a public station, broadcasts from Colchester. Cable television is now available to over three-quarters of the Region's population. Under Public Service Board rules, cable television companies offer local access for community programs.~~

~~Vermont Interactive Television operates out of Vermont Technical College in Randolph, feeding additional sites across the State, including Montpelier and Waterbury. This system allows people in distant locations to have visual and audio contact with each other for conferences, meetings and classes. This technology not only facilitates communication, but saves energy and reduces~~

~~fossil fuel consumption as it obviates the need for long distance travel.~~

Most residents of Central Vermont are within receiving distance of signals from affiliates of the major commercial networks. Only two have licenses within the region, WNNE, a CW affiliate, and WVER, a PBS affiliate. Cable television is now available to over three-quarters of the Region's population. Under Public Service Board rules, cable television companies offer local access for community programs.

Commented [KP175]: Updated data from new draft Infrastructure chapter.

Voice Communication

Most of Central Vermont is served by FairPoint Telephone Company or a subsidiary of FairPoint, the Telephone Operating Company of Vermont LLC. Areas outside of FairPoint's service territory include: The Mad River Valley, where Waitsfield Telecom operates, Northfield & Roxbury are served by TDS Telecom and finally part of Washington and Orange are served by Topsham Telephone. Vermont Public Utility Commission has opened Vermont to local telephone service competition, competitive local exchange carriers are only currently available within the FairPoint service territory.

Commented [KP176]: Updated data from new draft Infrastructure chapter.

Almost all residences are still served by a landline connection even though use of such services has seen a significant decline as cellular and internet options have abounded often for lower costs than landline service. As of 2020 only 12% of Vermonters live in a landline only household.

~~Most of Central Vermont is served by FairPoint Telephone Company or a subsidiary of Fairpoint, the Telephone Operating Company of Vermont LLC. The Mad River Valley, where Waitsfield Telecom operates, and Northfield & Roxbury served by TDS Telecom, are outside of Fairpoint's service territory.~~

~~Vermont's telecommunications market has grown more competitive in the last ten years with the entrance of competitive local exchange carriers (CLECs), explosive growth of mobile wireless telephone service, and telephone service being offered from cable providers. In urban and suburban areas such as Chittenden County, this influx of competition has resulted in greater choice of services for businesses and residents.~~

~~Competition, however, is less abundant in rural areas. Incumbent local~~

DRAFT

~~exchange carriers (ILECs) are very often the only wireline provider in the state's costliest to serve areas and act as the carrier of last resort. These two trends put great financial stress on ILECs, as they try to maintain an aging network for a dwindling number of customers.~~

~~Technological changes are also affecting the voice market. Voice over Internet protocol (VoIP) is poised to replace circuit switched technology with a voice system that rides over data networks. In some rural communities, this may mean abandoning traditional wireline service altogether in favor of a wireless solution. Voice over Internet protocol (VoIP) has allowed a greater number of competitors to enter the market for voice service, such as cable and Internet content companies. More importantly VoIP has challenged the distinction between "telecommunications ser- vice" (previously referred to as a "basic service") and an "information service" (or "enhanced service").~~

~~Mobile wireless voice service is becoming more available. Vermonters' use and reliance on mobile voice technology has increased since the publication of the last tele-communications plan. Twenty nine percent of Vermont households are wireless-only households.~~

~~As of 2013, thirteen of Central Vermont's twenty-three communities have between 90-100% of addresses served by a wireless voice provider according to voice tests that were conducted throughout the state (displayed in Figure 1). Mobile data for smartphones or mobile hotspots is also typically available from these carriers in the same service areas that voice is available.~~

~~The Towns of Woodbury and Washington remain the least served with less than 60% of Woodbury's addresses receiving coverage and between 60-70% of Washington's addresses. In recent years coverage has more than doubled in the Towns of Northfield and Roxbury and also increased significant in the Towns of Worcester, Calais and Woodbury.~~

Commented [KP177]: Outdated.

~~Figure 1: Addresses Served by Wireless Voice Service Map Deleted here (BroadbandVT.org)~~

DRAFT

Wireless Telecommunication Facilities

Wireless communication through broadband technologies has become a part of everyday life and a service relied upon by business, emergency services, and the public. Clearly, the ability to communicate to almost anyone, from almost any-where, at almost anytime brings added convenience and security to our lives.

Throughout Central Vermont, we are seeing continuing applications for the installation of wireless telecommunication facilities. This is partly because the demand for wireless services is growing and partly because of changes in technology.

While Central Vermonters want and expect good cellular service, they also expect the placement and design of new facilities to be guided by a respect for the integrity of the Region's landscape and compliance with microwave emissions standards. As such, it is important to balance aesthetics, signal quality, ~~health~~, business and personal needs when deciding whether and where to build new towers and other facilities.

Commented [KP178]: Health is not a part of current 248a review.

~~*The 2014 Vermont Telecommunications Plan highlights the fact that technology is evolving very fast and that changes over the last 10 years have blurred the line between what is an essential service and what is not. For example, the 2004 Telecommunications Plan survey indicated that an overwhelming majority of Vermont households (77%) had not even considered the idea of giving up their traditional landline service in favor of wireless service. Today, 29.9% of Vermont adults live in wireless-only households, and that number continues to increase as service expands and be- comes more reliable.*~~

Commented [KP179]: Outdated.

The Federal Telecommunications Act of 1996 does not allow local governments to prohibit the construction of wireless facilities on a town-wide (or city-wide) basis, or to make regulatory barriers so onerous as to effectively block service. However, municipalities did retain the right to place reasonable requirements and restrictions upon such facilities in order to protect community character and the environment, encourage the efficient use of resources, and seek coverage for local service gaps. In 2007, the Vermont Legislature created 30 V.S.A. § 248a. Section 248a provided telecommunications carriers seeking to construct telecommunications

facilities the option of obtaining a CPG as an alternative to local zoning and Act 250 environmental review. Applicants using the Section 248a process are not obligated to adhere to zoning ordinances of the host town.

During the 2014 legislative session, the General Assembly crafted new provisions relating to town participation in 248a proceedings. Criteria is applied in the review of projects requiring the Public Service Board to give *substantial deference* to the land conservation measures in the plans of affected municipalities and the recommendations of the municipal legislative bodies and the municipal and regional planning commission regarding the municipal and regional plans, respectively, unless there is *good cause* to find otherwise.

Communities planning for the appropriate sitting of wireless facilities have to ask themselves many questions as they proceed. Would they rather have several small scale, less visible, facilities closer to the population or a few large, highly visible sites in less populated spots? Are there certain locations that are so environmentally or visually sensitive that they should be "off-limits", consistent with other forms of development (see siting of electric infrastructure on page ##, and future land use page ##)? What areas are providers most interested in serving? Where are local service gaps and who do they impact? Through careful planning and clear language in the duly adopted municipal plan, cities and towns can ensure good service without compromising their character or the welfare of their residents.

Broadband and Internet Services

Internet services have become an integral part of everyday life relied upon by business, emergency services, and the public. Clearly, the ability to communicate to almost anyone, from almost anywhere, at almost any time brings added convenience and security to our lives. Broadband is an oft-referenced essential telecommunication technology that refers to high speed internet access. Central Vermont has several internet providers, and high speed connections are now available to most residents in highly populated areas. Although service has improved beyond dial-up for many Central Vermont residents and businesses, the nature of "adequate" service is an evolving concept that will continue to present challenges for the region. As

the broadband networks supporting the global and national economies are improved to meet demands for greater speed, residents and businesses in Central Vermont will need service that is adequate for them to participate. Broadband was originally defined as data communications at speeds faster than a dial-up connection, which is typically 56kbps or less. ~~The Vermont Dept. of Public Service now defines high speed internet access as 4 Mbps download and 1 Mbps upload or greater.~~

Commented [KP180]: Definitions have changed.

DRAFT

Regional Broadband Plan

In 2011 CVRPC established a regional technology and innovation team with representation from a variety of sectors including business, education, libraries, government, media, health care and human services. Input from this teams shaped the goals, strategies and actions found in the region-wide commonalities and sector analysis sections of a completed Regional Broadband Plan. Five themes that were pre- sent included: the availability and affordability of broadband, the role of broadband in local government, telecommuting, digital literacy, and economic impact of broadband. For more detailed information, refer to the 2012 Regional Broadband Plan.

Although the majority of the Central Vermont Region is served by Broadband in some capacity, primarily through cable and DSL (digital subscriber line via a telephone provider), the maps of cable, DSL, and fixed wireless service (WISP) provided online by BroadbandVT.org Roxbury, Washington, and Woodbury as the most underserved towns in our region. This is a concern for residents of those locales and an impediment to economic development and energy saving activities such as telecommuting. With large portions of the towns without access to Broadband service or with access at less than 25% of residences, these areas should be targeted for increased connectivity and access. Residents of rural areas generally have less competitive choice, but new options are coming online. Those in remote parts of the Region will be best served with fixed and mobile wireless services.

Commented [KP181]: Outdated plan and not required by statute.

Commented [KP182]: This website is no longer active. Current broadband trends are in the new paragraph below.

DRAFT

~~Fortunately, the State has recognized the importance of this issue and continues to take steps to identify gaps and develop solutions. The Vermont Telecommunications Authority (VTA) is supported by Legislative appropriations and has been involved on an ongoing basis in three types of projects: broadband expansion, cellular service infrastructure and fiber optic infrastructure. Several commercial service providers are also investing significantly in their own broadband and/or cell service expansion projects. BroadbandVT.org, is an active cooperative effort that has developed a variety of maps that show elements of broadband and cellular coverage. Broad- bandVT.org partners include the Vermont Center for Geographic Information (VCGI), VTA, Vermont Department of Public Service (DPS), and the Center for Rural Studies of the University of Vermont.~~

Commented [KP183]: The trends and reports listed are out of date. The following paragraph is from the new draft infrastructure and is indicative of current conditions

All towns in the region have broadband, cable, or Fiber optic within their communities. Many of the more rural areas are greatly limited in the build out of this infrastructure. CV fiber is attempting to address this within the region by building out a network in the more rural and underserved communities to allow high speed internet access to more remote areas. The towns of Orange and Roxbury currently have the smallest areas served by any of these services within the region. These services can replace standard telephone services with Voice over internet protocol which allows telephone calls to be transmitted over internet connections. The installation of these services increases the economic opportunities of individuals with access to high-speed internet services.

~~Landline High Speed Internet Access Expansion (DSL)~~

~~All incumbent local exchange carriers (phone companies) offer high speed Internet access. FairPoint, Vermont's largest incumbent carrier, offers DSL service to an estimated 92% of the service locations in its territory. The other independent phone companies offer DSL within their entire service territories. Most offer service at speeds of 4/1 or higher. Notable is the widespread DSL availability in the Mad River Valley provided by Waitsfield Telecom.~~

Commented [KP184]: Outdated.

Cable Internet Access

All cable providers in Vermont offer broadband service. All cable providers offer speeds of at least 4/1 Mbps and in most cases much faster speeds. Prices for broadband service are generally competitive with DSL, but cable offers higher speeds. In Central Vermont cable is available primarily in or in the vicinity to the Region's downtowns and larger villages.

Wireless Internet Service Providers (WISPs, or Fixed wireless)

Vermont consumers are served by several Wireless Internet Service Providers. These companies offer fixed wireless broadband service to residents within range of their facilities. ~~Recent~~ Expansions to the system included the development of the Cloud Alliance broadband network which, in partnership with the VTA and Central Vermont Economic Development Corporation, provided for new service to homes and businesses in Woodbury and Cabot and improved the speed of broadband service in Plainfield, Marshfield, East Montpelier and Calais. ~~Vermont Telephone Company (VTel) also began a project in 2011 to bring wireless broadband service to Vermont using federal Rural Utilities Service (RUS) broadband stimulus grant. Wireless open world's (WOW) 4G/LTE network will reach Vermont's presently underserved and unserved areas.~~

Commented [KP185]: Outdated example.

Mobile Wireless Data Service

Vermonters are served by all of the major wireless network providers, but AT&T Mobility and Verizon Wireless have the deepest facilities-based penetration in Vermont. VTel recently launched a wireless service, which is anticipated to be operational statewide. Vermonters may also choose service from a variety of pre-paid service providers and resellers of national service. As discussed more fully in the Voice portion of this chapter, mobile carriers are continuously expanding coverage and upgrading facilities to bring 4G/LTE service to existing coverage areas.

Vermont needs its wireline networks at this time. For rural residents and small businesses, wireline service is a necessity. Residents in rural areas may not have adequate cell coverage. DSL is also the best available broadband option in Vermont's most rural areas. Concerns over E-911 and the reliability of wireless service in a power outage are valid and should be

DRAFT

carefully considered before the state accepts wireless services as a substitute for wireline services.

Fiber Optic

~~The VTA has developed fiber optic infrastructure to support broadband service and provide backhaul for cell sites wireline transmission from the cell site to the carrier's network. Its largest project to date is the funding of the Vermont Fiber Connect project, an initiative of the federal Broadband Technology Opportunities Program (BTOP) stimulus. The project connects over 340 community anchor institutions in the project area, encompassing seven of Vermont's fourteen counties. Vermont Fiber Connect serves Montpelier, Barre City and immediate surrounding areas in the Region. Fiber optic technology is also advancing rapidly. While older fiber in the State is becoming outdated and getting costly to maintain and run, it is still much better than any improvements in copper and wireless technology currently in place.~~

Commented [KP186]: This section is out of date. Fiber optic coverage is discussed in the added paragraph above.

Emergency/Health Services

The availability of emergency services and health care facilities helps to ensure the personal safety and physical well being of Central Vermonters. As the Region grows, changes, and ages, new and increasing pressures will be brought to bear on service providers and existing facilities. While the cost of providing such services soars, public funding supplies are not keeping pace. Obviously then, it will take innovative thinking and action to address the Region's long term emergency and health care needs.

~~The Enhanced 911 Board operates nine 911 call answering points, known as public safety answer points or PSAP's. One of the nine PSAP's is located at the Montpelier Police Department. During 2001, 5,251 calls were answered for Central Vermont communities by the PSAP's. This represented 3% of the total calls made statewide. In 2002, the number of calls from Central Vermont increased to 9,557, or 6% of all statewide calls. It should be noted, however, that statewide calls were down by 8% in 2004.~~

Commented [KP187]: Outdated and not required by statute.

DRAFT

Fire Protection

Central Vermont is protected by over ~~20~~ 19 local fire departments. Most of these are based in village or urban areas and staffed by volunteer crews. In some instances, the demands on local fire departments are beginning to outstrip their capabilities. Sprawling development patterns make response more difficult and time consuming. In addition, many departments are faced with a shortage of trained volunteers and less than state-of-the-art equipment.

Commented [KP188]: Updated data from new draft Infrastructure chapter.

All of the Region's fire companies are members of mutual aid systems. These associations provide for back-up assistance from neighboring member companies, when needed.

Police Protection

Although not immune to crime, Central Vermont has historically enjoyed low crime rates. ~~The Region's crime rate of the 1990's has declined sharply in the more serious crimes (Part I crimes such as homicide, aggravated assault, etc.) and less significantly in lesser crimes (Part II crimes such as forgery, vandalism, simple assault, etc.) since the high in 1993. The Part I crime rate dropped by 23% from a region- wide rate per 1,000 population of 33.42 in 1990 to 26.01 in 2001 while the state- wide rate decreased by 35% from 45.64 to 29.90. The Part II crime rate for the Region increased from 70.46 in 1990 to a high of 85.60 in 1993. However, the 2001 rate dropped to 78.10, a decline of 9% from 1993. The statewide rate in 1990 was 83.33 and in 2001 was 82.57, a slight decrease from 1990, but a decrease of 10% from its peak of 91.03 in 1997.~~ Our ability to maintain lower crime rates will depend on maintaining adequate police services at the local and regional level.

Commented [KP189]: Outdated data and not required by statute

Barre City, Barre Town, Berlin, Montpelier, and Northfield ~~and Waterbury~~ maintain municipal police squads. The Washington and Orange County Sheriff's Departments, located in Montpelier and Chelsea respectively, provide contractual law enforcement services to some of Central Vermont's smaller communities. The Vermont State Police (with headquarters in Waterbury and barracks in Middlesex) provides primary police service to those towns without municipal squads or contracts with County departments,

and backup assistance to all others. In addition, the State Police patrols Interstate 89.

~~Police departments responding to CVRPC's survey cited increasing crime and lack of manpower as the greatest problem for the foreseeable future.~~

Commented [KP190]: Outdated survey.

~~Table 4: Emergency Resources by Municipality in Central Vermont (Town Plan Data) old table deleted~~

Commented [KP191]: Outdated data, new table below.

Emergency Resources by Municipality in Central Vermont

Commented [KP192]: Updated with information from Town Plans, Annual Updates, and Town websites

Town	Police Force	Fire Protection	EMT
Barre City	Full Time	Full Time	Full Time
Barre Town	Full Time	Hourly	Full Time
Berlin	Full Time	Volunteer	Contracted from Barre Town
Cabot	State and Sheriff Contract	Volunteer	Volunteer
Calais	State and Sheriff Contract	Contracted from Woodbury and East Montpelier	Contracted from Woodbury and East Montpelier
Duxbury	State and Sheriff Contract	Contracted from Moretown and Waterbury	Contracted from Waterbury
East Montpelier	State and Sheriff Contract	Full Time with Volunteers	Full Time with Volunteers
Fayston	State and Sheriff Contract	Volunteer	Volunteer (MRV Ambulance Service)
Marshfield	State and Sheriff Contract	Volunteer	Contracted from East Montpelier
Middlesex	State Contract	Volunteer	Contracted from Montpelier
Montpelier	Full Time	Full Time	Full Time
Moretown	State and Sheriff Contract	Volunteer	Contracted from Montpelier, Waterbury and MRV Ambulance
Northfield	Full Time	Volunteer	Full Time and Volunteer
Orange	State Contract	Contracted from Barre Town, Washington and Tri-Village Fire Dept	Contracted from Barre Town
Plainfield	State Contract	Volunteer	Volunteer
Roxbury	State Contract	Volunteer	Volunteer
Waitsfield	State and Sheriff Contract	Volunteer	Volunteer (MRV Ambulance Service)
Warren	State Contract	Volunteer	Volunteer (MRV Ambulance Service)
Washington	Sherriff Contract	Volunteer	Contracted from Barre Town
Waterbury	State Contract	Volunteer	Volunteer
Williamstown	State and Sheriff Contract	Volunteer	Contracted from Barre Town
Woodbury	State and Sheriff Contract	Volunteer	Contracted from Hardwick Emergency Rescue Squad
Worcester	State Contract	Volunteer	Volunteer

Ambulance/Emergency Medical Services

~~Some 17~~ Both full time and volunteer ambulance and emergency medical squads operate in and around Central Vermont, providing first aid and medical transport to injured persons. Most of these operate with volunteer

Commented [KP193]: Outdated data. New data is represented in the chart above.

DRAFT

crews and are funded at least in part by donations and user/ member fees. Lack of volunteers and members are cited by several squads as major concerns for the future.

Medical Facilities

The Central Vermont Medical Center (CVMC), located at Berlin Corners, is the Region's most significant medical complex. With 122 beds and a service area which includes all of Washington County and portions of neighboring counties, CVMC is truly a regional facility. A wide range of medical specialties and procedures including; emergency care, x-rays, rehabilitation, pre-natal and maternity care, pediatrics, physical therapy, mental health care, and cardiology, are available at CVMC. Some unusual and complex problems, however, may require more sophisticated treatment and/or equipment at tertiary care hospitals.

~~The Vermont State Complex in Waterbury, while now largely converted to state offices, still provides mental health care for some patients.~~ In addition, the Washington and Orange County Mental Health Agencies provide mental health counseling, adult day programs, and substances abuse services to those in need.

Commented [KP194]: This service is no longer provided.

The Region's elderly population is expected to grow for at least the next several decades. Accordingly, elder care facilities and services will become increasingly important. The region is host to 19 nursing, assisted living, and residential care home facilities. ~~Central Vermont hosts five nursing homes boasting more than 500 beds in total. In addition, there are several facilities which provide at home nursing and health care options.~~

Commented [KP195]: Updated data from the new draft Infrastructure chapter.

Finally, Central Vermont is home to several health care clinics including Planned Parenthood of Northern New England (Barre ~~and Waterbury~~), private facilities, and complexes of physicians.

Commented [KP196]: Location was permanently closed.

Health care costs continue to rise at a rate faster than the rate of inflation. Consequently, access to adequate health care services has become an impossibility to many. It is the position of CVRPC that health care should be everyone's right.

DRAFT

Emergency Planning

Emergency planning is an important aspect of planning that is critical to every municipality in Central Vermont and the Region as a whole. The goal of emergency planning is to work toward the development of disaster-resistant communities; through land use planning that reduces the impacts of disasters on persons and property. Municipalities can utilize tools, such as town plans and zoning regulations, to implement sound land use practices that consider the consequences of disasters, whether they be naturally occurring or man-made. In order for a municipality or the Region to understand the types and extent of potential disasters, an assessment of all known risks from potential natural and man-made disasters needs to be completed. These identified risks can then be used to develop land use practices that will protect a community from disaster, based on mitigation, preparedness, response, and recovery.

Naturally occurring disasters, which are the most common form of disaster in Central Vermont, are those events that result from environmental conditions. These disasters vary in frequency and magnitude, but always pose a threat to the Region. In Central Vermont, the most common types of natural disasters include: floods, winter storms, hurricanes, landslides, wildfires, earthquakes, and even tornadoes. Although some of these disasters may seem unlikely in Central Vermont, it is critical to plan for them, so that the impacts from their occurrence can be mitigated if they do indeed hit the Region. However, those disaster events that occur more frequently in Central Vermont, mainly floods and storms, should be given priority in the planning process.

~~Between 1996 and 2006, the National Climatic Data Center reported 267 major storm events in the Central Vermont Region, all of which resulted in the loss of life or property. In total, these storm events cost Central Vermont $21.083 million in property damage and resulted in 5 deaths.~~ Several major flooding events have affected the state in recent years, resulting in multiple Presidential Disaster Declarations. From 2003 to 2019, Washington County experienced roughly $88.82 million in municipal property damage due to flood events. It is estimated that the July 10th, 2023 flood created $352.7 million in County damages. Based on this data, it is evident that Central Vermont is vulnerable to major storms and the

Commented [KP197]: Data from more recent flood events added to better describe current conditions.

damage resulting from them.

Man-made disasters are those events that are caused by humans, usually involving accidents with hazardous materials. Man-made disasters can occur either on-site, such as factory malfunction, or in transit, such as an accident involving a truck carrying hazardous materials. Although these types of events occur less frequently in Central Vermont than natural disasters, they can be extremely dangerous and a threat to public health. Title III of the Superfund Amendment Reauthorization Act (SARA), Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C.11001 et seq. (1986) gives a municipality the legal right to know what chemicals are being used, stored, made, or transported through the community. During a community's risk assessment, this information regarding the presence of chemicals can be gathered from businesses.

Mitigation is any action that reduces or eliminates long-term risk to people and property from disasters and their impacts. It involves an ongoing effort at the individual, local, State, and Federal level and is aimed at reducing the impact of disasters on families, homes, communities, and economies. Mitigation includes compliance with the National Flood Insurance Program (NFIP). Municipalities must be in compliance with this program in order for property owners to receive flood insurance to offset some of the costs of major flood events. All 23 municipalities in Central Vermont are in compliance, however, FEMA is currently updating Flood Hazard Maps and regulatory standards – actions that will require amending local bylaws in many cases, if eligibility is to be maintained. CVRPC has been assisting out communities in responding to these new mandates.

Municipalities in Central Vermont have a variety of tools and programs to assist them with mitigation activities. The Federal Emergency Management Agency (FEMA), through Vermont Emergency Management (VEM), administers the Hazard Mitigation Grant Program (HMGP).

This program allocates funding to municipalities, following a Presidential-declared disaster, to implement mitigation projects. In addition, the Vermont Local Roads Program~~, administered through St. Michael's College~~, assists municipalities in setting the proper standards for planning roads, culverts,

Commented [KP198]: Since 2014, VTrans is now in control of the program.

bridges, and access to local roads. ~~Finally, the Central Vermont Regional Planning Commission is currently in the process of developing a Regional Pre-Disaster Mitigation Plan which will address vulnerabilities and relevant mitigation projects throughout Central Vermont. Depending on the availability of funds, local appendices covering specific concerns and projects for each municipality will be developed in consultation with local officials.~~

~~Preparedness is the process of inventorying and organizing the people and tools available for responding to an emergency event. A municipality's Rapid Response Plan (RRP) is the first step towards emergency preparedness. An RRP, which identifies key emergency personnel, contact numbers, locations, tasks, and an evacuation plan, is a guide for use in the early stages of disaster response. Although RRP's are not required, all municipalities in Central Vermont are strongly encouraged to have one in place and to update it annually.~~ The ~~Local Emergency Planning Committee (LEPC)~~ Regional Emergency Management Committee (REMC) is comprised of one emergency coordinator from each municipality and one representative from the emergency services community. The ~~LEPC~~ REMC is responsible for developing a disaster response plan for the Region, including training and exercises. ~~Currently, not every municipality in Central Vermont has a representative on the LEPC; only Barre City, Barre Town, Middlesex, and Northfield do. However, all local leaders and emergency personnel are encouraged to participate in the Committee.~~

Response is a time sensitive reaction to an emergency event designed to save lives, save property, and stabilize the situation. Response to an event includes warning, evacuating, rescuing, sheltering, informing, and providing medical care to the public.

Recovery is the effort to restore the infrastructure and the social and economic aspects of communities after a disaster occurs. In the case of severe events in which the President of the United States declares a disaster; Federal funds will become available to assist impacted communities with recovery efforts.

Emergency Management

Commented [KP199]: Outdated.

Commented [KP200]: RRPs are now integrated into LEMPs. See Emergency Management section below for added language about LEMPs

Commented [KP201]: Updated because LEPC is now at the state level.

DRAFT

Emergency management in Central Vermont is handled at the local level. It is led by a municipality's emergency managers and emergency personnel who are either professional or volunteer-based depending on the community. Emergency management deals with the emergency events that occur on a regular basis, such as fire, injury, accidents, and crime. It is very important to the social and economic stability of Central Vermont and should be a high priority in the Region. Due to limited emergency resources and the geographic extent of certain towns, emergency management is sometimes coordinated among municipalities. This is especially true with ambulance and rescue services in Central Vermont.

~~As a result of towns lacking sufficient resources to meet FEMA requirements to prepare for disasters, VEM looked to the regional planning commissions to contribute educational information, training, and emergency expertise. In 1999, VEM contracted with the regional planning commissions to administer the Local Emergency Management Program (LEMP). This required the regional planning commissions to work with local municipalities on emergency planning, mitigation, education, exercises, and response.~~

Local planning for disaster response is primarily done in Vermont by Local Emergency Management Plans, an integral part of each community's response. This is stated in 20 V.S.A. § 6 and the State Emergency Management Plan. That all municipal jurisdictions are expected to update and review their Local Emergency Management Plan yearly and to formally readopt them following town meeting day and before June 1st. These plans address the framework of how a town will respond during a significant event or disaster. The plan stipulates who the emergency management director is, where the town Emergency operations center and shelters are located, and any spending authority the emergency management director may have during a disaster. The plan is also used by the state during a disaster for who to contact in each town and reporting to the State Emergency Operations Center. This is also required to receive federal preparedness funding and is a component in the state Emergency Relief and Assistance Fund that combined with the other requirements increases a municipalities state reimbursement rate during a declared disaster.

Commented [KP202]: Text drawn from new draft Infrastructure chapter to reflect changes to emergency management planning.

DRAFT

Crime And Safety

~~Central Vermont is a relatively safe place to live where neighbors tend to look out for each other, and conflicts between members of the community are the exception rather than the rule. Vermont's crime rates are considerably below national averages and there wasn't a dramatic increase in those rates during the 1990's. It continues to be in the best interest of the Region and its residents to maintain and improve upon this enviable position.~~

Commented [KP203]: These trends have changed in the past 20 years. While Vermont is still below the national average, our crime rates have changed significantly. For example, while the violent crime rate in VT was 44% lower than the national average in 2023, between 2013-2023, violent crime increased by 70 percent in Vermont. Vermont Criminal Justice Data Snapshot

At first glance, crime may not seem like an issue that bears much relation to land use planning. However, these issues do share many of the same peripheral concerns. Population growth tends to increase the opportunity for both interpersonal and land use conflicts. In addition, crime prevention experts and land use planners are both interested in many of the same "quality of life" issues, including: livable wage, the availability of meaningful jobs, access to education and training, access to transportation, community stability and vitality, recreational opportunities and even the aesthetic quality of the places where people live. It is widely accepted that vibrant, pleasant, well-planned communities can avoid many of the socio-economic conditions that lead to conflict. Conversely, low crime rates are essential to the creation and maintenance of these kinds of places. To the extent that this relationship exists, it can be said that this Plan deals with the issue of crime prevention by default in the policies and programs espoused in its required elements. However, CVRPC believes the connection between land use planning and community conflict is important enough to merit direct attention.

Crime prevention is only one piece of the puzzle, however. The others may be found in the answer to the question "What happens after a crime has been committed?" The components of the answer involve the exploration of such concepts as justice, punishment, rehabilitation, restoration, and re-integration.

The traditional justice model is founded on the concept of retribution. The offender is generally punished for his or her offense by jail time, fines, or probation. The sentence is intended to be both the punishment and the

DRAFT

rehabilitation with the prospect of returning to jail serving as the incentive to reform behavior. The offender has little or no contact with the victim of the crime and no requirements (or opportunity) to make amends directly. Some crime experts argue that this traditional justice model is responsible for over-crowded prisons, high recidivism rates, and an unsatisfactory outcome for crime victims.

Corrections agencies around the country, however, (including Vermont's Department of Corrections, DOC) ~~are beginning to~~ also operate under a ~~new~~ paradigm that stresses "restorative" over "retributive" solutions for non-violent crimes. This ~~new~~ model (called the "Restorative Justice Program" and authorized in Vermont Statute Title 3 Section 163) is intended to make offenders answer directly to those they have wronged and begin to make amends to their victims and the community. Often this approach can maximize public resources by having offenders perform community services instead of serving costly prison sentences. In addition, it can reduce court loads and the associated expense to the taxpayers. However, there is the danger of the cost of delivering justice in this format being shifted from the State to the municipality.

Under the "restorative" model, justice for non-violent crimes may be prescribed by those closest to the offender and the victim through the establishment and operation of community reparative boards and/or restorative justice centers. Such an approach could work hand in hand with other local initiatives, such as neighborhood watch programs and "reintegration panels." While community-based justice would be in keeping with CVRPC's commitment to "bottom up" public processes, valid concerns exist over impartiality, over-zealousness, and personal vendettas whenever small town dramas play out. Consequently, the community restorative justice model demands protection against abuse. In addition, financial incentives to municipalities are an integral part of the success of the community restorative justice model. The costs usually borne by the State should not be passed on to the municipalities.

Obviously, this model is not applicable to violent or serious crime. In such instances the need to protect the public from further harm requires that offenders be incarcerated even as it is becoming increasingly difficult to

DRAFT

house the prison population.

Educational Facilities and Services

A commitment to education is the hallmark of an enlightened society. A well-educated citizenry contributes to the societal, economic, and cultural well being of a place. Education expands the horizon of individuals, families, communities, and nations. It is the laboratory in which new ideas develop, ideas that may one day mold the future, or correct the mistakes of the past. Further, education should be a life-long process, not a luxury of youth.

While the link between education and regional planning is not particularly obvious, there are in fact connections. Planning decisions regarding the location and amount of future growth may influence the location and size of future schools or the stability of existing ones. Planning can help schools project future needs and assist municipalities in financing capital improvements. CVRPC hopes this Plan can be used to broaden access to educational and vocational training opportunities, so as to help ensure the full realization of the abilities of Central Vermonters.

Central Vermont is home to ~~17~~ 18 public elementary/middle schools, eight middle and /or high schools, and two schools (Cabot and Twinfield) which host students K-12. ~~Many of these institutions are either approaching or over their capacities. Higher education thrives in Central Vermont.~~ There are a couple of higher education programs in Central Vermont, including Norwich University in Northfield ~~and its affiliate, Vermont College in Montpelier, and Goddard College in Plainfield~~ which offers four-year degree programs, in a variety of disciplines. Associates Degree programs and about 100 different courses are offered through the Community College of Vermont (CCV). CCV maintains central administrative offices in Waterbury and conducts classes in Montpelier. ~~Woodbury College, in Montpelier, offers training in mediation, Para-legal skills, counseling and human relations. Montpelier's New England Culinary Institute trains in the culinary arts and operates two restaurants where skills are honed.~~

Public School Enrollment

Commented [KP204]: Outdated trend.

Commented [KP205]: School closed in 2024.

Commented [KP206]: Closed in 2008.

Commented [KP207]: Closed in 2020.

Commented [KP208]: Updated data.

DRAFT

Org Id	School Name	2015	2025	% CHANGE
PS381	Barre City Elem/Middle School	771	617	-19.97
PS020	Barre Town Elementary School	755	719	-4.77
PS033	Berlin Elementary School	168	150	-10.71
PS390	Brookside Primary School	716	300	-58.10
PS055	Cabot School	169	130	-23.08
PS056	Calais Elementary School	117	77	-34.19
PS391	Crossett Brook Middle School US #45	263	260	-1.14
PS357	Doty Memorial School	63	63	0.00
PS091	East Montpelier Elementary School	175	172	-1.71
PS107	Fayston Elementary School	90	98	8.89
PS138	Harwood Union Middle/HS #19	649	550	-15.25
PS173	Main Street Middle School	184	348	89.13
PS191	Montpelier High School	280	383	36.79
PS193	Moretown Elementary School	98	119	21.43
PS210	Northfield Elementary School	242	211	-12.81
PS211	Northfield Middle/High School	296	256	-13.51
PS215	Orange Center School	102	80	-21.57
PS250	Roxbury Village School	37	Closed	N/A
PS181	Rumney Memorial School (Middlesex)	156	88	-43.59
PS276	Spaulding UHS #41	717	611	-14.78
PS304	Twinfield Us #33	372	282	-24.19
PS305	U32 UHS #32	773	646	-16.43
PS308	Union Elementary School	469	366	-21.96
PS315	Waitsfield Elementary School	127	126	-0.79
PS320	Warren Elementary School	145	106	-26.90
PS322	Washington Village School	79	105	32.91
PS343	Williamstown Elementary School	196	192	-2.04
PS344	Williamstown Middle/High School	318	263	-17.30
PS353	Woodbury Elementary School	43	48	11.63
		8570	7366	-14.05

Source: Vermont Agency of Education (2025)

Vocational training opportunities are available to Central Vermonter's primarily through the Barre Regional Vo-Tech Center which offers programs

DRAFT

in: accounting/bookkeepers, typing/general office skills, general marketing, allied health, food service, vocational home economics, brick/stone masonry, automotive mechanics, and drafting. Some area high schools offer courses in vocational skills as well.

Despite declining enrollment, some public schools face major expansion, renovation, or construction costs due to State public facility standards, as well as other factors.

Child Care

Overview: The availability of safe and affordable child care services is critical to the Central Vermont Region. Quality child care benefits families by preparing children for schooling and social interaction while enabling parents to work and provide income. It benefits businesses by expanding the workforce and creating more reliable, productive employees. Furthermore, child care facilities are businesses themselves and their existence expands local and regional economies directly through the hiring of workers and purchase of goods and services. Research has shown that investment in early child development programs brings a real (adjusted for inflation) public return of 12% and a real total return, public and private, of 16%.

Availability: Despite the economic and social good created by child care services, Vermont appears to have a shortage of such facilities. In fact, the Child Development Division of the Vermont Agency of Human Services estimates that the capacity in regulated facilities meets only 50-60% of the State-wide need. Consider the following statistics:

- ~~80% of Vermont workers with children under the age of six work outside the home.~~
- ~~87% of Vermont women with school age children work outside the home.~~
- ~~There are 93,436 children ages birth through 12 in the State. An estimated 60,733 of those require child care.~~
- ~~There are currently only about 36,000 children in regulated care.~~
- ~~Only 35% of licensed centers serve infants and toddlers.~~
- ~~On average, children under six receiving child care spend 8-9 hours~~

DRAFT

~~per day with their care providers.~~

- ~~Only 25% of the demand for infant care is being met.~~
- ~~An estimated half of all Vermont businesses have employees with a child or children in child care.~~
- 72% of infants, 50% of toddlers, 53% of preschoolers are likely to need care and don't have access to any regulated programs in Washington County.
- There are 28,997 children under the age of 5 in the State. An estimated 22,249 of those require childcare.
- Cost of childcare has increased with average costs across the state being $13,915/year for infant care at a Childcare Center (CCC) and $9,428/year at Family Childcare (FCC) this being between 10%-14% of median income of a two-earner family to 32-48% the median income of a single-parent household. Vermont-Front (childcareaware.org) Costs decrease slightly as a child grows but costs for a 4-year-old are still $12,835/year (CCC) and $8,885/year (FCC).
- Only 35% of licensed centers serve infants and toddlers in the State of Vermont.
- Only 25% of the demand for infant care is being met.
- An estimated half of all Vermont businesses have employees with a child or children in childcare.
- From the Lets Grow Kids Stalled at the Start, Vermont's Child Care Challenge report 2024 Washington County's estimated need was 545 infant, 211 toddler, and 447 preschool slots. Orange County needs an estimated 298 infant, 94 toddler, and 245 preschooler slots.

~~Regulated~~ Licensed Child Care Providers in Central Vermont, Vermont Agency of Human Services

Town	~~Registered Home Care Providers~~ Licensed Child Care Programs	% Regional Total
Barre City	15	14.2%
Barre Town	15	14.2%
Berlin	5	4.7%
Cabot	4	3.8%
Calais	4	3.8%
Duxbury	3	2.8%

Commented [KP209]: Updated information drawn from new draft Infrastructure chapter.

Commented [KP210]: Updated with 2026 data.

DRAFT

East Montpelier	7	6.6%
Fayston	1	0.9%
Marshfield	0	0.0%
Middlesex	2	1.9%
Montpelier	12	11.3%
Moretown	3	2.8%
Northfield	4	3.8%
Orange	1	0.9%
Plainfield	4	3.8%
Roxbury	0	0.0%
Waitsfield	6	5.7%
Washington	2	1.9%
Waterbury	7	6.6%
Warren	3	2.8%
Williamstown	7	6.6%
Woodbury	0	0.0%
Worcester	1	0.9%
Total	106	

In Central Vermont, there are ~~87 registered home care providers and 22~~ 105 licensed care providers with a total licensed capacity for 2,396 children as of February 2026 (see Table # for breakdown). However, there are only ~~7~~ 35 "quality" providers (licensed with 4 or 5 STARs in the Vermont Step Ahead Recognition System and/or with national accreditation). ~~Furthermore, if we assume that each center is licensed for 50 children (some are less and some are more) then there are 350 spaces for an estimated 21,000 working population. This~~ Current data suggests that we have a crisis that is affecting the social and economic well-being of Central Vermonters.

Commented [KP211]: Updated data.

~~Affordability: According to the Child Development Division of the Vermont Agency of Human Services, the average cost for center-based care for infants is $140.92 a week and $125.71 for pre-schoolers. This means a family with an infant and a pre-schooler in licensed care would pay $266.63 a week, or $13,865 a year, for child care. (These figures may be the average for all providers, but are low for quality ones. Costs range from $8,000 to $11,000 per year per child depending on age. State subsidies are available, but fall short of actual tuition.) This equates to 29% percent of~~

DRAFT

~~the median household income for Central Vermont.~~

Commented [KP212]: Updated data is reflected in new bullet points above

It is probable that the high cost of child care keeps some residents of the Region out of the workforce. Simply put, for some families the cost and inconvenience of putting children in daycare outweighs any potential income gain. Even moderate income families that do opt for a daycare solution, often pay a large portion of their total income for these services and consequently struggle to get ahead.

~~While the financial challenges of child care are certainly daunting, the State of Vermont DCF Subsidy Program, operated by the Agency of Human Services, does provide some financial assistance to low and moderate income families. The amount of the subsidy available is based on a formula (tied to the poverty rate) which takes into account both income and family size. Unfortunately, the formula has not been changed since 1999. Consequently, the percentage of families qualifying for subsidies has been decreasing. It would cost an estimated sustainable $18 million to bring subsidies up to date. Therefore, many working poor families are caught in a downward spiral. Both parents need to work, can't afford child care and education which then affects their ability to survive.~~

Commented [KP213]: Section is out of date given substantial changes to subsidy program under Act 76.

Resources: While child care "slots" are scarce, resources for parents, providers and would-be providers are abundant. Among the many sources of information and assistance are:

- The Family Center of Washington County/Child Support Services – Offers referral services, operates care programs. ~~www.fcwvt.org/child care~~. https://fcwcvt.org/ ~~(802) 828-8771 (referral), (802) 828-8774 (subsidy).~~
- Bright Futures Child Care Information System – Web based resource providing comprehensive information on child care in Vermont, as well as municipal level data on regulated care providers. www.brightfuturesinfo.org
- Vermont Association of Child Care Resource and Referral Agencies – Works with parents, care providers, businesses and community organizations to provide quality child care services throughout the State. ~~www.vermontchild-care.org~~ https://www.childcareresource.org/
- Vermont Child Care Consumer Line – Provides access to records of

DRAFT

violations, counseling regarding child care concerns.
~~www.dcf.state.vt.us/cdd/programs/ child care/cccl.html.~~ Child Care Consumer Line | Department for Children and Families

Healthy Communities

Community Infrastructure

The availability and quality of infrastructure, including transportation, communication, and public services, shape the day-to-day lives of community members. Insufficient infrastructure in economically challenged communities can hinder economic development, limit opportunities for social interaction, and impede overall community well-being. Isolation and social ostracization are major risk factors for mental health issues and substance use.

Social Cohesion and Inclusion

The social fabric of a community is crucial for its health. Social factors, including inclusivity, diversity, and community engagement, shape the sense of belonging and well-being among residents. Communities with strong social cohesion tend to experience lower rates of crime, improved mental health, and a higher overall quality of life.

Although it's hard to measure social isolation and loneliness precisely, there is strong evidence that many adults aged 50 and older are socially isolated or lonely in ways that put their health at risk. Older adults are at increased risk for loneliness and social isolation because they are more likely to face factors such as living alone, the loss of family or friends, chronic illness, and hearing loss. Recent studies found that:

- Social isolation significantly increased a person's risk of premature death from all causes, a risk that may rival those of smoking, obesity, and physical inactivity.
- Social isolation was associated with about a 50% increased risk of dementia.
- Poor social relationships (characterized by social isolation or loneliness) were associated with a 29% increased risk of heart disease and a 32% increased risk of stroke.

Commented [KP214]: Updating links and removing old contact information

Commented [KP215]: This section is from the new Infrastructure chapter. This information would be important for bolstering EJ requirements (State Goal 15).

Commented [KP216R215]: Included in 3 V.S.A. chapter 72 is a description of environmental benefits and burdens. Benefits includes access to green spaces, nutritious food, and clean natural resources. Environmental burdens included are excessive noise, climate change impacts, and home/building health hazards. Further, the Vermont Environmental Disparity Index (VTEDI) indicates that there are a number of communities in Central Vermont that are in the 75th or 100th VTEDI percentile. While EJ concepts are embedded throughout the text, having a clear section like Healthy Communities would help to acknowledge CVRPC's commitment to those communities and would directly align with State Goal 15.

DRAFT

- Loneliness was associated with higher rates of depression, anxiety, and suicide.
- Loneliness among heart failure patients was associated with a nearly 4 times increased risk of death, 68% increased risk of hospitalization, and 57% increased risk of emergency department visits.

New Americans who are linguistically and/or culturally isolated may also face adverse health outcomes due to social isolation.

Employment and Economic Stability

Economic factors, including employment opportunities and income levels, are fundamental to community health. High rates of unemployment, underemployment, or low wages can contribute to financial stress, affecting the health of individuals and families. Economic instability within a community can result in increased rates of poverty, diminished access to healthcare, and a general decline in overall well-being.

Housing and Neighborhood Conditions

The quality of housing and neighborhood conditions significantly influences community health. Socioeconomically disadvantaged communities may face challenges such as inadequate housing, lack of access to essential services, and environmental hazards. These factors contribute to higher rates of health issues and reduced quality of life for residents.

Environmental Factors

The environmental conditions in which a community exists can impact the health of its residents. Socioeconomically disadvantaged communities may be disproportionately affected by environmental pollution, lack of green spaces, and inadequate infrastructure. These factors contribute to higher rates of respiratory issues, chronic diseases, and overall reduced well-being.

Noise and Environmental Stressors

Noise pollution and other environmental stressors can impact the mental health of community members. Constant exposure to high levels of noise, industrial activities, or environmental stressors can lead to increased stress, sleep disturbances, and mental health challenges. Mitigating these factors is crucial for fostering a healthier and more resilient community.

DRAFT

Built Environment and Safety

The design and safety of the built environment significantly influence community health. Safe and well-maintained buildings and neighborhoods contribute to a sense of security, reducing the risk of accidents and injuries. Conversely, poorly designed or unsafe environments can lead to higher rates of accidents, injuries, and overall community distress.

Climate Change and Resilience

The impacts of climate change, including extreme weather events, rising temperatures, and natural disasters, can have severe consequences for community health. Vulnerable communities may face increased risks of heat-related illnesses, vector-borne diseases, and displacement. Building resilience and implementing sustainable practices are essential for mitigating the health impacts of climate change on communities.

Physical Environment

The physical environment in which communities exist plays a vital role in shaping the overall health and well-being of their residents. From air and water quality to green spaces and infrastructure, various factors in the physical environment contribute to the health dynamics of a community. This includes land use planning and town bylaws and the influence they have on how a community plans for local transportation, recreational opportunities, environmental protection, and energy use, and where a community locates medical care and emergency response facilities, food access, safe and affordable housing, employment centers, and parks and playgrounds.

Access to Green Spaces

The availability of green spaces within a community has a profound impact on the physical and mental well-being of its residents. Communities with ample parks, recreational areas, and green infrastructure tend to experience lower rates of stress, improved physical fitness, and enhanced community cohesion. Green spaces also contribute to a higher quality of life and support overall community health. Green spaces offer health benefits such as space to play and exercise, access to quality air, increase in sense of belonging, and places to gather. They also offer widespread benefits to a community such as stormwater runoff management, flood resiliency, air filtration and

DRAFT

phytoremediation of chemicals. Access to green spaces is not always equitable in our communities. Barriers such as cost, transportation, inaccessibility, feeling unwelcome or not sure if one belongs, unsafe access (busy roads) and distance from where one lives and not having enough pre-visit information are all conditions that can limit or deny access to green spaces. Disparities in access to green spaces are higher for those of certain identities, backgrounds or intersections of identities and backgrounds. Many studies have found that green spaces in urban areas are larger and more accessible to wealthier and predominantly white neighborhoods and are less accessible to neighborhoods with a higher percentage of residents of racial minorities and those of lower socioeconomic status.

Air and Water Quality

The quality of air and water directly influences the health of community members. Poor air quality, often associated with industrial emissions and traffic pollutants, can contribute to respiratory diseases and other health issues. Similarly, contaminated water sources pose significant risks to public health, leading to waterborne illnesses and long-term health consequences.

Historically, the Region's local air quality concerns have been limited mainly to emissions from traffic, heating systems and some agricultural practices; the cumulative effect of these sources will likely increase with additional growth and have greater impact on local air quality. Air quality is also a growing concern due to the increased frequency and duration of wildfires. Currently, there are no air quality monitoring stations located in the Region. Various stationary sources of emissions within the Region are regulated by the Environmental Protection Agency (EPA), state, and local air pollution agencies. The Agency of Natural Resources maintains statewide Real-Time Air Quality Data and offers a subscription to EPA air quality alerts. Many communities have chosen to include performance standards in their zoning regulations that address sources of air pollution. Discussions about land use, transportation, energy production, and other issues must consider the effect upon the production of greenhouse gases and air quality. Impacts on air quality also pose a serious threat to fragile, high elevation ecosystems. Our forested landscapes play a key role in maintaining good air quality through the sequestration of CO2 and airborne pollutants.

Access to Healthy Food

DRAFT

The availability of nutritious and affordable food options is a critical factor in community health. Food deserts, where residents have limited access to fresh and healthy food, contribute to higher rates of diet-related diseases such as obesity, some cancers and diabetes. Ensuring equitable access to healthy food options is essential for promoting overall community health. The Vermont State Agency of Agriculture Food and Markets provides additional information for residents seeking emergency food services and whom Central Vermonters can contract when in need of help, including information on the Supplementation Nutrition Assistance Program (SNAP) and the locations of food banks or other assistance programs.

Food deserts are geographic areas where residents have few to no convenient options for securing affordable and healthy foods, especially fresh fruits and vegetables. Among other adverse health outcomes, lack of access to healthy food options leads to a greater chance of diabetes and obesity. The USDA definition of a food desert uses two qualifiers, low-income and low access, to determine food desert status. There are 39 census tracts, or neighborhoods, designated food deserts in Vermont, and many of these are in the CVRPC region.

Definitions:

Food Security: All people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. (United Nations)

Food Insecurity: Limited or uncertain availability of nutritionally adequate and safe foods, or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.

Outdoor Recreation

Recreation is a basic psychological need; not a frivolous luxury. To recreate (literally, to "make new") is to refresh minds, bodies, and spirits. The ability to recreate enhances the quality of our lives immeasurably. Where the opportunity for recreation is denied, history and science have shown the spirit withers.

Recreation contributes not only to our individual well being, but to the health of our society as well. Throughout Vermont, recreation breeds tourism, which in turn provides an influx of imported wealth. Recreation also improves the health and productivity of our work force, thereby saving

untold dollars for health care. In addition, a region that boasts recreational amenities has a competitive advantage in attracting new entrepreneurs.

One of Central Vermont's greatest recreational "facilities" is its landscape. Besides being home of Vermont's last undeveloped mountain range (the Worcester Range), a bounty of mountains, rivers, lakes, forest and fields, provide a virtual playground for residents, neighboring regions, and out-of-state visitors alike. The Region boasts some 59,194 acres of public outdoor recreation lands. These include a National Forest, eight state forests, three state parks, four wildlife management areas, and about a dozen municipal forests. In addition, there are public parks and playgrounds, as well as State surface water access points.

In addition, an impressive network of trails traverses the region. While these lands contain some of Central Vermont's finest scenery, natural resources, and recreational opportunities, such values are abundantly represented in many of the region's private holdings, as well. Accordingly, unposted private lands are an important fabric in Central Vermont's recreational tapestry.

Given the Region's natural endowments, it is not surprising that recreational pursuits dependent upon or enhanced by natural resources and scenery flourish here. Skiing, snowmobiling, hiking, jogging, hunting, fishing, golf, cycling, boating, swimming, camping, picnicking, and auto-touring are examples of some of our popular outdoor activities. So popular are they that occasionally their practitioners find themselves in conflict with each other over scarce resources. CVRPC faces the challenge of promoting and capitalizing on those trends which bode well for the region, countering those which may have negative impacts, and adapting to those which are neutral and unavoidable.

~~Furthermore, the Vermont State Outdoor Recreation Plan (SCORP) has predicted that water-based recreation, bicycling, day hiking, walking and X-C skiing will witness increasing popularity over the next few decades, and the public demand for a more elaborate network of trails and green-ways, for recreation and transit, will increase accordingly.~~

Commented [KP217]: Outdated information, SCORP has since been updated.

DRAFT

~~Alpine skiing has, however, shown a decline in terms of participation, although the enthusiasm of its adherents has not been tempered. Recent mild winters, the sport's expense, and the popularity of X-C skiing as an alternative are all factors in the recent decline. However, alpine skiing is a major industry in Central Vermont, and one of the economic mainstays of the region in general and the Mad River Val- ley in particular.~~

~~The SCORP report also identified several societal trends that may affect recreation in Central Vermont in the years to come. Among these are: decreasing leisure time/ shorter vacations; aging population/life long interest in recreation; recreation for fitness; increased privatization and commercialization; continued low levels of public funding for public recreation; resources threatened by recreation/overuse; re- sources/opportunities threatened by development and pollution; redistribution of population and decline in community spirit; changing households; loss of opportunities on private land due to fear of liability, property damage, and fragmentation of large land holdings; and increases in travel and tourism.~~

Cultural Resources

The word "culture" refers to the development, improvement or refinement of the mind, emotions or interests, through ideas, customs, skills and arts. The opportunity for cultural experiences like recreation, theater, the arts, craft making, and public discussion is critical to our well being, happiness, and fulfillment. Culture, while universal among humans, is manifested differently, and with varying intensity, in different places. While the more urbane among us may perceive rural areas as existing in a cultural void, this is never true. Such an assumption about Central Vermont would be particularly erroneous. We are, in fact, in possession of cultural resources of unusual richness, quality and diversity for an area of our size and population.

This wealth of culture is partly responsible for Central Vermont's popularity as a tourist destination. At the same time, tourism bolsters our cultural resources. The link between culture and the economy is becoming

ever clearer.

Central Vermont is home to a talented array of artists, musicians and crafts people, including many who have migrated here seeking a fertile ground and supportive environment for their endeavors. A multitude of festivals, galleries, playhouses, concert halls, and patron organizations exist in support of these talents.

The Region's public libraries (of which there are more than one dozen) conduct and sponsor readings, discussions, lectures and other literary activities. In addition, a few local literary publications provide a forum for amateur writers.

Central Vermont has several facilities capable of housing large cultural events and programs, including the Barre Opera House (seating capacity 645 and recently renovated to be handicap accessible), Montpelier's City Hall Auditorium (seating capacity 600-650), Barre City Auditorium, and Barre City Recreational facility (the BOR). The Region's colleges, and primary and secondary schools also provide space for cultural happenings.

Museums are archives of our culture. Central Vermont's cultural treasures are well protected in a diversity of small museums. Montpelier is home to the T.W. Wood Art Gallery (Vermont College), the Statehouse Museum, the Children's Museum of Central Vermont, and the Vermont Historical Society Museum. The former Kent Tavern Museum in Calais remembers 18th and 19th century agrarian life. In Northfield, the Norwich University Museum displays a variety of military artifacts. Several local historical societies maintain small displays as well.

Libraries

Libraries are critical physical and social infrastructure in the region. There are 14 libraries found throughout our region (11 municipal, 3 incorporated). In addition to library and educational services, our libraries provide community members with internet, computer, and printer access (including 24-hour Wi-Fi in most cases), reliable food distribution and meals, provide bike repair/rentals, art and school supplies in addition to educational

Commented [KP218]: This section is from the new draft Infrastructure chapter to help meet statutory requirements of the utilities element.

DRAFT

programming, resources on mental and physical health, support navigating state and federal resources, free tax services, social meeting rooms and clubs, and more. Furthermore, libraries offer cooling and warming during business hours, and increasingly, adopting policies for extended use during extreme weather conditions. Libraries are an essential resource for all community members especially those with acute needs in day-to-day, emergency, and recovery conditions. Our region's libraries are thus considered important community stakeholders with significant insight into local needs as well as ideal locations for community infrastructure investment including but not limited to flood mitigation, sidewalk/recreation projects, on-site energy generation and storage projects, and more. CVRPC will provide outreach and technical assistance for funding opportunities for libraries to access funding for implementation of projects.

Commented [KP219]: This section also helps to support EEP standards and helps the plan to meet State Goal 15.

List of Public Libraries in Central Vermont

Library	Town	Square Feet	Year Built	Renovation or Addition	Refresh	Public Computer Sessions	WiFi Sessions	Website Visits	Total Programs	Total Program Attend.
Aldrich Public	Barre	20,000	1908	2001	2018					
Brown Public	Northfield	11,790	1906	1999	2020	728	200	0	134	675
Cabot Public	Cabot	1,300	1920	N/A	N/A	1,404	5,951	2,735	125	1,236
Calef Memorial	Washington	966	1919	2016	2022	220	0	1,134	27	418
Cutler Memorial	Plainfield	1,125	1937	1937	N/A	1,300	2,653	4,500	50	319
Jaquith Public	Marshfield	1,700	1920	1990		624	5,916	7,750	106	1,973
Joslin Memorial	Waitsfield	3,082	1913	2018	2018	416	60	2,979	43	702
Kellogg Hubbard	Montpelier	18,449	1895	2000	2022	6,642	65,026	75,026	299	5,295
Moretown Memorial	Moretown	1,700	1835	2005	2012	18		1,705	62	1,261
Roxbury Free	Roxbury	690	N/A	2008	2018	52	2,833	3,000	10	231
Warren Public	Warren	1,450	1872	2009	2021	94	250	4,904	112	2,003
Waterbury Public	Waterbury	7,656	2016		2023	702		21,408	221	2,406
Woodbury Community	Woodbury	1,500	1991	1991	1991		1	947	21	221
Total		**71,408**				**12,200**	**82,890**	**126,088**	**1,210**	**16,740**
Average (Mean)		**5,493**	**1919**	**1998**	**2017**	**1,109**	**8,289**	**10,507**	**101**	**1,395**
Median		**1,700**	**1916**	**2001**	**2019**	**624**	**1,452**	**2,990**	**84**	**969**

Commented [KP220]: EJ Focus Populations in Central Vermont include Plainfield, Barre, Northfield, Roxbury, Warren and Waterbury. Highlighting that these communities have access to libraries which can serve as heating and cooling centers is important in meeting Act 154 statutory requirements.

Historic and Archeological Resources

Preserving an accurate and tangible record of historic and prehistoric endeavors of the people of Central Vermont helps us to develop a better understanding of the past and an awareness and appreciation of our cultural lineage. Significant properties and historic resources edify and provide important benefits to individuals, municipalities, and the Region in the forms of aesthetics enhancement, economic revitalization, tourism, job creation and investment tax credits.

Central Vermont harbors a rich historic record, in its buildings, in its soil, and in the very fabric of its landscape. It is a goal of this Region to preserve, protect, and perpetuate this record as an important part of Vermont's heritage.

DRAFT

Utilities, Facilities and Services Goals, Policies and Strategies

Wastewater Treatment Goal:

Improvement and expansion of waste-water treatment facilities and options so as to protect public health, maximize public investment, and reinforce desired patterns of growth.

Policies:

1. This Plan supports efforts to improve existing wastewater collection and treatment systems.

2. Encourage municipalities to establish a schedule indicating when and for what uses remaining capacity should be allocated. A schedule of the number and types of hookups can serve a similar purpose.

3. Encourage continued efforts to improve water quality through the separation of combined sewers or other method to ameliorate the harmful impacts of combined sewer overflows.

4. Support efforts to upgrade components of aging wastewater systems to address depreciation, improve energy efficiency and increase flood resilience of the Region's systems.

A. Encourage coordination of upgrades to coincide with other municipal infrastructure projects (i.e. roads).

B. Perform outreach to municipalities whose systems are approaching 20-yr design life and connect local operators/commissions with available technical assistance.

5. In order to encourage municipalities to optimize the use of wastewater treatment capacities, municipalities are encouraged to

DRAFT

participate in inter-municipal facilities or agreements. Inter-municipal facilities can prove cost effective for the communities involved. At the same time, capacity allocation agreements offer individual communities the option of encouraging or discouraging growth.

Provide model inter-municipal agreements upon request.

6. New or expanded wastewater treatment facilities should be planned where municipalities have immediate need or where additional growth is appropriate, including ~~*Regional*~~ *Downtown Centers*~~*, Town*~~ *Village Centers*, *Hamlets*, ~~*Resort Centers*~~ *some Resource-based Recreation areas like ski resorts*, and ~~*Mixed Use Commercial and Industrial*~~ ~~areas~~ and Transition/Infill and Enterprise areas.

Commented [KP221]: Updated to reflect new FLUAs under Act 181.

Explore opportunities to develop a region-wide water and wastewater study to identify priority investments to supporting desired growth patterns.

7. Encourage planning for and installation of decentralized community wastewater treatment systems in villages, hamlets, and in clustered housing developments, and ensure that agreements for those facilities adequately provide for ongoing maintenance and oversight.

A. Encourage formation of and support efforts of existing local Wastewater Advisory Committees.

B. Assist with grant writing and coordinate provision of technical assistance (i.e. soil mapping, wastewater studies, capacity-building) to local efforts to identify wastewater solutions.

C. Assist with public outreach and engagement efforts in planning for wastewater infrastructure.

8. This Plan encourages the extension of municipal sewage treatment collection systems to existing developments within currently un-sewered drinking water source protection areas in order to protect

DRAFT

underground water supplies from harmful septic system leachate.

9. Wherever possible, extensions of municipal wastewater collection systems should occur, along or within existing public rights of way.

10. CVRPC will promote and encourage environmentally and fiscally sound solutions to the Region's sludge disposal problem.

11. Work with municipalities to improve outreach to on-site sewage disposal system owners through provision of guidance material explaining how to properly maintain their systems.

12. Support programs to assist with the replacement of failed on-site sewage disposal systems.

13. CVRPC encourages the use of shoreline zoning powers (24 V.S.A., Chapter 117, and Section 4411), in compliance with the Vermont Shoreland Protection Act, to regulate the design of sanitary facilities on lands adjacent to surface waters.

14. CVRPC urges communities to establish retrievable record keeping systems for "as built" municipal waste water system engineering plans, so as to ensure exact knowledge of the placement of underground collection lines.

Water System Goal:

Improvement and expansion of public water system facilities so as to protect public health, maximize public investment, and reinforce desired patterns of growth.

Policies:

1. Where existing water supply systems are functioning properly, they should be utilized. Particularly when located in combination with the region's wastewater systems, the service areas of water supply systems are recommended for high intensity development.

DRAFT

2. Land uses or activities that would measurably degrade the quality of water supply sources should be prohibited.

Assist communities in developing local regulations and/or incentives to protect aquifer recharge areas and source protection areas.

3. Work with the region's small water supply systems to build administrative capacity, coordinate with each other and develop capital improvement plans and budgets.

A. Encourage participation in VT DEC's Asset Management trainings.

B. Incorporate outreach and education regarding water and wastewater infrastructure planning into Municipal Transportation Capital Improvement Planning task in the Transportation Planning Initiative.

4. Inter-municipal water supply agreements are encouraged. The sharing of water resources can be a cost effective method of insuring that water supply adequately supports the municipal plan.

5. CVRPC encourages municipalities that have not already done so, to identify and protect backup or alternative sources of water.

A. Assist such efforts at the request of local officials.

B. Raise awareness of groundwater mapping resources available from the VT Agency of Natural Resources and U.S. Geological Survey.

6. Water service area expansions should be designed to encourage development in areas where growth is appropriate including ~~Regional~~ Downtown Centers, ~~Town~~ Village Centers, Hamlets, Resource-based Recreation areas ~~Resort Centers~~, ~~Rural Commercial~~ and ~~Industrial~~ Enterprise areas and growth centers as identified by town plans.

Commented [KP222]: Updated to reflect new FLUAs under Act 181.

7. Capacity expansion and water quality improvements to existing

DRAFT

water supply systems are encouraged where such problems are impediments to concentrated
growth.

8. CVRPC urges communities when designing and constructing public water systems and, to require the site engineer to provide "as-built" plans so as to ensure exact knowledge of the placement of underground collection lines. when the need for repair or replacement arises.

Electric Power Goal:

Improvement, and expansion of electric power generation methods and infrastructure so as to provide adequate service, conserve energy, maximize benefits of public investment, minimize impacts on aesthetic, ecological and recreational resources, and protect public health.

Policies:

1. CVRPC supports the concepts of "demand side management" and "least cost integrated planning" as mechanisms to reduce electrical power consumption, and its attendant costs (both financial and environmental) through conservation and energy efficiency.

2. CVRPC encourages the development and use of renewable energy sources to meet the region's electrical power needs, while minimizing impacts on aesthetic, ecological and recreational resources (see *Energy* element of this Plan).

3. CVRPC encourages diversity in the region's future power supply so as to establish flexibility and avoid reliance on any single source.

4. CVRPC encourages utilities and the Public Service Board to give greater consideration to making service territories more flexible by allowing for inter-utility connections and deregulation where there will be beneficial impact to the consumer and the environment. Such flexibility will help promote the Region's goals regarding settlement patterns, and save money as well.

DRAFT

5. Proposals to introduce extra high voltage and ultra high voltage transmission lines (capacity greater than 345 KV, AC or DC) to Central Vermont should be carefully scrutinized pending satisfactory resolution to the health and safety issues concerning their operation.

6. The Commission encourages adherence to environmentally and ecologically sound utility line maintenance practices.

Plans and designs for utility infrastructure and corridors should incorporate climate projections and be reviewed for long-term reliability, safety and economic, social and aesthetic impacts.

7. The corridor concept is generally supported by this Plan. As such, the location of new transmission lines should share existing power line routes as illustrated on the Central Vermont utilities map. However, it is recognized that existing routes may not always be optimal for additional or expanded transmission lines. It is also recognized that the construction of distribution lines within, or adjacent to, public highway rights-of-way may, in some instances, have more negative aesthetic impacts than would a parallel route away from the road.

8. Utility infrastructure and corridors shall be sited so as to minimize aesthetic impacts, particularly in areas of local and regional scenic importance.

A. Wherever practicable, utility lines will be installed underground or behind structures in downtowns and village centers

B. The use of wood support structures, appropriate conductor colors for the background, and landscape compatibility techniques are encouraged.

C. Municipalities, in their plans, should consider the visual impacts of the siting of utility poles. Traffic safety and water quality issues may also be pertinent in certain locations.

DRAFT

9. Resource areas, as identified by this Plan, shall be avoided wherever possible, in the location or routing of new substation or transmission facilities.

10. Substation facilities should be located in industrial areas or in those planned for industrial use whenever practical. In any case, such facilities should be sited as un- obtrusively as possible.

Outdoor Recreation Goal:

To promote adequate access to a wide range of high quality outdoor recreation experiences to all sectors of the population.

Policies:

1. CVRPC will encourage and foster the provision of diverse outdoor recreational opportunities, with consideration given to the needs of the elderly, disabled, and economically disadvantaged.

2. CVRPC encourages, in particular, those recreation activities that focus on, respect, enhance, and educate, about the natural environment.

3. Recreation inventories and needs assessments should occur at the local and regional levels in order to determine deficiencies and conflicts, and to identify key recreational resources and opportunities on both public and private land.

4. Municipalities should develop and implement strategies to protect important recreation lands. Actions such as securing voluntary easements, fee or less than fee acquisition, subdivision or zoning regulations which contain provisions for common open space, impact fees or other contractual arrangements are encouraged as alternatives for achieving permanent or semi-permanent protection.

5. Public access to rivers, streams, lakes, ponds and recreation lands is a need in the Region. Municipalities, the State, and private groups, such as land trusts, should coordinate efforts to provide for improved access to the Region's surface waters. At the same time, significant

DRAFT

water related natural areas should be maintained and protected.

6. Priority consideration should be given to rehabilitating and upgrading existing recreation facilities.

7. CVRPC supports the maintenance or upgrading of existing surface water classifications to reflect their actual recreational uses, except where lower classifications may be needed for municipal sewage treatment projects.

8. Landowners are encouraged to voluntarily keep their lands open for public recreation and enjoyment where possible, so as to maintain the Region's tradition of informal, resource based recreation on private lands.

9. CVRPC will support future legislation to alleviate landowners of unreasonable liability burdens.

10. New development proposals are encouraged, through design, to make an effort to preserve access to recreational uses for the general public.

11. The Commission supports and encourages the creation and existence of inter municipal recreation districts. (Inter-municipal districts are legal arrangements whereby a governmental entity joins with another to provide recreational facilities or services. Through these arrangements, increased opportunities may exist for municipalities to acquire or develop land, provide services, or manage an area).

Accordingly, we will continue to provide administrative and technical assistance to the Wrightsville Beach Recreation District Board of Directors.

12. CVRPC will work towards and support the maintenance and development of trail and greenway networks to provide for recreational diversity, tourist amenity, habitat linkage, and low

DRAFT

impact transportation choices. Specifically, the Commission will strive to:

- work with individual municipalities, at their request, to help plan local trails and greenways;
- work with groups of municipalities and/or citizens to promote the concept and realization of a regional trail and greenway network that connects and builds upon local initiatives;
- encourage the paving of shoulder for safe bicycle and pedestrian travel on all state highways in the region;
- encourage the development of multi-purpose trail corridors along abandoned rail beds;
- encourage municipalities to retain Class IV roads and public trails for public recreational use; and
- encourage the provision of recreation along utility corridors, as appropriate.

13. Downhill ski areas provide valuable recreational and economic benefits in Central Vermont. However, certain external costs (e.g. expanded demands on facilities and service, environmental impacts, etc...) are inherent in their operational and expansion activities, too. It is CVRPC's goal to enhance the viability of existing ski areas and foster their development in a manner which will enable them to remain competitive while ensuring that they will protect and co-exist with the natural, physical, and socio-economic environment. Equitable means of sharing external costs between ski areas and their host towns are encouraged where such costs cannot be avoided. The Memorandum of Understanding between the Sugarbush Area Resort, CVRPC, and the Mad River Valley towns is a model for such positive coordination and communication.

14. Atmospheric pollution has become an increasing problem over

DRAFT

the past few decades. It now threatens to disrupt global weather patterns and endanger public health. The impacts of air quality on recreation and tourism are also recognized. CVRPC will support measures to address air quality at the local, regional, state, federal, and global levels. Promotion of energy conservation practices will be the focus of such support (see Energy Element).

Cultural Resources Goal:

To promote adequate access to a wide range of high quality cultural experiences for all sectors of the population.

Policies:

1. CVRPC encourages the development of new cultural facilities and services (including studio space), in Central Vermont, particularly in or near existing settlements and growth centers, as such areas are most accessible to all segments of the population, and the proliferation of culture in such areas will strengthen their vitality.

2. The protection and preservation of existing cultural resources and activities is a goal of the Commission.

3. CVRPC will continue to work with cultural organizations where appropriate, to support cultural resources in Central Vermont.

4. The Commission encourages the rehabilitation or adaptive use of sites and structures for cultural pursuits.

5. CVRPC supports strengthening the role of cultural and artistic disciplines in public education.

Historical and Archeological Resources Goal:

To promote the protection and use of the Region's historical and archeological resources.

Policies:

1. Municipalities are encouraged to provide a historic preservation

DRAFT

section in their municipal plans. (CVRPC will assist in such an effort, if requested.)

2. CVRPC encourages development which preserves the historic and architectural character of town and village centers and the rural landscape.

3. Therefore, it is the policy of this Commission to support and encourage downtown revitalization programs and tax incentives and grants to encourage preservation ~~Downtown and Village Center Designation~~. Downtown revitalization efforts are means to create jobs and to preserve our national heritage.

Commented [NS223]: this might be a point that folks want to weigh in on.

4. CVRPC encourages the restoration, rehabilitation and adaptation of historic structures where feasible, as this minimizes the environmental impact of development by conserving raw materials, using land already developed, employing existing services.

5. Where economically practical, rehabilitation of a historic site or structure should be designed to minimize the architectural impact and maintain the historic character of the site or building.

6. Where an area is not designated as a historic district, but where there are buildings of local historical significance, projects should be designed to maintain and protect the historic character of the area. Municipalities are encouraged to develop criteria that would assist in protecting the character of an area considered historic, whether designated as such or not.

7. The impact upon the historic character of the area should be considered when public or private municipal improvement projects (such as sidewalks, roads and traffic improvements) are proposed.

8. Activities having substantial impact on an important historical site or structure should be planned in consultation with the Division for Historic Preservation, Agency of Commerce and Community Development.

DRAFT

9. Additions to a historic building should be designed to minimize the visual impact upon the site or building.

10. Land development adjacent to or on an important prehistoric or historic archeological site should be designed to minimize the impact upon the site.

11. Prehistoric and historic archeological sites are recognized as important to Vermont's history. Any activity that may have an impact on a prehistoric or archeological site should be planned in consultation with the Division for Historic Preservation, Agency of Commerce and Community Development.

12. CVRPC will provide support to local, regional, and state non-profit historic preservation trusts upon request.

13. CVRPC will promote the awareness of historic preservation through periodic publication of funding sources available to municipalities and investment tax credits available to individuals.

Wireless Telecommunication Facilities Goal:

To promote effective and efficient communication systems.

Policies:

1. Telecommunication facilities should not be sited where they may create an attractive nuisance.

2. Telecommunication facilities should be sited, designed, maintained and operated so as to minimize negative impacts on natural, cultural and scenic resources. Use of stealth design and/or use of existing structures are encouraged where appropriate. New towers should be no taller than necessary to provide coverage. The policies of this Plan addressing ridgeline and hilltop development (see Land Use Element, Goal

DRAFT

5) are intended to apply to telecommunication facilities.

3. Use of existing towers, communication facilities, and structures where possible, is encouraged and expected rather than development of new transmission and receiving stations. Permits for tower facilities should require permitees to accommodate additional users, appropriate to the structure, at a fair market rate.

4. Permits for towers should require a financial mechanism to ensure their removal by service providers should they be abandoned or rendered obsolete by advances in technology. Processes for establishing bonds should take inflation into account as many years can elapse between construction and removal.

5. Applicants must demonstrate that telecommunication facilities comply with FCC emission standards in order to protect public health and safety.

6. Assist service providers and municipalities to identify appropriate locations for the construction of new tower (or other facilities) necessary to achieve adequate coverage of the Region as well as locations that are not appropriate for new towers. CVRPC will act to implement the results of this effort through its participation in the Section 248 Process.

7. CVRPC will provide its "Model Telecommunication Facility" bylaw to all member municipalities and work with towns and cities to develop bylaw, ordinance, and/or town plan language to address facility siting. The Commission encourages municipalities that adopt telecommunications regulations to provide for an expedited permit process for small scale facilities.

8. New towers should be constructed in areas served by existing roads or trails.

9. Access roads should be designed to minimize their impact on scenic, agricultural, forestry, and natural resources.

DRAFT

Emergency/Health Services Goal:

To promote effective, efficient and accessible emergency and health care services.

Policies:

1. Adequate health care facilities and personnel should be planned and located throughout the Region so that all residents have access to such services. It is necessary that planning for these facilities be coordinated with population distribution and existing and future transportation patterns.

2. For all aspects of emergency/health service delivery, full consideration of the costs and benefits of cooperative and regional provision of these services is encouraged.

Emergency Management Goals:

1. To build disaster resistant communities in Central Vermont through sound emergency planning and management.

2. To ensure that all communities in Central Vermont have the appropriate information, resources, and tools to respond to disaster events and recover from their impacts.

Policies:

1. Promote the importance of local emergency management plans to municipalities in Central Vermont.

2. Encourage municipalities to annually review and update their ~~Rapid Response Plans~~ LEMPs for the new contact information and to identified risks.

Commented [KP224]: LEMPs are now primary document

3. Encourage municipalities to undertake and periodically review an all-hazards assessment in their community to identify potential

DRAFT

hazards and the at-risk people and property.

4. Encourage municipalities to adopt minimum standards for public roads, bridges, and culverts (using the Vermont Local Roads Program and FEMA's standards).

5. Encourage municipalities to implement land use policies and development regulations that consider the potential impacts of disasters on people and property.

6. Discourage residential, commercial, or residential development in flood plains.

7. Maintain, wherever possible, vegetated buffer strips adjacent to all waterways to reduce the occurrence and magnitude of flooding.

8. Encourage municipalities to amend flood hazard regulations so they comply with current NFIP requirements.

9. Provide local officials with information on programs and funding available through FEMA and/or VEM for emergency management and hazard mitigation projects.

Crime and Safety:

Overall Goal: To minimize community conflicts within Central Vermont, reduce the Region's already low crime rate, and protect the community from violence and serious crimes.

Goal 1: To prevent the social and economic conditions that often lead to community conflicts.

Policies:

1. To encourage the use of early intervention and prevention strategies in schools

2. To work to implement the other goals and policies of this Plan,

DRAFT

particularly those regarding education, housing, and employment.

Goal 2: To foster safe and supportive communities by educating municipal officials on crime issues, supporting prevention programs, encouraging re-habilitation strategies, and fostering public safety.

Policies:

1. To encourage municipalities to investigate the establishment of community based, victim focused crime prevention/justice initiatives.

2. To work with municipalities, SRS, and the Vermont criminal justice system to support the establishment of a regional restorative justice center.

3. To support the use of conflict reduction/resolution techniques and restorative processes in schools, law enforcement, and communities.

4. To gather and report information on crime and safety indicators as related to other indicators of community health to establish data on possible relationships therein.

5. To coordinate all crime/rehabilitation related efforts with municipalities and the Vermont criminal justice system.

6. To encourage State financial and technical support for community restorative justice programs.

Goal 3: To protect the community from violence and other serious crimes.

Policies:

1. To support incarceration of violent offenders.

2. CVRPC should consider the need for, costs, benefits, and

DRAFT

detriments of construction of new prison facilities within the Region.

Education Goal:

To promote effective, efficient, accessible, and affordable educational facilities and services.

Policies:

1. New development that places a significant impact on local and regional educational systems must address and mitigate these impacts.

2. The construction of new educational facilities should occur in locally designated growth areas or in other locations that will maximize their convenience and accessibility to the population and infrastructure, and will contribute to the vitality of com- munities.

3. Through improved coordination among planning commissions, school boards and the State Department of Education, a regional approach to planning for the placement and timing of construction of educational facilities is encouraged.

4. Municipalities and school districts are encouraged to employ capital budgeting and programming as a means to anticipate and plan for the payment of capital improvements to public schools.

5. CVRPC supports and promotes efforts to broaden access to adult and senior educational opportunities.

6. CVRPC supports and promotes efforts to broaden access to vocational education opportunities.

Child Care Goal:

To ensure the availability of safe and affordable child care and to integrate child care issues into the planning process.

DRAFT

Policies:

1. Continue to inform municipalities of their statutory responsibility to plan for child care and assist in this effort upon request.

2. Encourage municipalities to assess local barriers (regulatory or otherwise) to the provision of child care services and to support them in taking action to remove or reduce those barriers.

3. Consider undertaking, in partnership with local advocacy organizations, a region-wide needs assessment for child care services. As part of such a program, CVRPC could examine the relationship between the location of jobs and the location of child care facilities.

4. Encourage the location of child care facilities in growth centers and existing settlements, near residential clusters, schools, and large employers, and along public transportation routes. Such locations can help reduce traffic, energy consumption, and the overall financial cost of day care for families.

Solid Waste Goal:

Safe, sound, cost effective, and efficient solid waste management.

Policies:

1. For both environmental and economic reasons, support waste reduction as a top priority of the Region and support the concept of "zero waste" as outlined by Vermont's Universal Recycling Law and the policies of the Central Vermont Solid Waste Management District, Northeast Kingdom Waste Management District, Lamoille Solid Waste Management District and the Mad River Resource Management Alliance.

2. Encourage managing solid waste as close to the source as is reasonable, with a preference given to local or sub-regional solutions to waste management. Proper management of municipal solid waste should utilize environmentally sound systems and programs at the

DRAFT

least cost possible.

3. Promote education about composting, recycling and waste reduction in the Region.

4. Encourage individuals or businesses in the Region to bear the cost of proper management of the waste generated.

Support Extended Producer Responsibility (EPR) programs and sites for industries to recycle their own byproducts in the Region.

5. Support recycling and composting facilities and programs that promote individual participation and responsibility.

Encourage the convenient and decentralized placement of local drop-off facilities

6. Support the maintenance of collection centers for hard to recycle materials within the Region.

A. Support the siting and building of a permanent location for the Additional Recyclables Collection Center (ARCC) in a location central to the Region

B. Support the siting and building of a facility to collect and recycle asphalt shingles and drywall in a location central to the Region

7. Encourage composting of residential, commercial and institutional organic waste in order to maintain the materials' highest re-use value. Composting efforts should move toward being financially self-supporting and locally controlled.

Support the continuing presence and establishment of composting centers at appropriate sites within the Region

8. Continue to implement recycling and waste reduction measures in our internal operations, in accordance with Vermont's Universal

DRAFT

Recycling Law.

9. Support projects that involve the distribution of Class A Biosolids from municipal wastewater treatment facilities only when only when Central Vermont Solid Waste Management District, Northeast Kingdom Waste Management District, Lamoille Solid Waste Management District or the Mad River Resource Management Alliance has worked with municipalities to ensure that said biosolids are safe and that municipal officials and other decision makers have been educated about the issue.

Broadband Goal:

Universal broadband availability and affordability.

Policies:

1. Encourage Municipalities to include broadband goals and strategies within local plans as tools to enhance economic development, education and overall resiliency.

2~~. Promote awareness of broadband informational resources, such as BroadbandVT.org, to inform residents, businesses and local planning processes.~~

Commented [KP225]: Link/resources are no longer operational

3. Support expansion of broadband services and enhancements in underserved areas, ~~*Regional*~~ *Downtown Centers* and ~~*Town*~~ *Village Centers*.

A. Encourage creation of public wi-fi zones in ~~*Regional*~~ *Downtown Centers*, ~~*Town*~~ *Village Centers and Hamlets*.

Commented [KP226]: Updated to reflect new FLUAs under Act 181.

B. Encourage expansion of wireless internet service providers in rural communities.

Healthy Communities Goal:

Land use and infrastructure design that ensures health equity.

Commented [KP227]: Goals from the new draft Infrastructure chapter to match health equity section if it is included.

DRAFT

Policies

1. Engage with and provide technical assistance to municipalities to address health issues in their town plans through the Vermont Health Equity Planning Toolkit and other health-related planning tools.
2. Assist municipalities seeking funds for health-related planning.
3. Assist municipalities with community engagement in the decision-making process to ensure that the built environment is equitably accessible to all.
4. Collaborate with municipalities and partners to hold trainings on those elements in the built environment that support the mental health of all in the community.
5. Engage with municipalities on options to conduct health impact and equity assessments when developing or updating plans, zoning reform or land development processes.
6. Collaborate with municipalities and partners to hold trainings on cultural competency and making public spaces inclusive and welcoming to all ages, abilities and backgrounds.
7. Assist towns in the creation of smoke free ordinances, alcohol ordinances and ordinances to protect children from marketing of tobacco products in local stores.
8. Train and assist municipalities with Smart Growth principles and how zoning can facilitate healthy lifestyles, activities, and development patterns.
9. Facilitate cooperation between municipalities and health-promoting groups and agencies working towards healthy community design.

DRAFT

6. HOUSING ELEMENT

Housing is the foundation of our historic towns and villages. The size, location and cost of housing shape the communities in which we live. Providing a range of housing options for a variety of income levels and lifestyles contributes to the vitality of our communities. Housing impacts local economic development, school enrollment, land use, and traffic patterns, among others. Currently in ~~Central~~ Vermont:

- Average household sizes are decreasing; yet new construction house size is increasing;
- The population of people between ages 45 to 69 is expected to grow more rapidly than any other age group; The number of households headed by someone 55+ is projected to be 54% by 2029.[50]
- Incomes are not keeping pace with dramatically increasing home costs;
- New housing creation is falling ~~just~~ short of the 5-year demand for housing;
- Much of the recent housing growth in the Region is happening outside of town and village centers.

This chapter reviews the number and types of housing units currently in existence, future trends in housing demand and costs, and outlines strategies to meet identified housing needs. Finally, it concludes with a list of resources that can be used by town officials and residents who are interested in this important issue.

Discussion: Trends

Population & Households

The ~~2000~~ 2020 Census showed the population of the Central Vermont Region at 65,402 ~~63,276 and estimates the Region's 2005 population to be at 64,842.~~[51] The population of the Central Vermont planning area has

[50] 2020 U.S. Census
[51] Vermont Housing Needs Assessment 2025-2029 ~~U.S. Census. 2000. American Factfinder www.factfinder.census.gov.~~

DRAFT

experienced a slow growth rate. Between 2010 and 2020, the Region gained only 368 new residents. ~~According to the EPR Forecast, the Central Vermont Region's population is expected to reach 67,297 by 2010 and 73,080 by 2020.[52] This is an increase of 6.3% between 2000-2010 and an increase of 8.6% between 2010-2020.~~

That number would likely be even lower without the COVID-19 Pandemic, which is speculated to have increased migration from denser urban areas to rural communities, like Vermont (VT Department of Taxes). Pandemic-related migration to Vermont has since slowed down and CVRPC will continue to measure its lasting impacts. ~~Between 1970 and 2000, the Region's population increased at an average rate of just 8% while the Region's number of households increased at an average rate of 20%. The reason for the significant difference between population growth and household growth is the increasing population has been distributed into a greater number of smaller households.~~

Commented [LB228]: Outdated - not required by statute

Central Vermont Population and Household Growth

Commented [LB229]: Updated table

		2000	2010	2020	% Change (2000-2010)	% Change (2010-2020)
Orange County	Total Population	28,226	28,936	29,277	2.50%	1.20%
	Total Households	10,936	11,887	12,364	8.70%	4.01%
	Household Size	2.5	2.4	2.2	-4.00%	-8.33%
Washington County	Total Population	58,039	59,534	59,807	2.60%	0.50%
	Total Households	23,659	25,027	25,842	5.78%	3.26%
	Household Size	2.4	2.3	2.2	-4.17%	-4.35%

Source: US Census ACS 5-Year Estimates, US Decennial Census via Housingdata.org

~~[52] Economic & Policy Resources, Inc. 2001. Economic & Demographic Forecast: Central Vermont Region 2000-2020~~

DRAFT

It is notable that the number of occupants per household is trending down. Across Vermont there are fewer children below age 17, down more than 3 percent since 2020. Household size has decreased by over 6% in Washington County and 11% in Orange County (the CVRPC planning region is all of Washington County and three towns in Orange County: Orange, Washington, and Williamstown).~~The average household size in 2000 was 2.47 people, down from 2.64 people in 1990. The number of households in the Central Vermont Region will increase from 25,675 in 2000 to 28,708 in 2010 and 33,534 in 2020. This is an increase of 16.8% between 2010- 2020. One reason is the average household size is projected to continue to decrease to 2.34 persons in 2010 and 2.18 persons in 2020.~~ The increasing number of households containing a smaller number of people will have a significant effect on housing demand.

~~Central Vermont will experience substantial changes in the growth and decline of certain age groups between 2000-2010. Most notably, householders between the ages of 25-44 are expected to decline while most of the growth will occur in householders between ages 45-69. There will also be a fairly significant increase in the number of householders over 80 years old.~~ Vermont as a whole is aging, with a 54% of the population is projected to be 55+ by 2029. In Washington County residents 45 and up comprise 70% of the population. In Orange, it is even higher at 74%.[53]

DRAFT

[53] Vermont Housing Needs Assessment 2025-2029

Age of Householders in Washington and Orange Counties

Commented [LB230]: Updated table

Age range	Households
15 to 24 years	368
25 to 34 years	3,247
35 to 44 years	4,038
45 to 54 years	4,666
55 to 59 years	2,512
60 to 64 years	2,726
65 to 74 years	4,652
75 to 84 years	2,090
85 years or older	867
Total	25,166

Washington County

Age range	Households
15 to 24 years	234
25 to 34 years	1395
35 to 44 years	1681
45 to 54 years	2243
55 to 59 years	1709
60 to 64 years	1229
65 to 74 years	2645
75 to 84 years	1188
85 years or older	366
Total	12,690

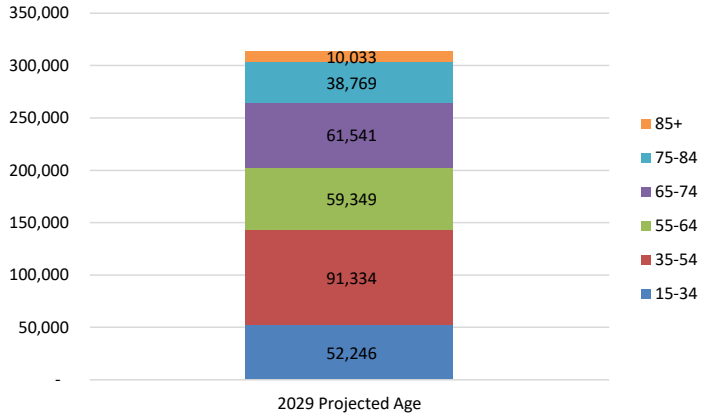
Orange County

Source:Housingdata.org

~~*In 2000, there were 5,287 households with residents aged 65 years or older, representing 21% of all the households in the Central Vermont Region. According to the Washington County Housing Needs Assessment, between 2000-2010 these households are expected to grow by 12.25%.*[54] *These types of households generally require smaller units with one or two bedrooms and as they age, may need access to housekeeping, personal care, or medical services.*~~

[54] ~~VT Department of Housing and Community Affairs. 2005. Washington County 2005 Housing Needs Assessment.~~

Projected Number of Vermont Households by Age of Householder 2029



~~According to the Vermont Department of Housing and Community Development, "In 2000, more than 1,800 Washington County elderly households had some type of mobility and/or self-care limitation. The problem was noted especially for elderly or extra-elderly (age 75+) owner households. However, non-elderly households experienced even higher levels (21% of renter and 35% of owner households). The total number of households with mobility and/or self-care limitations represents 17 percent of all Washington County households."~~

Commented [LB231]: Required by statute

Commented [LB232]: Outdated - not required by statute

DRAFT

Housing Needs at Different Life Stages

Age Group	Characteristics	Housing Needs
20s	• Lower incomes • High mobility • Small households	• Apartments
30s	• Beginning families • Small children • Low savings • Growing incomes	• 1st time homebuyers • Mobile homes • Condos
40s	• Growing **families** • Growing income	• Step up to larger homes • Additions and home improvements
50s	• Stable housing • Empty nest • Income peak	• Stay in current homes • Renovations and home improvements
60s	• End of income producing years	• "Begin process of downsizing"
70s	• Retirement • Reduced income • Risk of frailty	• Smaller homes • Condos • Retirement developments
80s and 90s	• Risk of frailty or dementia • More singles (widowed) than couples	• Assisted living • Institutional care

Source: VT Department of Housing & Community Affairs, VT 2006 Housing Needs Assessment

Commented [LB233]: This was an existing table in the 2024-approved Plan that was retyped to be cleaner

Housing Stock

The 2025 Housing Needs Assessment found there were 33,195 ~~29,912~~ total housing units in the Central Vermont Region (2020 Census). Of this total 4,137 or 12% ~~3,285, or 11% of the total,~~ are seasonal units leaving ~~26,627~~ 29.058 year-round units that are occupied or available for occupancy. Having 12% of the total housing stock as seasonal, recreational, or occasional use housing is well above the national average of only 3% and points to the

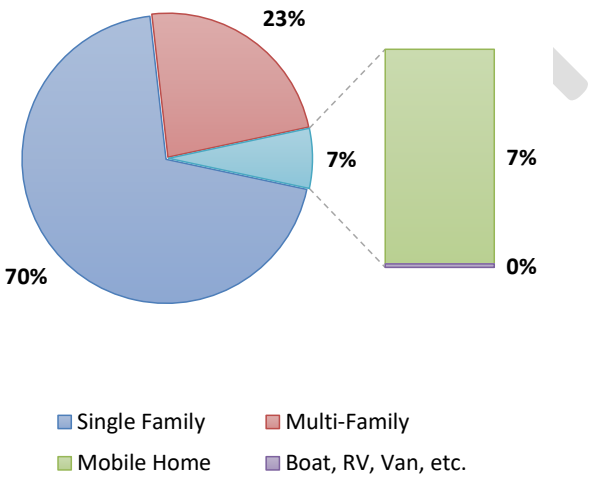
DRAFT

strong vacation home market in Central Vermont.

In Washington and Orange Counties, 77% of the housing stock is owned, and 23% are rentals. Single family homes make up the majority of the housing stock in the Region (70%)~~(63%)~~. ~~Thirty percent (30%)~~ 23% of the housing stock consists of homes that contain more than one housing unit, for example — condominiums, two-family houses, or apartment buildings, and the remaining 7% are mobile homes.

Washington and Orange Counties Composition of Housing Stock

Commented [LB234]: Updated chart



Source: US Census, 2024 ACS 5-Year

If trends over the last 30 years continue, about 70% of these households will be owners and 30% will be renters. The high cost of housing could push many households out of the home buying market. (See Housing Affordability section.)

~~While the average household size is shrinking, the average single-family house size continues to increase. According to the Vermont Finance Agency "the average size of a newly-constructed home has increased dramatically over the past 30 years. According to Census data, in 1975, the average new~~

Commented [LB235]: Outdated

~~home in the Northeast measured 1,575 square feet of living space. By 2005, that average new home had grown by 62 percent, to 2,556 square feet."[55] (For more information see: Land Use & Energy Elements)~~

Commented [LB236]: Graphic showing relative house size was deleted

One measure of a healthy housing market can be indicated by the vacancy rate. In general, a rental vacancy rate is considered healthy when it is approximately 5% and a healthy ownership vacancy rate is 3%. Any rate below the one considered "healthy" indicates that choices will be limited and prices generally increased. On the other hand, vacancy rates much above 5% for rental units and 3% for ownership units may signify an oversupply of that type of housing or disinvestment in a particular area. According to a housing needs analysis performed by the state, there is concern about the health of Washington County's housing market because at the time of the last Census, it had a rental vacancy rate of ~~3.3%~~3.1% and an ownership vacancy rate of ~~1.4~~1.5%, well below the rates considered healthy (~~Vermont Dept. of Housing & Community Affairs, 2005~~Vermont Housing Needs Assessment 2025-2029).

Vacancies in Central Vermont

Commented [LB237]: Updated table

	Orange County	Washington County	% of Totals
Total Vacant Units	2,336	5,149	
For rent	47	307	1%
For sale only	63	153	1%
Rented, not occupied	25	79	0%
Sold, not occupied	68	100	0%
For seasonal, recreational, or occasional use	1,590	3,734	14%
Other vacant	524	763	3%
Vacancy Rate = Vacant Units/ Total Number of Units x 100	6%	13%	19%

Source: US Census ACS 5-Year Estimates B25004, B25003, 2024 data

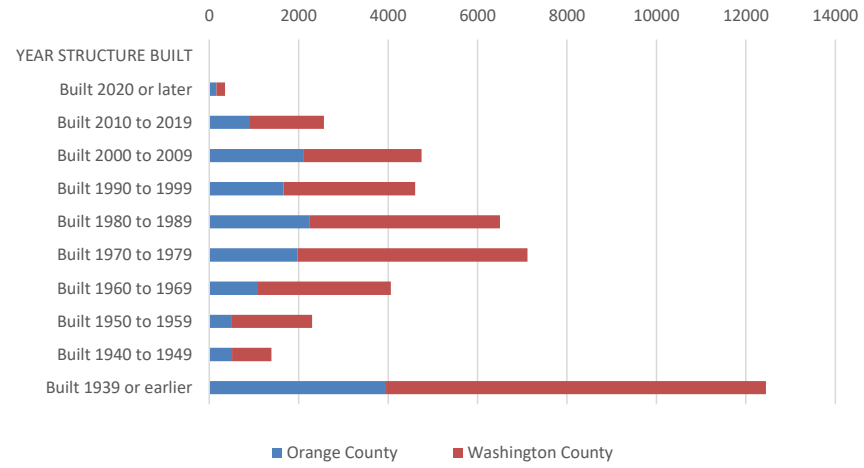
Quality of Housing Stock

Any discussion of the quantity of housing units available should also include

[55] ~~Vermont Housing Finance Agency. 2006. Housing Matters Newsletter.~~

the quality of those units. One rough measure of the quality of the housing stock is its age. In Washington and Orange Counties. 54% were built before 1980, approximately the time lead paint was banned nation-wide.

Age of Central Vermont Housing Stock



Commented [LB238]: Required by statute

In addition to age, housing may have other issues such as lack of heating or coal heat, lack of kitchen or plumbing facilities, or mobile homes built before 1979. The 2025 Housing Needs Assessment found that 14% of the households in Central Vermont had potential housing issues in 2022. This includes 3,093 owned and 1,099 rented residences.[56]

Commented [LB239]: Required by statute

Housing Costs

Housing costs in Vermont have increased significantly over the last ten years. ~~It is not uncommon for~~ While housing prices ~~to~~ rise as wages and income rise, ~~yet~~ throughout Vermont housing costs are rising much faster than income. A few facts from the ~~Vermont Housing Awareness Campaign's "Between a Rock and Hard Place" 2007.~~Vermont Housing Needs Assessment 2025-2029:

[56] Not including vacancies. Source 2025 Housing Needs Assessment.

Update on housing and wages in Vermont illustrate this issue:

- Homeowner median income in Vermont was $90,311, and renter median income was $43,102.
- A Vermont household would need an annual income of ~~$66,000~~$118,731 to purchase the median-priced, $355,000 home.~~ single family home ($197,000).~~
- In Washington County, the average Fair Market Rent for a modest, two-bedroom apartment was $1.453 in 2024. This is 25-35% higher than it was in 2019.[57] ~~Vermont reached $797 in 2006, a 10 percent increase since the year before and a 42 percent increase since 1996.~~
- A ~~Vermont~~ Washington County household would have to earn ~~$15.34 per hour, or $31,897~~$58,120 annually, to afford that Fair Market Rent.
- ~~At least 59 percent of Vermont's non-farm employees — more than 163,000 people — work in occupations with median wages below that level.[58]~~

Area Median Incomes

	Area Median Income	% AMI	1 person household	2 person household	4 person household
Washington County	$105,400	30%	$22,140	$25,320	$31,620
		50%	$36,900	$42,200	$52,700
		80%	$59,050	$67,450	$84,300
		100%	$73,800	$84,400	$105,400
		130%	$95,940	$109,720	$137,020
Orange County	$93,000	30%	$19,950	$22,800	$28,500
		50%	$33,250	$38,000	$47,500
		80%	$53,200	$60,800	$76,000
		100%	$66,500	$76,000	$95,000
		130%	$86,450	$98,800	$123,500

Commented [LB240]: Required by statute

[57] Vermont Housing Needs Assessment 2025-2029
[58] Vermont Housing Council. Between a Rock and a Hard Place. 2006.

Source Data: HUD FY 2024 Income Limits Summary

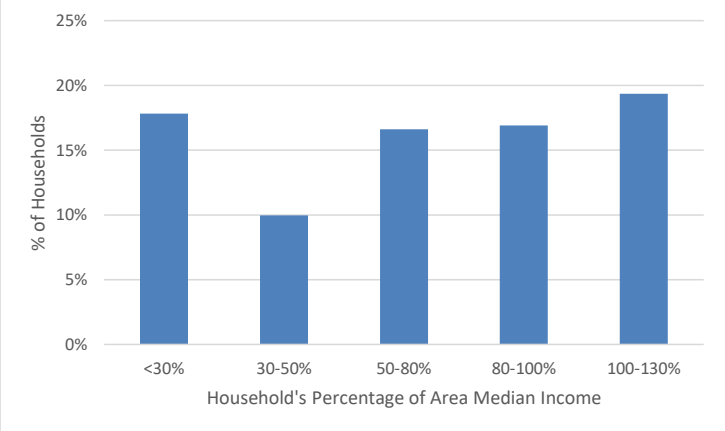
Area Median Rent and Housing Prices

Commented [LB241]: Updated table

		2024	2025
Washington County	Median Primary House Price	$340,000	$365,000
	Median Secondary House Price	$330,000	$382,500
	Median Rent	$1,163	not yet available
Orange County	Median Primary House Price	$315,000	$300,000
	Median Secondary House Price	$224,268	$190,000
	Median Rent	$1,173	not yet available

Percentage of Households at Area Median Income

Commented [LB242]: Required by statute



In Washington County, about 24% of households make less than 50% of the

Area median income, or less than $36,500 for household annually. In Orange County 21% of households make less than $37,267 - 50% of the AMI.

Housing and Transportation Cost Burden

Housing costs are identified as a "burden" by State planning statue (Ch. 117) if they consume more than 30% of the household's income. ~~In the Central Vermont Region, at the last Census in 2000, 23% of all homeowner households and 36% of all renter households lived in homes that cost more than 30% of the household income. Many of these In Washington County, the median home price increased by just 10% between 1990 and 2000, but by as much as 73% in the five years between 2000- 2005 .In order to the median home in Washington County in 2005 a household would need to earn a yearly salary of $59,169~~

~~Many of these~~ In Washington County, the median home sale price increased by 96% between 2015 and 2025 from $186,000 to $365,000 and in Orange County, the median price increased 94%, from $155,000 to $300,000. In order to afford that home in Washington County, a household would need to earn a yearly salary of $113,714. In Orange county, the household would need $100,366.

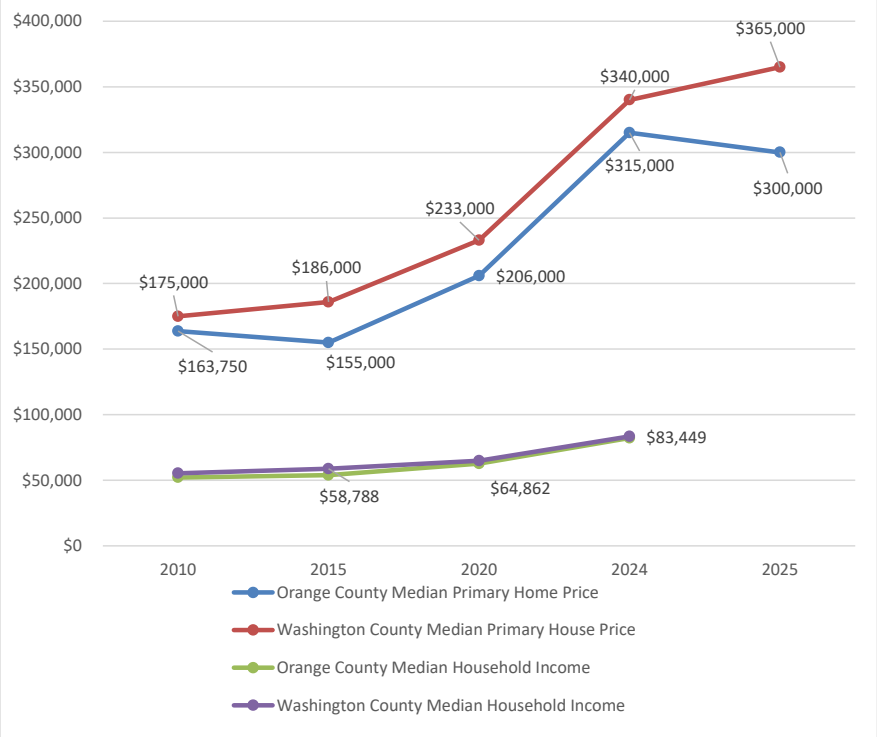
According to ~~a Housing Needs Assessment undertaken by the Vermont Department of Housing and Community Affairs in 2005~~ the Vermont Housing Needs Assessment 2025-2029, a Washington County household earning the median income of $77,278 would need an additional $36,436 to afford the median home, nearly 50% more. In Orange County with a median income of $74,534 the gap is $25,832, which is more than third again as much. ~~the gap between the income needed to buy the median priced home and the actual median income of residents in Washington County ($77,278) is $11,312 and expected to increase by 306% (to $34,663) by the year 2010. It should be noted that according to the Washington County Needs Assessment the estimated affordable homes based on median income decreased in 2010 because the calculation includes expenses beyond the mortgage, such as taxes and insurance which are based on the increasing median home price. This leaves less income available for mortgage payments.~~

Commented [LB243]: See updated paragraph below.

Commented [LB244]: Replaced below

DRAFT

Median Income Compared to Median Home Price



The number of burdened households will rise given the significant increase in median house prices over the last several ~~five~~ years. This increasing gap between what families are forced to pay for housing costs and what their incomes can afford has several negative side effects on quality of life and the local economy. Burdened households may not be able to afford medical or educational costs. These households also have less disposable income to spend in local stores, restaurants and entertainment venues.

~~For many low income residents of the Region, homeownership is not an option. In 2005 a household in Washington County would need to earn $13.15 or $27,360 annually in order to afford a two-bedroom apartment. In Orange County the 2005 housing wage was $12.54 or $26,080 for the same size apartment.~~

~~According to Between a Rock and Hard Place, out of the ten occupations~~

Commented [LB245]: Updated table

Commented [LB246]: Updated in Affordable Housing section below.

~~employing the most Vermonters only two of them paid median wages above both the Washington and Orange County housing wage. (For more information about jobs in Central Vermont see: Economic Element) The Vermont Department of Housing & Community Affairs estimates that households earning $38,286 per year (80% of the county median household income) can afford to pay about $957 monthly for rent (including utilities). There are 5,111 households with incomes below 80% of the county median.~~

~~In 2005, an estimated 7,058 affordable rental units were available in Washington County with rents below $978. However, more than half of these units are estimated to be occupied by upper income households (i.e., not low or moderate income) and an additional 5% are assumed to be vacant at any given point in time, leaving only 2,978 available for low-income renters. In 2005, there were an estimated 3,053 very low-income households (those making less than 30% of the county median income, see Table A above) and only 1,213 subsidized rental units in the Central Vermont Region. Seven hundred and fifty of them are restricted to elderly or disabled residents only. According to the Washington County 2005 Housing Needs Assessment this creates an estimated shortage of 2,134 affordable rental units in Washington County. In any market area there is a percentage of the units which are rented or sold at affordable rates, yet they may be in older buildings or in less desirable locations.~~

Transportation Cost Burden

Many households find more affordable housing farther away from employment centers causing long commutes and reduces the amount of time to spend with family. The cost savings on a home farther from town centers may be deceptive. Commuting costs increase substantially as families move farther away from jobs. These households also have less disposable income to spend in local stores, restaurants and entertainment venues. (Also see Location of Housing section.)

Vermont statute states that Regional Planning Commissions create a policy for households to avoid spending greater than 30% of their income on housing and not more than 15% of their income on transportation costs. Housing and transportation constitute a relatively smaller proportion of

DRAFT

household budgets in the downtown areas of Central Vermont compared to households in lower-density municipalities. According to the data presented, only Barre City has a combined cost-burden of less than 45% of household income for these two expenses. These findings support the goals of encouraging housing affordability by placing new housing in and around dense, mixed-use core areas. Nevertheless, it is crucial to highlight that across Central Vermont, median spending on transportation never falls below the state-identified threshold of 15% of household income, indicating that density and access to services and transit alone are not enough to bring transportation costs below 15%.

Transportation and Housing Cost Burden

Commented [LB247]: Required by statute

	Percent of Income Spent on:		
Municipality	Housing & Transportation	Housing	Transportation
Barre City	39%	20%	19%
Barre Town	47%	21%	26%
Berlin	51%	30%	21%
Cabot	52%	25%	27%
Calais	57%	30%	27%
Duxbury	61%	33%	27%
East Montpelier	55%	31%	24%
Fayston	63%	35%	27%
Marshfield	55%	26%	28%
Middlesex	59%	31%	28%
Montpelier	48%	27%	20%
Moretown	56%	30%	27%
Northfield	47%	23%	24%
Orange	55%	26%	28%
Plainfield	52%	27%	25%
Roxbury	51%	23%	28%
Waitsfield	48%	25%	23%
Warren	59%	31%	28%
Washington	54%	25%	28%
Waterbury	49%	27%	22%
Williamstown	53%	26%	27%
Woodbury	55%	27%	28%
Worcester	55%	27%	28%

Source: 2025 Housing and Transportation Index – Center for Neighborhood Technology

DRAFT

Long commuting times have an impact on more than just quality of life, traffic, air pollution levels, natural resources. (For more information see: Land Use & Transportation Elements.) These long commutes also cost residents a significant amount of money. ~~According to the Internal Revenue Service's 2008 standard mileage rate~~ A resident who drives 40 miles round trip per day to work will spend about ~~$404~~ $640 per month (~~$4,848~~ $7,540 per year)[59] on commuting expenses alone, while a 15 mile round trip commute would cost significantly less. Current development patterns which locate housing far from jobs and services are costing residents both time and money.

Costs of Commuting

	40 mile roundtrip commute	15 mile roundtrip commute
Monthly Cost	$629	$236
Yearly Cost	$7,540	$2,827

*Assumptions: commuting 5 days per week at 2025 IRS rate ($.725)

~~However, in Central Vermont public housing authorities and the community land trust are working to provide our Region with perpetually affordable rental and homeownership units. Affordable housing developers can use Federal and State funding resources in order to subsidize units that will be maintained at affordable rates for income eligible tenants. Affordability covenants or deed restrictions can be added to homeownership units to ensure homes remain affordable for a set period of time, even during re-sale, a mechanism used by community land trust model. (For more information see section: Working with the Central Vermont Community Land Trust.)~~

Affordable Housing

Subsidized Housing in Central Vermont

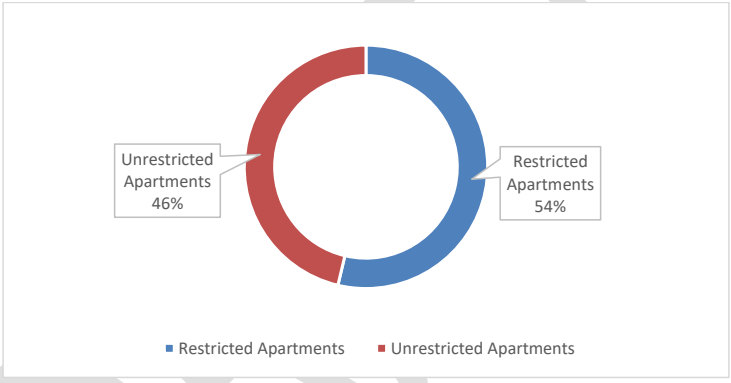
There are 57 subsidized housing developments in Central Vermont. In 2024, an estimated 7,408 rental units were available in the Central Vermont Region, and of those 1,785 were subsidized rental, roughly one quarter of the total stock.

Commented [LB248]: This was an existing table in the 2024-approved Plan that was retyped to be cleaner and the federal reimbursement rate was updated.

[59] Internal Revenue Service. 2008 Standard Mileage Rate. The standard mileage rate for business is based on an annual study of the fixed and variable costs of operating an automobile.

In Central Vermont public housing authorities and the community land trust are working to provide our Region with perpetually affordable rental and homeownership units. Affordable housing developers can use Federal and State funding resources in order to subsidize units that will be maintained at affordable rates for income eligible tenants. Affordability covenants or deed restrictions can be added to homeownership units to ensure homes remain affordable for a set period of time, even during resale, a mechanism used by community land trust model.

Subsidized Rental Housing in Central Vermont



~~Working with the Central Vermont Community Land Trust text box deleted~~

Market Growth

During the ten-year period between 2015 and 2024, 1,354 new units were created in Washington County, and 558 in Orange County. While the number of multi-family homes increased in Washington County, Orange County saw a decrease in small, medium and large multi-unit housing. ~~Single-family dwellings the last two Censuses, 2,141 home-owner units and 915 rental units were created, representing a growth rate of 13.5% for all occupied housing units. Over this same time period, the total number of single-family units grew while the number of multi-family and mobile home units declined. If this trend continues it could/will present a problem as multi-family and~~

Commented [LB249]: Updated chart

Commented [LB250]: Out of date "Working with the Central Vermont Community Land Trust" text box removed.

Commented [KP251]: Outdated example.

Commented [LB252]: Outdated and not required by statute. Outdated chart showing growth rate by housing types removed.

~~mobile home housing is a necessary option for households that require more affordable forms of housing.~~

~~The CVRPC Regional forecast states that "as the Region's population has grown, population densities in the less dense areas tend to show a pattern of dramatic increase" indicating the more rural towns are experiencing the greatest housing growth. According to data collected by CVRPC, 1,709 building permits for housing have been were issued in the Region between 2001 and 2005. Of these permits, only 138 have been for multi-family units, the rest for single-family units. While building permits issued cannot be considered the same as the number of housing units that have actually been constructed, it does give us some idea of the number and type of units that are being produced between Censuses.~~

~~Central Vermont is falling just short of the 5-year demand for housing— forecasted at 1,755 housing units. It will be important to at least keep this pace, if not increase it, over the next 15 years to meet projected demand for housing. According need to be created between 2005 - 2015.~~

Commented [LB253]: Outdated

Commented [LB254]: Outdated data. See revisions.

It should be noted that all projections of future trends are the best guesses of experts and computer models. Anything as complex and dynamic as the Region's housing market must be ~~constantly~~ ~~monitored~~ revised regularly to identify any changes in supply or demand and respond to them. It is therefore recommended that housing needs analyses be updated at least every five years.

Care should be taken to create the type of units, in both size and price that are needed by the Region's current and future residents. Keeping prices from soaring higher will require not just a raw increase in the number of housing units but the production of specific types of housing units, in the locations that are needed in the Region. The sections above show a growing demand for housing that fits the needs of people age 45-69 as well as householders over 80 years old.

Mobile, Modular and Manufactured Housing

Commented [KP255]: Text added to meet requirements of State Goal 11 (C)

Mobile, modular, and manufactured housing provide an important source of relatively affordable homeownership, with smaller footprints and flexible options for workforce households, first-time buyers, seniors, and small

DRAFT

families. These factory-built homes are often constructed to high safety standards and can be more energy efficient, helping reduce long-term heating and utility costs. Under the HOME Act (Act 47), municipalities must allow manufactured homes to be sited wherever single-family homes are permitted, reinforcing their role in expanding housing choice. In Washington County, there are approximately 1,722 manufactured homes—about 7% of the housing stock. However, many parks are located in environmentally vulnerable areas; many are in floodways, and during the July 10, 2023 flood, 28 homes in the Berlin Mobile Home Park were destroyed and five additional homes at River Run Manor were condemned, underscoring the disproportionate risk faced by lower-income residents.

Location of Housing/Density

In the early twentieth century towns and villages were characterized by compact neighborhoods; yet today much of the housing growth in the Region is happening outside of town and village centers. ~~According to the 2007 CVRPC Northwest Build-Out Study, most municipalities within the study area support 'smart growth' principles as a matter of policy, but have not been able to put them into practice.[60] (For more information about the Northwest Study visit www.centralvtplanning.com)~~

Commented [LB256]: Reference to outdated study removed.

Low-density scattered development has been a significant concern to many towns in the Region as reflected in their town plans. Most towns now have land use and housing goals that include some version of the following statement: "Goal: ~~The preservation of~~ Preserve the Town's historic settlement pattern, defined by compact villages surrounded by rural countryside." (Warren Town Plan 2019 ~~2005~~) The benefits of developing more dense, compact housing within or close to village and town centers at historic settlement densities are numerous and include:

Commented [KP257]: Updated to reflect slight change in language from 2005 to 2019 Warren Town Plan.

- decreased land costs due to smaller lot sizes
- decreased development costs due to proximity to existing infrastructure
- increased opportunities to develop a variety of housing options for different lifestyles
- decreased automobile dependency due to proximity to amenities

~~[60] Central Vermont Regional Planning Commission. 2007. CVRPC Northwest Build-out Study Summary Report.~~

such as schools, shops, services and jobs
- increased viability of mass transportation
- preservation of natural resources such as agricultural land and water resources.[61]

In spite of these benefits, rural municipalities continue to see higher housing growth than larger communities with the infrastructure available to support more dense growth. ~~While it is widely believed that this is driven by market forces/consumer preference, that perception may not be the entire story. In fact, a 2005 survey by the Vermont Forum on Sprawl concluded that 80% of Vermont residents believe that "action should prevent sprawl," and, more surprisingly, that 33% of Vermonters would choose to live in an urban/village setting over a rural one if such a choice was available. This latter figure represents a 65% increase over the number making this choice in a 1998 poll.~~

Commented [KP258]: Outdated survey.

Distribution of Housing in Central Vermont Region

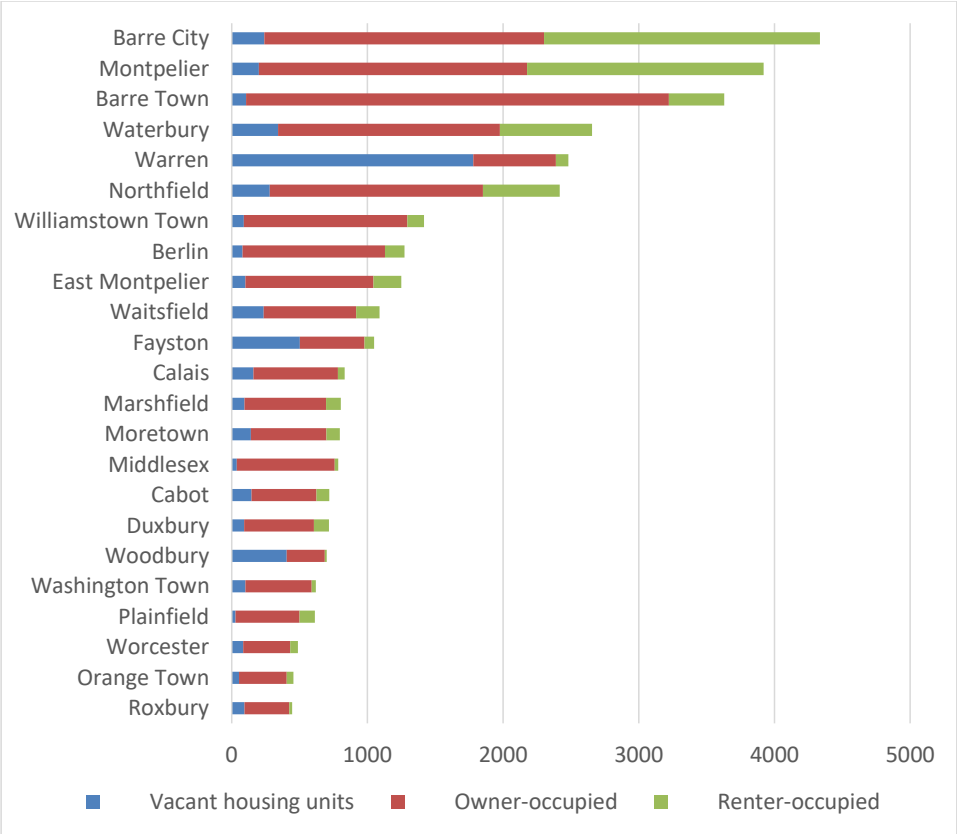
Local regulations and attitudes may be compounding the problem as well. GIS "Density Sampling", conducted as part of the Northwest Buildout Project indicated that, in many traditional village and urban areas, allowable densities are often considerably less than that displayed by existing neighborhoods. NIMBY-ism (not-in- my-back-yard) has also been cited as a factor occasionally inhibiting denser new development.

Rural communities can also do more to promote compact housing by providing density bonuses and other incentives for "clustered" development, or finding suitable locations for village expansion or the development of new villages and "rural hamlets." (For more information on residential development patterns see Land Use Element)

DRAFT

[61] Central Vermont Regional Planning Commission. 2007. CVRPC Northwest Build-out Study Summary Report.

Current Distribution of Housing in Central Vermont



Commented [LB259]: Required by statute

~~In addition to the cost of land, there are other factors that affect the real cost of housing. The fact that housing development is occurring farther away from village and town centers also generally means that people are located farther from the sources of employment. Over the ten years between 1990 and 2000, the percentage of Central Vermont Region residents who drive 60 minutes or more roundtrip to work each day increased from 22% of working residents in 1990 to 27% of working residents in 2000. (See Housing Affordability section.)~~

~~In May 2006 the Growth Centers bill (S.142) was approved by the State legislature. CVRPC has endorsed the growth centers concept for over a decade and this legislation has created a new process for the designation of growth centers. According to the Vermont Growth Center Planning Manual, a~~

Commented [LB260]: Outdated data. See Housing and Transportation Burden above.

~~growth center is "a compact area planned for concentrated, mixed-use development." Like the Village, Downtown and New Town Center designation programs, the Growth Center program offers financial and regulatory incentives to promote planned growth, including housing.~~

Meeting Current & Future Needs

Homelessness & Transitional Housing

Homelessness in Central Vermont is growing yet it is a problem which is not easily tracked. Homeless persons are not counted in the Census and many times they do not seek assistance or shelter at local facilities. Some "couch surf" at homes of friends and family, some seek shelter in tents or in their cars. Others may find shelter in abandoned lots or buildings.

~~Currently there is one overnight shelter in Central Vermont, the Good Samaritan Haven in Barre. It operates on a first-come-first-serve basis and is open from 6 p.m. to 7 a.m. in the winter and from 7 p.m. to 7 a.m. in the summer.~~ Good Samaritan Haven provides emergency shelter assistance, food and care in Central Vermont, with a network of facilities in Barre City, Barre Town, Berlin and Montpelier. In addition to the overnight shelters, transitional housing and shelter are provided by a number of organizations, including Good Beginnings of Central Vermont, Champlain Housing trust and Pathways Vermont. ~~there is one transitional housing site.~~ Transitional housing provides the bridge between homelessness and permanent housing, ~~Good Neighbors offers~~ offering both short term housing and case management to assist families transitioning from homelessness into permanent housing.

Commented [KP261]: Updated information to reflect expansions to shelter and transitional housing services in the region.

~~According to the Washington County Needs Assessment average stays at the Good Samaritan Shelter have dramatically increased in the last 10 years. In 1998 the average stay was between eight days to two weeks, in 2004 the average stay was two months. More people who are seeking shelter are not transient but are local Vermonters who are working multiple jobs and cannot afford rent.~~

Commented [KP262]: Outdated data.

DRAFT

Fair Housing Laws & Municipal Responsibility

State and Federal housing laws help protect against housing discrimination. Under the Federal Fair Housing Act and its 1988 amendments, individuals may file complaints alleging housing discrimination on the basis of race, color, national origin, religion, gender, handicap, or familial status. Individuals may also allege related acts of discrimination that are governed by other federal laws such as the Civil Rights Act of 1964. Vermont law (9 VCS 4503) prohibits any person from engaging in unfair housing practices such as the refusal to sell or rent, as well as many other actions involved in the advertisement, financing, and brokering of a dwelling.

A municipality has fair housing responsibilities regardless of whether or not the Federal government has funded the activity that is the basis for the complaint. A fair housing violation does not require a discriminatory intent; a violation can be found simply because municipal officials carried out regular activities in a routine way and failed to recognize their special fair housing responsibilities. In addition Chapter 117 section 4412 outlines required provisions and prohibited effects by which municipalities must abide. Municipalities carry out four broad categories of activities that affect housing. Each can trigger municipal fair housing responsibilities:

- Regulatory activities – When a municipality enacts and administers regulations (e.g. zoning or building codes) that affect existing or potential residential properties;
- Provision of services – When a municipality provides routine services in residential areas or to residents;
- Provision of subsidies – When a municipality offers financial incentives (e.g. grants, loans, or loan guarantees) or special services (e.g. infra- structure projects or housing rehabilitation services) to residential property owners or to residents; and
- Proprietary activities – When a municipality buys or sells real property, particularly if the property was used or will be used as a residence.

Under the Fair Housing Act, a person who believes that he or she is a victim of housing discrimination may file either a complaint with the Department of Housing and Urban Development (HUD) or a lawsuit in federal or state court. If a municipality must defend itself against a complaint based on the Fair

DRAFT

Housing Act, or if it is found to have violated the Act, the costs can be considerable. For more information on Fair Housing laws, visit the HUD website at http://hud.gov.

Advocacy & Housing Committees

~~In February 2006, the Central Vermont Economic Collaborative, of which CVRPC is a member, initiated a Regional summit called "Housing Strategies 2006". Seventy-five Central Vermont residents attended this meeting and many of them volunteered to be on one of three task forces in order to work on the following issues:~~

- ~~Planning / Zoning / Permitting~~
- ~~Incentives to create or purchase housing~~
- ~~Public Awareness / Education / Involvement~~

~~Each task force has developed strategies for implementation that could foster increased housing. The Planning/Zoning/Permitting Committee (of which CVRPC is a member) created a GIS model to identify land available for housing development within towns with municipal sewer and water systems. The Incentives group identified five financial incentives which currently do not exist in Central Vermont which would benefit the creation, rehabilitation and purchase of homes. They are: 1) development of low-interest loans for landlords to renovate existing apartments, 2) develop more incentives/tax breaks/abatements/credits and assistance to attract the private sector to develop housing within existing infrastructure, 3) expand assistance for accessory apartment conversion, 4) develop community support for creating mixed uses and mixed housing types, and 5) develop employee pre-tax house savings accounts. The Public Awareness/Education/Involvement committee developed an educational flyer and compiled a comprehensive list of media contacts and other forms of information outlets. Currently, the Collaborative is working on a housing guidebook (entitled "The Central Vermont Housing Menu") combining the efforts of all committees.~~
~~The Mad River Valley Housing Coalition (MRVHC) is organized as a not-for-profit housing group and continues to work on the following projects in the Fayston, Waitsfield and Warren area:~~

- ~~research and develop an accessory apartment program,~~
- ~~implement the recommendations of the Mad River Housing Study;~~

Commented [KP263]: Outdated.

DRAFT

- ~~support local housing projects;~~
- ~~educate the public on local housing needs.~~

~~The Montpelier Housing Task Force (MHTF) was organized in 1999 to assist with the preservation and enhancement of residential opportunities in Montpelier for households of all income levels. Working with community residents, City staff and elected officials, landlords and financial institutions, and community organizations, recent accomplishment of the task force include:~~

- ~~creation of a City housing trust fund,~~
- ~~implementation of an accessory apartment program,~~
- ~~recommended changes to municipal ordinances~~
- ~~conducted public outreach and education,~~
- ~~continuation of tracking City housing data.~~

Local housing groups have proven effective at addressing local housing needs and can be a valuable resource in assisting town select boards and planning commissions in decision making. Yet no single municipality acting alone can address the Region's housing needs. All 23 cities and towns can work together in advocacy and partnership with other housing organizations (see CVCLT feature on p. 5) in order to meet current and future housing needs in sustainable ways. ~~The Regional Housing Distribution Plan, as detailed below, is one way the Region's municipalities can continue to work cooperatively towards this important goal.~~

Addressing Homelessness

According to the ~~2022~~ 2024 Point in Time (PIT) counts conducted by the Vermont Coalition to End Homelessness, there are ~~296~~ 317 households experiencing homelessness in the Central Vermont planning area. Of these, approximately 90 children in 50 households ~~with children~~. This count includes figures for Washington County and a proportional estimate for the three CVRPC municipalities in Orange County. Consequently, there is a need to create an additional mix of ~~296~~ 317 housing units to support this population.

Commented [KP264]: This text comes from the 2024 readoption Appendix 2: Housing Targets. Data has been updated.

~~This approach acknowledges~~ It is important to acknowledge the complexity of homelessness and the frequent need for additional services. New construction

is often not enough. Therefore, CVRPC recognizes that housing designed to alleviate homelessness should likely be situated where supportive services are already available, rather than evenly distributed across the region.

Housing Resources

Advocacy

- ~~Vermont Affordable Housing Coalition. www.vtaffordablehousing.org. Organization working to promote awareness and policies for affordable housing.~~
- ~~Vermont Coalition to End Homelessness. www.helpingtohouse.org. Organization working to monitor the needs and stream line the services and housing.~~
- Housing and Homelessness Alliance of Vermont. Home - Housing & Homelessness Alliance of Vermont. Organization working to promote awareness and policies for affordable housing and to end homelessness in Vermont.

Data Sources

- American Census ~~Factfinder.~~ ~~www.factfinder.census.gov.~~ https://data.census.gov/ Data base of Regional and national statistics.
- Vermont Housing Data. www.housingdata.org. Data base of Vermont including a directory of affordable housing, housing profiles and policy resources.

Guides

- ~~Affordable Housing Design Advisor. www.designadvisor.org.. U.S. Department of Housing and Urban Development website which includes tools, resources, ideas and a guide to affordable housing design.~~
- ~~Central Vermont Housing Resource Guide. www.centralvtplanning.org. A guide to renters and homeowners looking for information about subsidized housing; mobile homes; and mortgage and home improvement financing. Hard copies are available at CVRPC Offices, 29 Main Street, Montpelier.~~
- ~~Housing and Vermont's School Enrollment, VHFA Issues Paper. www.vhfa.org. Explores the relationship between home building and school enrollment levels. Includes a guide to help communities make~~

Commented [KP265]: These two organizations merged in 2024 and formed the organization added below.

Commented [KP266]: Factfinder database was retired in 2020 and data is now housed under data.census.gov

Commented [KP267]: Outdated. Guide is from 2013 and has not been updated since.

Commented [KP268]: Outdated. Guide was written in 2004 and has not been updated since.

DRAFT

~~decisions about the impact of housing development on school enrollment.~~

Commented [KP269]: Outdated. Report is from 2007.

- HUD's Regulatory Barriers Clearinghouse. RBC Home Page | HUD USER ~~www.huduser.org/rbc/.~~ U.S. Department of Housing and Urban Development's guide to solutions to state and local regulatory barriers to affordable housing.
- Vermont Housing Needs Assessment Guide. www.housingdata.org. Guide to help community groups determine the need for affordable housing within their cities or towns.

Organizations

- Downstreet Housing and Community Development https://downstreet.org/ ~~Central Vermont Community Land Trust. www.cvclt.org.~~ Organization working to develop and manage affordable rental and homeownership housing opportunities in Central Vermont.

Commented [KP270]: Renamed in 2015.

- ~~Vermont Forum on Sprawl. www.vtsprawl.org. Organization dedicated to promoting research-based smart growth. Includes resources to assist towns with including density and affordable housing.~~

Commented [KP271]: No longer operational in this form.

DRAFT

Housing Targets:

Commented [LB272]: Added in 2024 plan readoption

According to the 2025 Vermont Housing Needs Assessment (HNA)[62], the number of new housing units needed in the Central Vermont Region in 2030 are between 2,540 and 3.864 and for 2050 between 8.045 and 15,856. Per statute, CVRPC has disaggregated targets by municipality and zoning district, as well as by unit type, size, and affordability.

Municipal Housing Targets

Given the interdependent economy and society of the Region, the housing needs of the Region affect every community. The purpose of the Regional Housing targets are ~~Housing Distribution Plan is~~ to establish a long-term vision for housing in Central Vermont and is to be used to measure progress.

Commented [LB273]: Reference to previous housing breakdown by municipality: the Housing Distribution Plan, was removed here and replaced by Regional Housing Target instead.

The 2026 ~~2024~~ CVRPC Regional Plan established the objective of strategically planning population growth around dense mixed-use core areas.

Municipal housing targets were set by factoring a combination community population and ability to accommodate future development. This was done by identifying areas in each municipality appropriate for high-density, medium-density and low-density housing. This was done by assigning Future Land Use categories to each parcel. The totals for each town were then compared against the regional total, and assigned a percentage of the overall target housing units. That data can be found in Appendix c: Housing target Methodology. For more information on how these determinations were made, see Appendix D: Future Land Use Area Metholodology[63].

While CVRPC believes there are advantages for municipalities to focus new growth in their centers, there is nothing in these targets to prevent the majority of new housing to be in low-density suburban or exurban districts. Further, we recognize that many folks moving to Central Vermont mostly prefer to live in rural or very rural locations, therefore, it would be folly not

Commented [LB274]: This language comes from the new draft Housing Element

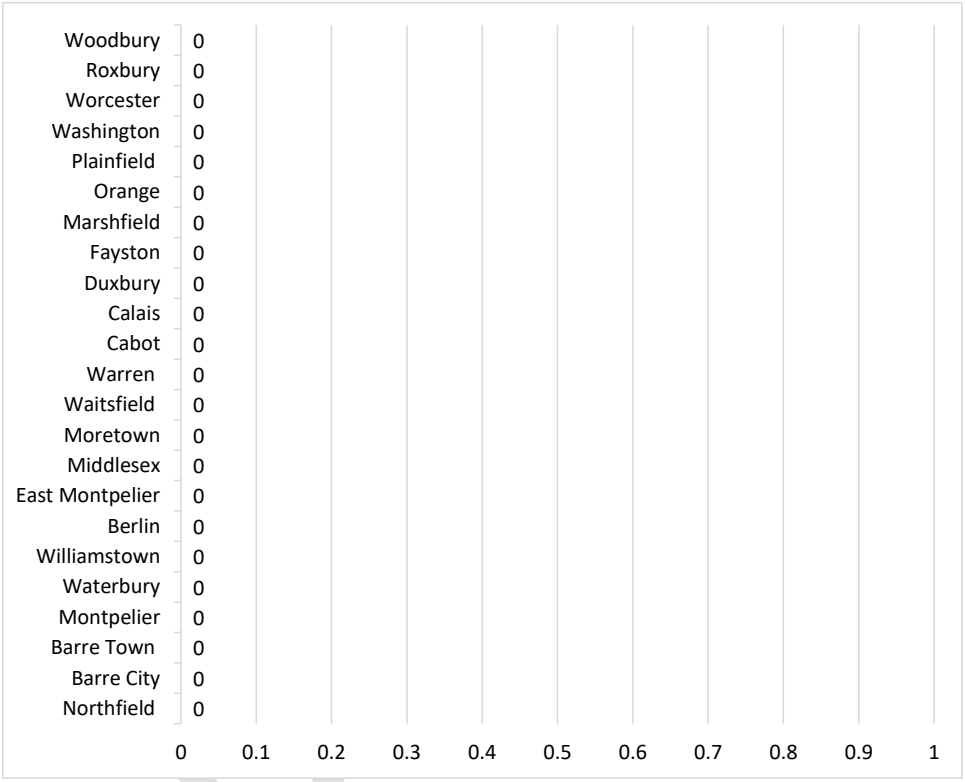
[62] 2025 Vermont Housing Needs Assessment, Vermont Housing Finance Authority for the Vermont Department of Housing and Community Development.

[63] In determining FLUAs, CVRPC considered a variety of factors including each municipality's Town/City Plan, the future land use they assigned, and local zoning regulations[63]; existing or potential for future infrastructure; and state designations for downtown centers, etc. This information was used to identify appropriate locations for future housing, as well as those better suited for recreation, agriculture, and conservation.

DRAFT

to plan for continued growth in our rural municipalities. Therefore, this plan will continue to use the statutory language of *targets*, while in practice these numbers describe both targeted growth but also predicted growth.

Municipal Housing Targets



Commented [LB275]: Municipal Housing Targets will be calculated once Future Land Use Area coding on regional map is complete. This replaces the previous Housing Distribution Plan. See notes below.

Housing Units by Future Land Use Areas

The balance of future land use areas below reflects the intention to promote clustered development, support medium-density infill in transition areas and steer low density development by encouraging conversion of seasonal residences to full time, commercial properties to residential use, and replacing homes in hamlets and working lands.

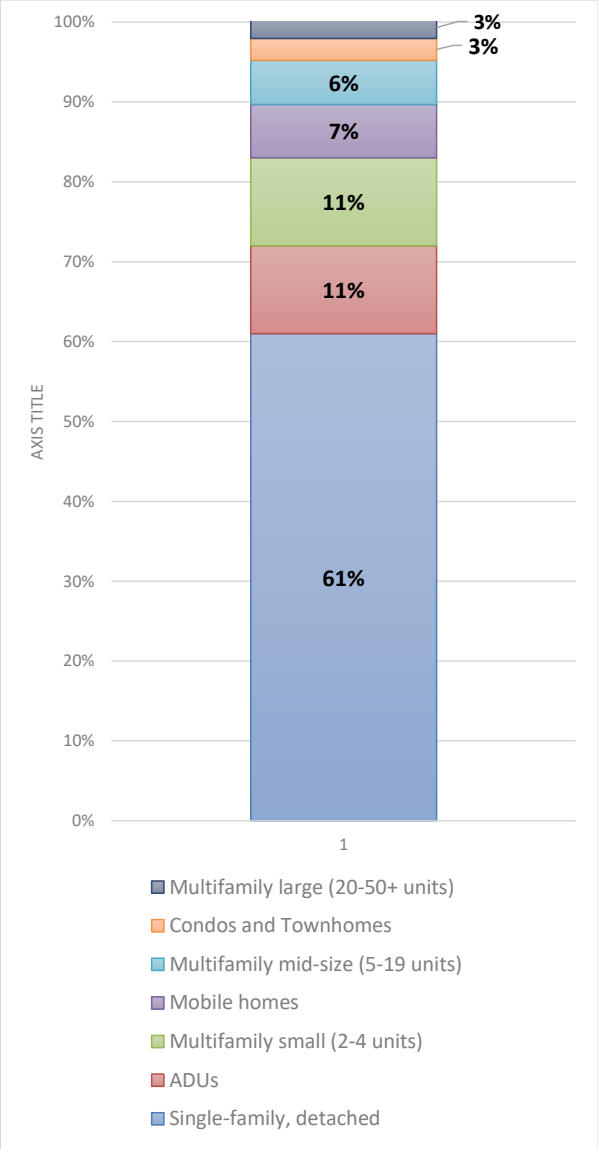
Commented [LB276]: Added as further high-level explanation of future land use areas as they relate to housing targets

Percentages of Future Land Use Areas in Central Vermont

	Future Land Use Category	% of Overall Housing Target	Number of Units
High-density	Downtown Center		
	Village Center		
	Planned Growth Area		
	Village Area		
Medium-density	Transition/Infill Area		
Low-density	Enterprise Area		
	Hamlet		
	Rural-General		
	Rural-Agriculture and Forestry		
	Rural-Conservation		

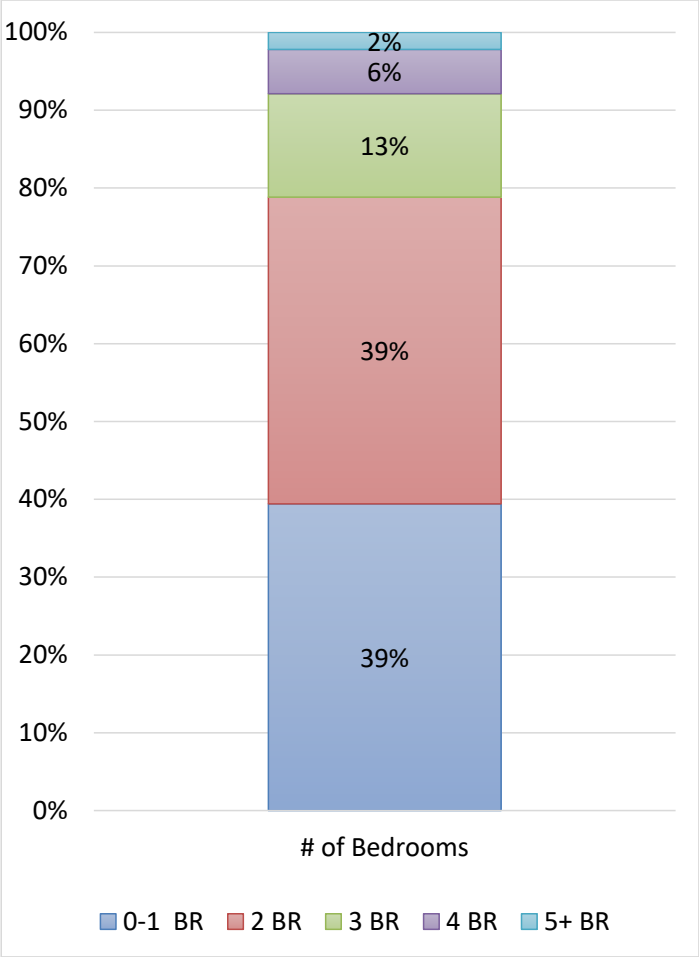
DRAFT

Housing Targets By Unit Type



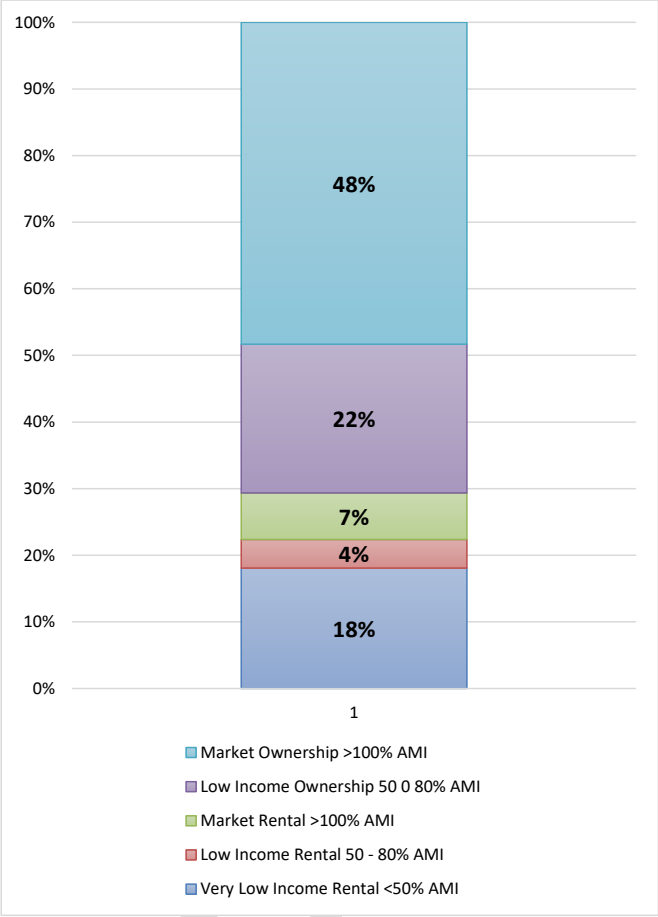
Single family homes make up the vast majority of Central Vermont's housing stock, and will likely continue to be the home of choice for new homeowners and some renters. Small multi-family rentals are likely to attract families with children, which is a key demographic Vermont is targeting. As stated above, mobile homes offer affordability and autonomy with the support of infrastructure and community, as do condos and ADUs with the ability to connect to neighbors in communal spaces.

Housing Targets By Unit Size



As household size continues to decrease, the popularity of studio, 1- and 2-bedroom units will continue to grow. These unit size targets address the disproportionate number of 3+ bedroom homes currently available in the market.

Housing Affordability Targets



As discussed above in the Housing Affordability section, there is an increasing gap between area median incomes and area median rental/sale price. The targets below allocate the current range of household incomes into renters and owners. In Washington and Orange counties combined, 17% of the homeowning households make less than 50% of the Area Median Income (AMI). This points to homeowners who may have inherited their homes or purchased before housing prices rose so sharply. In assigning these housing targets, we allocated this segment of households to future low-income rentals.

Municipal Housing targets

Commented [LB277]: This text and the tables there were based on the "Housing Distribution Plan" This was previous method of breaking out housing goals by town. The Housing Targets description and tables above included above replaced this section.

This housing assessment is meant to be a stand-in for the Statewide Housing Needs Assessment to be completed by the Department of Housing and Community Development. This is an interim measure until the State assessment is complete. Most of the regional housing discussion, including goals and policies to identify the location, quality, types, and costs of housing is included in the 2016 CVRPC Regional Plan. This assessment has the limited purpose of discussing the median housing and transportation cost for Central Vermont communities and of providing regional and municipal housing targets. The analysis is based exclusively on data from the 2020 census. This assessment is based on four primary data points: the growth rate of households in Central Vermont, the natural rate of housing unit destruction, a healthy vacancy rate of 5%, and the estimated number of homeless households in Central Vermont. By focusing on these factors, CVRPC tries to develop a rough understanding of the evolving housing landscape, set regional and local housing targets, and hopes to facilitate informed decision-making to address the diverse housing needs of the community over the next decade. Based on this assessment, the region has a target of 1,267 new or replacement housing units for Central Vermonters of all backgrounds.

Municipality census tract info table deleted here

Source: 2019 Housing and Transportation Index – Center for Neighborhood Technology

For much of the Central Vermont planning area, housing costs exceed the affordability threshold of 30% of household income. To establish housing needs, 24 V.S.A. § 4348a(a)(9) states that regional planning commissions shall estimate total needed housing and disaggregate targets by municipality. CVRPC developed the following targets based on the theory that if new housing is built to accommodate the rate at which the number of households grew between 2010 and 2020, replace housing units that are being removed from the housing stock through natural destruction, and elevate the regional vacancy rate to 5%, this supply-side action would help depress housing costs and increase housing affordability. For this assessment, a healthy vacancy rate for non-seasonal housing was set at 5%.

housing units needed to accommodate new households

DRAFT

+	# of housing units needed to replace deteriorated housing units
+	# of housing units needed to elevate the vacancy rate to 5%
	Total # of new housing units to meet demand by 2030

Based on this analysis, CVRPC estimates that by 2030 an additional 521 housing units are needed to accommodate the growth in the number of households and elevate the vacancy rate to 5%. While 450 housing units are needed to replace the destruction of existing housing units. Therefore, a total of 971 new housing units need to be built by 2030 to relieve current pressure on the housing market. This analysis begins to estimate regional need. However, it relies on a number of assumptions, namely that the creation of new housing will improve affordability. CVRPC will continue to work to integrate this analysis into the work that has already been completed as part of the 2016 CVRPC Regional Plan.

These numbers are further broken out by census tract below.

Housing Units by Town Table deleted here

The above calculation of housing need does not include new housing for Central Vermonters experiencing homelessness. Housing Targets

The projected target for total new housing units in Central Vermont by the year 2030 is 1,267. This figure accounts for a blend of affordable and market-rate housing to accommodate all demographics.

Regional Housing Distribution Plan

The Regional Housing Distribution Plan is a pro-active regional approach developed by CVRPC and designed to assist local towns in their planning for housing. It is a critical step in the Region's on-going effort to address the housing needs of Central Vermont residents. Given the interdependent economy and society of the Region, the housing needs of the Region affect every community. The purpose of the Housing Distribution Plan is to establish a long-term vision for Central Vermont and is to be used to measure progress.

The number of housing units for which each town is expected to plan was derived from the report titled Economic and Demographic Forecast Central Vermont Planning Region 2000-2020 prepared by Economic and Policy Research, Inc (EPR) for CVRPC. In the year 2000 each town contributed a certain percentage of housing units to the Regional total. The EPR forecast indicated that the larger towns in our Region, with infrastructure capacity,

DRAFT

~~are projected to contribute lower percentages to the Regional housing total as the year 2020 approaches. (This is in part due to a combination of factors including land costs are cheaper in more rural areas, causing an increase in scattered residential development outside of town and village centers. This pattern of decreasing population in our larger towns has been the basis for future forecasts.) Therefore, the Housing Distribution Plan was formulated with the aim to ensure that all towns continue to contribute similar percentages of the Regional total, or more, as they were in the year 2000 to fulfill the needs of the future. The Regional Housing Distribution Plan results in planning for a total of 8,835 new housing units in Central Vermont between 2000 and 2020. (See Appendix)~~

~~Under § 4347 of Chapter 117, the State mandates CVRPC to plan for anticipated growth and promote the development of housing suitable to the needs of the Region. In § 4348a, the State also mandates that the Regional plan housing element "identifies the need for housing for all economic groups in the Region and communities." Therefore the Regional Housing Distribution Plan is a method to be used by municipalities, in conjunction with information contained within this Housing Element, to help meet the future housing demand.~~

- ~~The Regional~~ Housing ~~Distribution Plan is~~ intended to be used by municipalities ~~when updating their land use plans and regulations.~~
- ~~Town Plans adopted after January 1, 2009 are expected to incorporate this Housing Distribution Plan into their town plan housing element.~~
- ~~The Regional Planning Commission has established a town-by-town housing distribution plan at least 15 years into the future. The formula and allocation will be reviewed and updated with each Regional Plan's five-year update.~~
- ~~Town plans shall contain a detailed map or maps of the town showing the town's preferred locations for future housing units – consistent with current or proposed zoning* – for 80 percent of the anticipated 10 to 15 year housing demand. ("Demand" is the difference between the number of units at the time of town plan approval and the Housing Distribution number at least 10 years thereafter.)~~

~~Municipality Regional Distribution Plan table deleted here~~

- ~~Town plans shall also provide~~ mapping ~~updates that identify the~~

Commented [LB278]: Integrating zoning into housing targets was largely done by the map assigning FLUAs, so this language was not brought forward into the new housing targets section.

DRAFT

~~locations and number of housing units created in the town since the previous town plan adoption.~~

- ~~Towns and cities are required to demonstrate the community's intent to meet the proposed housing unit numbers laid out in the Housing Distribution Plan or to describe in detail the obstacles that make attainment impossible. CVRPC will consider the encourage planning efforts to encourage support housing development in relation to the Housing Distribution Plan Regional Housing Targets when approving a municipal plan.~~
- ~~CVRPC can and will work with municipalities to overcome any local barriers to housing production that prevent attainment of the housing unit numbers, and suggest programs of local actions to address those barriers. Towns unwilling to implement programs to address barriers to housing may have their plans denied Regional approval.~~
- ~~The Regional Housing Distribution Plan is not proposing quotas that municipalities must achieve within the time frame of their next municipal plan update; rather it aims to identify the locations where the Region can best accommodate and sustain welcomes and encourages the housing new and current residents need.~~

~~*For towns without zoning bylaws: Town plans shall contain a detailed map or maps of the town showing the town's preferred locations for future housing units consistent with the town plan's housing goals and policies and be compatible with other plan elements as outlined in § 4382 "the plan for a municipality." (See Appendix.)~~

~~Note: The Distribution Plan total numbers are somewhat higher than the actual projected unit totals for the Region, as well as for some individual municipalities. The Distribution Plan numbers are not meant to replace the projections that appear elsewhere in this Plan, but rather are intended to ensure that communities plan for potential demand.~~

Commented [LB279]: The new housing targets are meant to be aspirational, not a mandate, so this language was not brought forward into the hew housing targets section.

Conclusion

CVRPC encourages member municipalities and residents to address the Region's shortage of affordable housing through various methods. These include diversifying the types of new housing units constructed, increasing density in new and existing housing units, and zoning for growth close to existing population centers and infrastructure and out of natural disaster hazard areas. The following are goals and strategies to ensure that all Central Vermont residents have housing that meets their needs.

Commented [LB280]: This language is from the new draft Housing Chapter

DRAFT

Housing Goals, Polices & Actions

Housing Goal 1:

To promote the development of housing opportunities for all residents of the Region, including and especially, affordable, elderly, and special needs housing.

Housing Goal 2:

To encourage innovative planning, design, and development of housing which minimizes its costs, energy consumption, and environmental impacts.

Housing Goal 3:

To promote preservation of the existing housing stock and the development of future housing in the centers and neighborhoods of the Region. ~~village/town and employment centers of the Region, or those areas designated as Growth Centers.~~

Commented [LB281]: Changed to align with new statutory language

Housing Goal 4:

To support the coordination between public, private, and non-profit agencies involved with planning, financing, and developing affordable housing.

Housing Goal 5:

Encourage large employers to explore and implement employer assisted housing.

Policies

1. The Region's towns, non-profits, and state agencies should work collaboratively to address the Region's housing needs.
2. Municipal plans should assess the community's ability to meet the goals set out in the Regional Housing Distribution Plan.
3. Municipalities should encourage housing at the maximum densities allowed by local plans and regulations and at densities at or above those of their traditional/existing neighborhoods.
4. Municipalities should seek to ensure at least 20 percent of the housing stock is affordable, as defined by 24 VSA, Chapter 117, Section 4303.

DRAFT

5. The majority of new housing should be constructed in centers and neighborhoods identified on the regional future land use map ~~town centers and designated growth centers.~~
6. The Region's existing housing stock should be preserved and renovated. Adaptive reuse of older and historic buildings should be encouraged especially in downtown and village centers.
7. Housing units that are affordable to households below the area median income and housing near employment centers should be encouraged.

Actions

Commented [LB282]: Bullet points changed to numbered list for ease of refence.

1. Assist towns in finding the resources needed to carry out housing needs analyses to identify the specific types of housing most needed by the community.
2. Provide communities with ~~the~~ tools and resources ~~needed~~ to implement the Regional Housing Targets. ~~Regional Housing Distribution Plan~~.
3. Encourage the adoption of local land use regulations and bylaws that allow concentrated development where appropriate infrastructure can be made or is available.
4. Review town plans to assure that all towns in the Region have a housing element that identifies housing issues and outlines steps through which housing needs will be addressed.
5. ~~5.~~ Assist towns with the process of determining areas for growth on the regional future land use map ~~process of designating growth centers~~
6. Help towns to identify potential partners for affordable housing development.
7. Continue advocating for state policies and funding initiatives that increase housing opportunities for the Region's residents.
8. Make Geographic Information System technology and other tools available to communities so they may analyze the impact of existing and/or proposed zoning policy on the potential for housing development.
9. Continue support of local housing groups.
10. Promote the density building land use strategies discussed in this Chapter and in the Land Use Element as a matter of course through our technical assistance programs.

DRAFT

~~11.~~ Provide municipalities with resources for ADU design and construction~~. copies of "The Central Vermont Housing Menu" when completed.~~

12. Actively participate in the Act 250 process to support appropriate housing development.

~~13. Actively support the economic incentives identified by the Central Vermont Economic Collaborative (see page Advocacy & Housing Committees section.)~~

14. Continue to assist any municipalities which have not yet adopted the 2023 HOME Act required changes.~~ 2004 housing-related changes to 24 VSA, Chapter 117.~~

15. Support placement of mobile homes and manufactured housing, and modular construction models through local planning and zoning standards;

16. Encourage towns to develop a streamlined permitting process for housing along with density bonuses and lowering of impact fees in downtown centers, village centers, planned growth areas and village areas. ~~growth centers, village centers and downtowns, and other areas where housing growth is desired.~~

Commented [LB283]: Outdated

Commented [LB284]: Added to meet statutory requirement 4302 (C)"Sites for multi-family and manufactured housing should be readily available in locations similar to those generally used for single-family dwellings."

Commented [KP285]: Updated to reflect changes to state designation program after Act 181.

DRAFT

7. ECONOMIC ELEMENT

A healthy economy is essential to maintaining Vermont's quality of life. A diversified and dynamic economy provides employment, stimulates social and cultural interaction, and provides the resources for the provision of a wide variety of community services, including education, health care and a well maintained physical infrastructure. On the individual level, a diversified economy offers greater opportunities for individuals to engage in satisfying and meaningful occupations and pursuits.

Economic vitality is a balance between human, natural and capital resources. The interaction of these factors determines the scale and intensity of growth and development. The Economic Element of the Central Vermont Regional Plan focuses on making effective use of the wide range of resources available in the region, while maintaining the balance of these resources.

Discussion: General Economic Profile

Like the rest of Vermont, the Central Vermont economy has evolved from an agricultural/ manufacturing emphasis to a more complex mixture of economic activity. The growth of the travel/ hospitality/recreation industry, for instance, has contributed to the expansion of the retail and wholesale trades, and other services like construction and mortgage banking. Manufacturing, which has expanded to include food processing, plays a significant role in the attraction of tourists and the diversification of agriculture. No one sector can stand alone; changes in one will have an effect on all the others.

~~Total employment in Central Vermont is expected to increase by approximately 14,000 over the 2000-2020 period at an average rate of 1.4% per year. However, given a sharp drop in employment in 2008 and 2009, the Region exhibited only 1.3% growth between 2003 and 2013. While Washington County is expected to see an increase in employment over the~~

~~forecast horizon, it is expected to decrease its share of the total northwest region's (including Chittenden, Franklin, and Lamoille Counties) employment.~~

The region's diverse economy is divided among a variety of activities. This industry distribution is supported by an equally diverse educational and occupational profile of the work force. Of the adult population in Central Vermont, ~~92.6%~~ 87.3% have a high school diploma or better. ~~44.7%~~ 42.2% have either ~~an Associate's degree~~, a Bachelor's degree or graduate-professional degree. Central Vermont has a higher relative number of collegiate degrees, including ~~Associates~~, Bachelors and Graduate/ Professional, compared to Vermont (~~42.3~~ 41.13%) and the United States (~~35.8~~34.14%)[64]. ~~Within the Region there is significant variation in educational attainment with levels of adults with a high school diploma or less at 48.5% in Barre. These percentages have increased significantly since the 1990 census.~~ The occupational profile of the work force indicates that the largest category falls into ~~public administration~~, health care and social assistance, ~~or~~ retail trade or educational services.

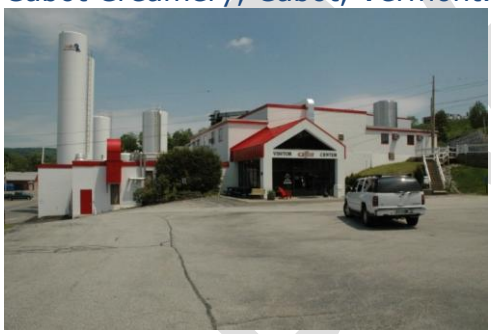
Commented [KP286]: Outdated.

Commented [KP287]: Data is updated with 2024 ACS data.

Commented [KP288]: Outdated data.

Commented [KP289]: Updated information taken from new jobs table below.

Cabot Creamery, Cabot, Vermont.



~~Approximately 60%~~ Most of the region's employment is concentrated in the urban core, which is made up of Montpelier, Berlin, Barre City and Barre Town, with most of the balance of employment opportunities found in Waterbury, Northfield and the Mad River Valley towns. ~~Together the region's employment centers account for about 89% of the region's employment and approximately 73% of its population.~~

[64] S1501: Educational Attainment - Census Bureau Table

DRAFT

Just as the region's economy has evolved from locally focused agriculture and manufacturing to its current place in the more complex New England and national marketplace, it will continue to evolve as markets change and competition in all sectors becomes more global.

Central Vermont has a diverse economy. However, many of its top industries are similar to elsewhere in the state. As host to the state capital, Montpelier, the Central Vermont economy is characterized by a high percentage of employment in the public administration sector.

Job Counts by NAICS Industry Sector

	Total	Percent
Total Primary Jobs	28,865	100.00%
Health Care and Social Assistance	4,003	13.87%
Retail Trade	3,652	12.65%
Educational Services	3,164	10.96%
Accommodation and Food Services	2,511	8.70%
Manufacturing	2,426	8.40%
Professional, Scientific, and Technical Services	2,131	7.38%
Public Administration	2,209	7.65%
Finance and Insurance	1,991	6.90%
Construction	1,426	4.94%
Other Services (excluding Public Administration)	1,145	3.97%
Administration & Support, Waste Management and Remediation	1,071	3.71%
Wholesale Trade	834	2.89%
Information	419	1.45%
Transportation and Warehousing	467	1.62%
Arts, Entertainment, and Recreation	381	1.32%
Real Estate and Rental and Leasing	321	1.11%
Utilities	235	0.81%
Management of Companies and Enterprises	230	0.80%
Agriculture, Forestry, Fishing and Hunting	166	0.58%
Mining, Quarrying, and Oil and Gas Extraction	83	0.29%

Source: OnTheMap (2023)

~~Projections developed by the Office of Policy and Information of the~~

Commented [KP290]: Table and blurb taken from new draft Economy chapter but updated with most recent data from OnTheMap. Added to help meet statute for describing current economic conditions.

~~Vermont Department of Employment and Training help to identify the shifts that are occurring in the state and regional economies. National and international forces have a tendency to have greater influence on manufacturing, while state and regional market forces combine to influence the non-manufacturing side.~~

~~The growth of the state economy is closely linked to the expansion of trade and service industries which meet the demands of residents and tourists. Our proximity to the urban centers of the Northeast plays a major role as a market in our recreation/ tourist activities. The growth in resident income also contributes to the importance of the trade and service industries.~~

~~While the next two decades are expected to produce employment growth at a rate of about 1.4% per year, approximately 84% of this growth is expected to be in the non-manufacturing sector with the addition of approximately 11,000 jobs over the forecast period (1.6% annual growth). Most of this increase (62%) will be in service industries that will grow faster than the rest of the non-manufacturing sector.~~

~~Employment in the manufacturing sector is forecast to grow 1.1% per year or by 1200 jobs by 2020. The government sector is expected to add the same number of new jobs while growing at an annual rate of only 7%.~~

The granite industry has long been at the heart of the Central Vermont Region's manufacturing sector. The region is a melting pot of ethnic heritage brought about by the influx of immigrants drawn to the region's granite quarries and manufacturing plants. ~~The industry continues to be a major employer, with over 1,000 jobs and in excess of $100 million in sales~~. In recent years, the industry has emphasized diversification of its product line and improvement of its fabrication processes. Innovation has led to reductions in such health and environmental hazards as dust and sludge, and has led to greater utilization of processing wastes.

Ski areas are viewed as one of the Region's resources, combining economic benefits and recreational opportunities. Ski area growth has direct implications for the natural, physical and socio-economic environments. The ski industry also presents the potential for secondary impacts through

Commented [KP291]: Outdated.

Commented [KP292]: Outdated.

DRAFT

associated employment in the service and construction sectors, as well as the expansion of seasonal and permanent housing. A challenge exists to balance the competing demands of accommodating growth while preserving resources.

By its nature, the ski industry operates within some of the more environmentally sensitive areas of the Region. The ski areas, themselves, have often recognized the strong relationship between the health of the environment and the health of the ski industry and have demonstrated a desire to ensure that ski-related development respects the natural environment.

Central Vermont continues to have significant ties to the agricultural and forest- based economies. In addition to direct economic contribution, farms and forests helps to define the Region's cultural identity and provides Central Vermont residents with open space, recreational opportunities, aesthetic pleasure, and a sense of place. The continued economic viability of these highly valued working landscapes will be a key factor in preventing the conversion of these lands to other uses.

Though a variety of economic and social factors continue to threaten the local sourcing that was common in the past, new economic and social forces make this a good time to look anew at local food and wood product manufacturing. Many farmers are growing for local markets, local processors are feeling pressure for growth, the majority of maple producers have diversified their operations, and public interest in maintaining our agricultural economy is clearly on the rise.

Economic Development

Self Sufficiency

Research has shown that community and economic development are best supported when local solutions and resources are brought to bear on local problems.

Small, new businesses are the backbone of economic development and job

DRAFT

creation. In Washington County, enterprises with less than 20 employees comprise ~~90~~ of roughly 71.54% of ~~total private businesses~~ establishments while providing for ~~38~~ 23.4% of ~~total private~~ employment[65]. ~~(National figures are 87% and 26%, respectively.)~~ Even though initial employment gains may be small, start-up businesses have immediate impacts on the local economy. Small companies tend to hire locally, buy locally and put more money into the local economy than they take out.

Commented [KP293]: Data updated.

Over the past decade Vermont has become a leader in small business formation, with the Central Vermont region adding its share of new, small, innovative businesses to the list. In Vermont, 99% of Vermont businesses fit the definition of a small business and small business employees accounted for 60.4% of total employees in the state[66]. ~~In Central Vermont the vast majority of the more than 2000 employers fit the definition of small business.~~

Commented [KP294]: Data updated.

Business development is influenced by a number of factors, as is the ability of the Central Vermont region to nurture, attract, and retain the businesses that are crucial to the economy. The Central Vermont Regional Plan attempts to capitalize on the region's positive factors, and also identify problems along with potential solutions.

Education

The quality of the work force and quality of life are directly related to community emphasis on education. Elementary and high school education are the basis of the human infrastructure. They provide the skills necessary for individuals to interact with one another in civil and meaningful ways. They are also the source of basic vocational skills in communications, mathematics, and problem solving.

As our society becomes more technologically advanced, these elementary skills take on even greater importance. Complex manufacturing techniques require workers who can process information and manipulate advanced machinery. Information management requires the ability to identify, isolate and utilize a wide variety of data.

[65] 2022 SUSB Annual Data Tables by Establishment Industry
[66] Small Business Economic Profile VT

DRAFT

The Central Vermont region is served by a high quality public and private school system. The region's seven high schools provide curricula ranging from college preparatory to vocational education. Several high schools have received state recognition for excellence in education. The region's elementary schools are in the forefront of the educational reform movement, making great strides in performance based programs, several of which have been recognized at the national level, and curriculum integration.

~~Institutions of higher education play an important role both as major employers and as support institutions for technology based industry. The Central Vermont region hosts six colleges and post-secondary schools. Spin-off institutes and for-profit ventures undertaken by the higher education community have added substantially to the economic and cultural wellbeing of the region. Advanced educational institutions also play a major role through the provision of programs that advance technical and problem-solving skills.~~

Commented [KP295]: Paragraph cut because of outdated information. New paragraph added below from new draft Economy chapter to reflect ongoing programs/institutions.

While an elementary and high school education can provide the building blocks for an educated work force, individual advancement and technological improvement will depend on the development of life-long learning habits and opportunities for all workers. The public education system must expand to meet the vocational needs of adults. Public and private institutions and employers must take a proactive role in identifying the skills necessary for economic vitality in the future, and take the steps necessary to prepare and retain the work force.

Examples of the programs needed to foster workforce training include: the VT Department of Labor's registered apprenticeships program, which provides work experience and training, and the Central Vermont Career Center, which is the region's provider of Career Technical Education and provides training and a pipeline between students and employers. Additionally, Central Vermont benefits from local post-secondary educational institutions like the Community College of Vermont and Norwich University. Institutions of higher education play an important role both as major employers and as support institutions for technology-based industry.

DRAFT

Transportation and Communication

A number of factors contribute to the appeal of Central Vermont to businesses. The transportation system in Central Vermont provides ready access to markets for goods produced here, as well as facilitating the flow of tourists into the region from the major northeast metropolitan areas. The region is served by the interstate highway system and national freight and passenger rail service. Private business and general aviation are served by the all-weather Edward F. Knapp State Airport, and passenger air service is readily accessible through the Burlington International Airport.

The State's communications policy and planning have benefited Central Vermont in the form of a network of telecommunications infrastructure that enables information-based industries to link into a worldwide telecommunications network. There remain challenges to both take advantage of this advanced technology, and to keep pace with the developments of this quickly changing industry. The increasing region-wide availability of the state-of-the-art telecommunications/information technology infrastructure (including high speed internet access and wireless communications) is increasing work options for Central Vermonters.

Quality of Life as an Economic Consideration

Quality of life is a difficult concept to define, yet many would agree that it stems from the sense of security and well-being that comes from being part of a community. Central Vermont's small town character, with its opportunities for participatory government, diverse social interaction, and human scale commerce plays a major role in maintaining an excellent quality of life.

Essential to a high quality of life is a dynamic and varied cultural experience. The village as the center of social activity provides the critical mass necessary for a flourishing interchange of ideas, art and culture. The traditional New England village is a virtual textbook of human history. The variety of architectural styles reveal the economic and social fortunes of its inhabitants, past and present.

DRAFT

The New England village is considered by many to be the pinnacle in land use design. In scale and function, it satisfies our needs for privacy, community and livelihood. Maintaining historic development patterns of village centers surrounded by resource based agricultural, mineral, forest and recreational activities balances economic and environmental interests. Concentrating growth and development within the confines of a downtown or village center ~~or "growth center"~~ allows the community to implement infrastructure improvements in an efficient and effective manner that will improve the quality of life while limiting the degradation of the environment.

Commented [KP296]: To align with updated FLUAs.

Central to the preservation and development of village patterns and commerce are affordable public utilities and services that allow increases in residential and commercial densities. While the costs of water and sewer for dispersed development can be borne by individual owners and users, public systems that benefit the entire community are frequently beyond the capacity of individual users to support. Equitable methods of financing that recognize the social, economic and environmental benefits of public infrastructure must be developed.

The availability of safe and affordable child care services is critical to the Central Vermont Region. Quality child care benefits families by preparing children for schooling and social interaction while enabling parents to work and provide income. It benefits businesses by expanding the workforce and creating more reliable, productive employees. Furthermore, child care facilities are businesses themselves and their existence expands local and Regional economies directly through the hiring of workers and purchase of goods and services. The need for childcare is prevalent across the state: of Vermont children under 5 years old, 76.7% have all available parents participating in the labor force. This indicates that a significant portion of children are in the care of someone other than their parents for at least part of the day[67]. ~~71% of Vermont children under 5 years old are in the care of someone other than their parents for at least part of the day~~.

Commented [KP297]: Data updated.

[67] Stalled at the Start 2024

Challenges

A number of obstacles have been identified as impediments to economic development. The limited number of clearly identified, well-serviced, commercial/industrial sites hampers the ability of local businesses to expand and new ventures to develop. Some sites are identified as commercial or industrial in town zoning ordinances, but lack the needed sewer, water, electrical services or transportation infrastructure, while other areas have services available, but are not zoned for commercial/industrial use.

Similarly, the capacity of some of the region's existing public infrastructure is being severely strained by age, quality and the demands being placed on it from all sectors. The costs of upgrading and expanding public facilities often out pace the ability of users to pay.

The lack of venture and expansion capital is a serious obstacle to business development, especially for smaller enterprises. In Vermont's small business climate, where loans have traditionally been made as much on the credibility of the individual as on the assets of the company, the effect has been profound.

Utility costs represent a substantial portion of the operating costs of many alone mean increased energy use and cost compared to other areas. Conflicting and sometimes lengthy permit decisions have also complicated the development process. Development proposals are reviewed by numerous state agencies, local boards and regional planning and environmental commissions, each adding its own perspective and requirements. The myriad of permits that are sometimes required can tend to discourage the inexperienced business-person.

There has been much discussion in recent years regarding salaries in Vermont and the desirability of compensating workers with a "livable wage" (defined as the hourly wage/annual income necessary to cover all basic needs plus all relevant local, Federal, and State taxes. Basic needs include: food, housing, child care, transportation, health care, clothing, household and personal expenses, and insurance). ~~It is an often heard refrain that our young people often leave the State to find higher paying jobs elsewhere.~~

DRAFT

~~The fact that Vermont placed in the top five states in multiple job-holders in 2000 may provide further evidence that low wages may be a problem here. Unfortunately, this trend is actually accelerating~~.

Commented [KP298]: Outdated data.

The Region's downtowns and villages were primarily established along the Winooski River and its major tributaries. This development pattern leaves our communities very susceptible to flood damages amongst other natural hazards and weather events that can affect community vitality and economic activity. This vulnerability became extremely evident during 2011 flood events, including Tropical Storm Irene, during which a great number of businesses were directly impacted by flood damage or indirectly impacted due to road closures, tourism impacts or dips in local spending. As well, in the July 2023 flood, total damage to the Region's economy was estimated at $300 million and the average economic injury per business was $150,000; one business reported $6.5 million in damage. 46.6% of businesses in the region reported economic injury that severely impacted their ability to reopen, which extended the opening of their establishments more than 120 days (about 4 months) after the flood occurrence. BIPOC, New American, and Low and Middle Income (LMI) business owners faced even greater difficulties in opening due to communication barriers and accessing resources and contractors. Also, nearly all the businesses in the Region that were damaged by flooding had difficulty accessing funding to repair their properties.

Commented [KP299]: More recent information included from new draft Economy chapter. The additions also include important in showing distribution of environmental burdens to vulnerable communities (State Goal 15).

There is a need to incorporate an economic component into future analyses related to our communities' flood vulnerabilities and to include actions to better prepare businesses for future flood events.

The Demographic Challenge

Continued economic vitality depends on the existence of a skilled, knowledgeable and innovative "next generation" workforce. With an older than average and rapidly aging population, along with one of the lowest percentage of people in the 25 to 29 age group in the nation, Vermont faces some serious challenges in this regard.

The percentage of Vermonters 19 years or younger has been consistently

Commented [KP300]: More recent data from the new draft Economy chapter to help highlight present economic conditions required by statute.

DRAFT

decreasing since 2000, while the population of Vermonters 65 years and older has increased. As Vermont's population ages out of the workforce, a smaller proportion of working adults must support a larger proportion of the population than in the past. Loosely defining working age as 20 years to 65 years, the following table illustrates how an aging population will put additional pressure on the number of adults in the labor force. Further, the number of Central Vermonters under age 20 has decreased in this same period, potentially indicating additional future scarcity in the workforce.

Age of Vermonters in the Workforce

	2010	2015	2022
Working age (20-64 year)	62%	64%	59%
Younger and older Central Vermonters	38%	36%	41%

Source: ACS 2022 – Table S0101

~~Recent studies in the State suggest two different points of view on, and approaches to, solving the State's demographic problem. The 2006 report of the Governor's Next Generation Commission espouses the belief that many young people are "forced" out of the State by the high cost of post secondary education, lack of avail- able training, and lack of early awareness regarding career/educational choices. Its recommendations focus primarily on retaining young people already in the State by providing them with financial and other incentives for them to stay, helping them develop skills to offer employers, and providing them the information to make better decisions about their futures.~~

Commented [KP301]: These reports are not recent. No new versions of these reports have been released since. The descriptions of the findings are not required by statute.

~~Another point of view, delivered in a 2007 report commissioned by the Vermont Department of Economic Development, argues that the so called "youth flight" or "brain drain" is a natural, perhaps even healthy phenomenon common to all rural areas. This document (Growing Vermont's Next Generation Workforce) suggests that instead of trying to prevent out-migration, the State should instead focus on "brain circulation" – "The capture of new talent and the recapture of native talent after they have experienced other places." CVRPC believes both approaches have validity~~

DRAFT

~~and merit and that the data they present and recommendations they offer are not mutually exclusive, and are probably complementary.~~

~~The later study included sizable surveys of recent alumni of Vermont colleges. Among the positive revelations of these surveys was that a high percentage of the respondents had an interest in moving back to, or remaining in, Vermont. Notable among the reasons offered was an affinity for the State's environment and culture. Chief among the barriers were our relatively low wages and high cost of living – a daunting financial "double whammy." While stating that 80% of the State's college students move out of Vermont within one year after graduation, the report did cite a number of unique opportunities for Vermont and makes a case for optimism. Among the encouraging factors are:~~

- ~~Colleges and universities are already actively engaged in attracting young people to Vermont- over 50% of those enrolled are from out of State.~~
- ~~Vermont's tourism/recreation industry is a "natural draw" for young people to experience Vermont's quality of life.~~
- ~~The younger generation is less bound to the notion of corporate employment and more inclined to make "value based" career choices than previous ones. Both of these factors bode well for entrepreneurial, innovative, "socially responsible," small business development.~~
- ~~Information technology has widened the horizons for recruitment and marketing.~~
- ~~According to survey results, "Students who become interns at area companies are up to 75% more likely to stay in Vermont."~~

CVRPC must recognize these trends and strive to support and cultivate opportunities for young people to stay in, return to, or discover our Region as an exciting and affordable place to work and live.

Summary

Vermont's "quality of life," its work force, the environment, and Vermont's positive marketing image are assets to doing business in Central Vermont.

Central Vermont has the underpinnings of a strong economy. The diversity of its larger employers, the number of small employers, the variety and

level of skills found in its labor force, and the quality of life are its prime assets. In conjunction with local governments, businesses and other regional development groups, the Central Vermont Regional Planning Commission will participate in economic development efforts by helping communities capitalize on their assets and helping the region and state to overcome economic obstacles.

The purpose of this element is to guide and plan for economic development that will create employment in Central Vermont which keeps pace with the region's labor force, provides an adequate flow of taxable economic activity to fund State programs, and increases the wealth and economic well being of residents.

Economic Goals, Policies and Strategies

Economic Goal 1:

Full employment[68] and the creation and preservation of high quality jobs in a diverse range of occupations.

Economic Goal 2:

Business retention, growth and development that anticipate and meet market opportunities.

Policy 1: Promote career exploration and education planning for all young people and reduce barriers to participation in some form of post-secondary education or training.

A. Promote sharing of best practices within the Region's supervisory unions with regards to dual-enrollment, work-based learning internship and apprenticeship programs and assist with identifying resources and incentives for these efforts.

[68] The level of employment, or unemployment rate, which provides the maximum sustainable rate of economic growth and Gross Domestic Product without resulting in accelerating inflation. A Full Employment rate that is also just above the rate which will cause inflationary pressure, is called the Non-Accelerating Inflation Rate of Unemployment (VT Dept. of Labor).

B. Promote an annual regional Student Career Day/Job Fair event targeted to High School students for summer employment, job shadow opportunities and internships.

C. Facilitate effort to identify partners and formalize network of STEM-related (science, technology, engineering and math) companies, high schools, educational institutions, Tech Centers, and Community College of Vermont (akin to Vermont Youth Conservation Corps. concept, applied to STEM sectors) to provide hands-on training and internships.

D. Identify, inventory and support resources programs that place emphasis on sound management and mentorship for young workers, particularly at-risk youth, in partnership with service providers such as Washington County Youth Services Bureau and ReSource/ReBuild.

E. Support and engage with Young Professionals organizations to better understand professional development needs and barriers to workforce stability in younger workers.

Policy 2: Deliver training and life-long learning to retain and expand a robust work-force with skills to match needs for current and future available jobs.

A. Support availability and awareness of training programs for underutilized workforce populations (e.g. dislocated, special needs and older workers) to attain skills to transition to new careers.

B. Increase local delivery of information regarding regional workforce training resources (e.g. Front Porch Forum, employer groups/trade associations, municipal web sites).

C. Promote partnerships with digital workforce training programs such as those piloted by the Vermont Digital Economy Project to increase access to workforce training opportunities, including those in more rural communities.

DRAFT

D. Encourage and collaborate with the State to conduct or reference existing labor skills gap analyses, where available, to: i) improve workforce data availability, ii) identify the types of jobs that businesses need to fill, and iii) document anticipated skills shortages.

Policy 3: Focus retention, growth and development efforts on industries and businesses that are a good fit with the Region's existing economic base and support sustainable economic development.

A. Increase collaboration between regional planning and economic development organizations, such as Central Vermont Economic Development Corporation, Capstone Community Action and Central Vermont Chamber of Commerce, in order to accomplish strategies identified in Policy 3.

B. Support and encourage expansion in sectors that are poised for growth, such as: health care, high tech manufacturing, software development and information technology, value added agriculture, higher education and recreation and tourism.

C. Support education on sustainable business best practices, on topics such as recycling, use of environmentally friendly materials and processes, and implementing energy efficiency improvements.

D. Explore opportunities to expand value added manufacturing networks (i.e. processing, storage, distribution, wholesale, retail, direct-to-consumer) and information exchanges.

E. Develop and disseminate information on development incentives, techniques and resources for towns and local development groups.

F. Provide a range of information regarding regulatory processes and available financial and technical resources and, where feasible, facilitate trainings for developers, entrepreneurs and business owners.

DRAFT

G. Research cooperative development models (e.g. Evergreen Cooperatives in Cleveland, Cooperative Development Institute in Massachusetts, Cooperative Vermont in Burlington) and identify potential partnerships between the Region's cooperatives (the credit unions, food coops, and few worker-owned cooperatives) and other major "anchor" institutions (the State, educational institutions, etc.) to encourage more cooperative development in the Region.

Policy 4: Promote entrepreneurship and innovation in all business sectors and encourage small and micro business development.

A. Assess zoning and other regulatory barriers to entrepreneurship and small and micro business development, including home-based businesses and diversified agricultural enterprises.

B. Continue to expand availability and improve the quality of broadband to enable telecommuting and home-based work opportunities, particularly in more rural areas of the Region.

C. Identify policy and programmatic gaps and opportunities to expand access to capital for businesses, particularly knowledge-based.

D. Work with Capstone Community Action partners to explore opportunities to develop a network ~~(e.g. "Community Capital Exchange")~~ where local businesses and investors come together to identify capital needs, investment, and opportunities to apply commercial strategies to maximize improvements in social and environmental well-being~~, such as Capstone Community Action's Community Capital Exchange initiative~~.

Commented [KP302]: This initiative is no longer ongoing, at least not formally under that title.

E. Encourage organizations or professional associations to provide networking and a unified voice to creative economy sectors (writers, web designers, etc.).

F. Explore opportunities for regional innovation partnerships

DRAFT

and/or technology transfer with employers, educational and research institutions and other public partners.

G. Encourage online marketing training and technology use for small and micro businesses, ~~including participation in Vermont Digital Economy Project trainings and use of aggregated web platforms such as the Vermont Food System Atlas or Made in Vermont~~.

Commented [KP303]: These projects are no longer operational.

H. Increase collaboration with business development organizations to enhance delivery of technical assistance to the wide range of small and micro businesses and entrepreneurial enterprises serving the Region.

Policy 5: Implement the goals and policies presented in the Utilities, Facilities and Services and Land Use elements of this Plan that enhance and optimize quality of place to attract and retain employers and residents.

These efforts to enhance and optimize quality of place include preservation of historic and cultural assets; maintaining the scenic qualities of our agricultural and forest lands, protection of natural resources and environmental quality, expansion of local food systems and healthy lifestyles, and increased access to recreational opportunities and amenities

POLICY 6: Ensure availability of commercial and industrial space to meet employment and business expansion needs.

A. Assess capacity of commercial and industrial space using available data, including existing GIS information, and identify the various types of commercial and industrial space needs.

B. Assist municipalities in promoting marketable sites and identifying assets, deficits and options available to meet industrial and commercial site development needs; for example, the potential for use of small wastewater treatment systems.

C. Maintain inventory and support the reclamation and

redevelopment of blighted, contaminated or potentially contaminated sites (i.e. "brownfields"). Continue to actively seek funds to facilitate this effort.

D. For uses that do not require a rural location, guide and assist commercial, industrial and institutional uses to locate in downtowns, villages and adjacent industrial areas, or at those locations in the fringe areas that have been significantly developed and are zoned for such purposes.

Policy 7: Implement the goals and policies presented in the Energy, Utilities, Facilities and Services and Transportation elements of this Plan to maintain and plan for adequate infrastructure, energy, telecommunications, and transportation systems to accommodate and support business growth and expansion.

These efforts to maintain and plan for adequate systems to support business growth and expansion include support of:

- A transportation system that efficiently transports goods and services and employees to their place of work;
- An efficient and stable energy system that provides for reduced costs, consumption and reliance on nonrenewable energy sources;
- State-of-the-art telecommunications/broadband infrastructure that would increase work options and reduce commuting and its impacts on the transportation infrastructure and the environment; and
- Water, wastewater and storm water management systems in locations that allow for appropriately-scaled commercial and industrial expansion, higher densities and co-location of jobs, housing and services.

Policy 8: Support the continued use and sustainability of our natural resources and associated industries.

A. Encourage the continued productivity of viable mineral resources.

DRAFT

B. Facilitate the use of locally obtained materials for building and highway construction and maintenance. Assist municipalities in mapping the important, accessible resources.

C. Ensure that resource extraction operations follow best management practices to minimize impacts to the local and surrounding environment and other land uses, and to allow for site restoration.

D. Implement the goals and policies presented in the Land Use element of this Plan related to continued use, sustainability and protection of productive forests and prime agricultural soils.

Economic Goal 3:

Incomes sufficient to meet or exceed basic needs with opportunities to advance and to achieve financial security.

Policy 9: Support and encourage the business community and policy makers in developing strategies for the retention and creation of jobs that pay a livable wage[69].

A. Research and develop case studies of businesses that are pursuing or have achieved a livable wage for employees as a goal, research and identify primary barriers to businesses being able to pay livable wages, and research impacts of livable wage policies and incentives on the economies of other places.

Policy 10: Implement the goals and policies presented in the Housing, Transportation and Utilities, Facilities and Services elements to expand access to resources that promote stability in the workforce, including workforce housing, transportation solutions, affordable child care, and medical and mental health care.

[69] Defined in statute as the hourly wage required for a full-time worker to pay for one-half of the basic needs budget for a 2-person household, with no children, and employer-assisted health insurance, averaged for both urban and rural areas (VT Legis. Joint Fiscal Office).

Policy 11: Support efforts to develop and disseminate information on career pathways and advancement opportunities for industry sectors poised for growth.

A. Encourage employers to provide for training and education opportunities for employees of all ages to acquire, maintain, and improve the skills and knowledge necessary to advance.

B. Support statewide initiatives such as the STEM (science, technology, engineering and mathematics) Equity Pipeline and other Statewide Consortia developing career pathways in priority sectors identified in the 2020 Statewide CEDS, such as health care and value-added agriculture.

Policy 12: Support projects identified in the 2020-2025 ~~Statewide~~ West Central Vermont Comprehensive Economic Development Strategy.

Economic Goal 4:

Dynamic and resilient downtowns, villages and commercial districts.

Policy 13: Find new uses and opportunities for vacant and under-utilized sites and buildings.

A. Encourage and support new and existing downtown, new town and village centers ~~assist applications for Village Center designations in existing compact settlements~~ not yet designated on the regional future land use map that meet state requirements to become a center designation ~~by the Agency of Commerce and Community Development~~.

B. Assist participating municipalities in determining eligibility for new or amended designation areas on the regional future land use map ~~designation renewals~~ and in utilizing technical assistance and incentives offered by State designation programs to preserve and reuse significant, economically viable, and historic structures.

C. Support rezoning of ~~village~~ centers and planned growth areas for mixed-use development, encompassing commercial, light

Commented [KP304]: Updated to reflect changes to state designation program after Act 181.

DRAFT

manufacturing, artisan and residential uses at traditional village density.

D. Assist municipalities in: planning for capital investments, identifying barriers to redevelopment or reuse, and planning for adaptive reuse of buildings.

E. Support and prioritize assistance with community-identified priority/anchor revitalization projects in our downtowns, village centers and growth centers as they are identified.

Policy 14: Focus infrastructure investments in downtowns, village centers and growth centers and promote use of healthy community design principles in public investments and land use regulations.

A. Promote incorporation of Healthy Community Design[70] and Complete Streets[71] principles into public infrastructure, redevelopment projects, land use regulations and community engagement efforts.

B. Assist municipalities in pursuing resources to upgrade infrastructure, including roads, sidewalks, bike paths, multi-use paths, bridges, rail, water, wastewater, and stormwater. Promoted shared services via inter-municipal agreements where appropriate.

Policy 15: Increase economic resilience by mitigation of and adaptation to extreme weather events and flooding.

A. Encourage and assist employment centers with participation in FEMA's Community Rating System to enhance community-wide floodplain management efforts and reduce flood insurance premiums.

[70] Healthy Community Design links traditional concepts of planning (land use, transportation, community facilities, parks and open spaces) with health themes (physical activity, public safety, access to nutritious food, air and water quality, mental health and social equity) (Vermont Dept. of Health).
[71] Complete Streets are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities (Smart Growth America).

B. Develop and implement outreach strategies targeted to business and residential property owners to raise awareness of flood risk and promote strategies and resources to reduce vulnerabilities.

C. Work with communities to upgrade flood hazard bylaws and improve storm water mitigation strategies in order to minimize risks to homes, businesses and public infrastructure.

D. Encourage communities to direct new commercial or industrial development to areas not at risk from erosion and inundation flood hazards, where feasible.

E. Consider the benefit to local and regional economic resilience when prioritizing assistance with Hazard Mitigation Assistance grants.

Policy 16: Support coordinated and complementary efforts to market the Region's unique, yet-connected downtowns and villages.

A. Utilize results from Vermont Downtown Action Team retail market analyses to assist with marketing available commercial space, business recruitment and start-up support.

B. Promote collaborative marketing with common themes among regional downtowns and villages, chambers of commerce, scenic byway committees and Vermont Tourism via region-wide events and tours (e.g. cycling; hiking; food, farm and brewery; covered bridges; stone arts; and fall foliage) targeted to both visitors and residents.

C. Support formation and expand capacity of community-based or business associations focused on village vitality, marketing and enhancements.

Economic Goal 5:

Sustainable and viable agricultural and forest lands.

DRAFT

Policy 17: Promote and expand asset-based recreation and tourism with an emphasis on year-round offerings.

A. Support efforts to develop and update local and region-wide inventories of natural, historic, scenic, agricultural and recreational assets at the local level to support tourism and quality of life promotion.

B. Investigate feasibility of a region-wide promotion effort similar to Newport's "Fresh by Nature."

C. Identify gaps in offerings and support expansion of facilities to develop off-season activities, host multi-day events, conferences and weddings and various related support services.

D. Work with municipalities to identify viable options for expanded commercial and public outdoor recreational facilities, including trail development and related infrastructure that are environmentally and culturally sustainable.

E. Explore options and pursue resources to update VT TrailFinder website.

Policy 18: Foster collaborative partnerships among regional food system stakeholders.

A. Assist with identifying sustainable collaborative frameworks and funding sources to continue the work of the Central Vermont Food Systems Council.

B. Collaboratively host an annual meeting focused on best-practice- partnerships among economic development, land use planning and conservation stakeholders to support local food systems.

C. Promote representation of the agricultural and/or forestry

DRAFT

sector on town and regional economic development committees/boards.

D. Promote Handbook for Local Action in Sustainable Agriculture developed by the State and targeted to municipal officials, boards and staff and local volunteers.

Economic Goal 6:

Maintain equitable economic growth in communities with high unemployment or low per capita income.

Commented [KP305]: From new draft Economy Chapter to meet requirements of State Goal 2 which requires that plans strive "to expand economic opportunities in areas with high unemployment or low per capita incomes."

Strategies:

3.1. Identify communities with persistent unemployment or poverty.

3.2. Align regional development programs to concentrate resources in distressed communities.

3.3. Promote:

a) infrastructure investments that improve economic competitiveness;
b) federal and state initiatives aimed at rural economic revitalization;
c) access to public services that support workforce participation;
d) community participation in economic development programs;
e) workforce training tailored to community-specific needs; and
f) initiatives that expand local job creation in communities with persistent unemployment or poverty.

3.4. Provide technical assistance to municipalities to:

a) plan for inclusive workforce participation by addressing barriers such as housing, childcare and transportation;
b) integrate childcare, healthcare, and transportation access into local economic development plans; and
c) attract sustainable businesses.

3.5. Evaluate progress using income, employment and community well-being metrics.

Policies:

3.1. Support:

a) affordable workforce housing initiatives in distressed communities;
b) childcare, healthcare and transportation initiatives that remove workforce barriers;

DRAFT

c) workforce training tailored to local needs in high-unemployment communities;
d) targeted public investment in communities with persistent unemployment;
e) flexible, locally driven approaches to addressing economic inequity;
f) broadband access and digital equity programs in underserved areas;
g) equitable distribution of regional economic development funds; and
h) federal and state initiatives focused on rural economic revitalization.

3.2. Oppose:
a) economic development initiatives that bypass distressed communities;
b) development projects that increase cost burdens on existing residents without providing local economic benefits;
c) policies that increase financial or regulatory barriers for small businesses; and
d) the displacement of low-income residents from revitalizing communities.

3.3. Require:
a) inclusive public engagement in economic planning processes; and
b) equity impact analyses for proposals requesting regional planning commission support for funding in distressed communities, to assess both benefits and risks of displacement.

3.4. Employ community well-being and income metrics in evaluating program success.

DRAFT

8. Implementation Plan

CVRPC's priorities continue to lie at the nexus between land use, transportation, hazard mitigation, conservation, and energy planning. CVRPC recognizes that some of the most important work we can do to positively impact the region is through providing technical assistance to our member municipalities.

In addition to the Implementation Plan below, the Statement of Basic Policies in the introduction to this document contains a vision of CVRPC's vision for the Region, and the values that guide its work. Finally, throughout the document, goals, policies, and strategies at the end of each chapter call out specific actions to make this vision a reality.

Progress Measures:

- Regional Plan actions are accomplished.
- Municipal plans continue to make progress towards achieving state planning goals, thereby receiving regional approval.
- State agency plans and programs are consistent with the Regional Plan.
- Municipalities achieve efficient local governance by working together on shared goals through intermunicipal districts or by using other tools.

Commented [LB306]: Section added in 2026 to separate out/highlight all implementation language needed to meet statute. The content is from the 2024 adopted Implementation Plan, except as noted below.

Commented [LB307]: This text was added to make the content work better as this is an independant chapter. Previously, the plan had been an appendix to the 2024 readopted Plan.

DRAFT

Action / Strategy	Area	Recommended Lead / Partner	Estimated Cost	Timing	Priority	Financing
CVRPC will review this Plan in preparing its annual work program and in all of its internal decision-making to ensure that our actions are consistent, defensible, and purposeful.	Region	RPC	Low	Annually in April and on-going	High	CVRPC
A Regional Plan implementation schedule, which will establish priorities of key Plan goals for implementation, followed by an annual review to evaluate progress, analyze current data, reassess priorities, and consider possible amendments to the Regional Plan.	Region	RPC	Medium	5 years with subsequent annual reviews	High	CVRPC and State agreements
CVRPC will continue to provide technical assistance to member municipalities in the areas of community planning, bylaw development and administration, capital budgeting, community development, and GIS in accordance with our membership services policies,	Region	RPC / Municipalities	$600,000 - 800,000 annually	Annually	High	CVRPC, Towns, State and Federal grants and agreements
CVRPC will employ public engagement processes that centers the voices of marginalized and underserved populations in planning.	Region	RPC / Municipalities / Service Providers	$6,000	Ongoing	High	CVRPC and project-based grants

DRAFT

Action / Strategy	Area	Recommended Lead / Partner	Estimated Cost	Timing	Priority	Financing
When seeking Regional approval or as requested by municipalities, ~~requested,~~ CVRPC will review municipal plans for consistency with this Plan.	Region	Municipalities / RPC	$2,500 per plan	Within 60 days of request	High	State agreements
CVRPC will continue to provide local officials and interested citizens with information and training on the complete range of topics and issues presented in this Plan. We will do so through periodic workshops, newsletters, public forums, and the provision of materials and information upon request.	Region	RPC	$20,000 annually	Annually~~ at various times~~ and at regular intervals throughout the year	Medium	CVRPC and project-based grants
CVRPC will review State agency plans and programs to assure that they are consistent with the goals and policies of this Plan and those of member towns.	Region	RPC / Municipalities	$3,000 annually	Annually as needed	Medium	CVRPC, State grants & agreements
CVRPC will continue to engage with the state on planning initiatives and studies.	Region	RCP / ANR / ACCD and others	$6,000 annually	Ongoing	High	CVRPC, State grants and agreements

DRAFT

Action / Strategy	Area	Recommended Lead / Partner	Estimated Cost	Timing	Priority	Financing
CVRPC will maintain and strengthen its commitment to regional and intermunicipal issues and programs in accordance with, and in support of, this Plan. Specifically, we will continue our technical support services for the Mad River Valley Planning District, the Wrightsville Beach Recreation District, and the Mad River Solid Waste Alliance.	Region	RPC /Municipalities & Intermunicipal Districts	$20,000 annually	Ongoing	High	Districts, CVRPC, State agreements
CVRPC will continue to provide region-wide transportation planning services.	Region	RPC / VTrans	$250,000 annually	Ongoing	High	State agreement, Towns
CVRPC will develop a Safety Action Plan with a goal of zero traffic fatalities – Vision Zero – for Central Vermont	Region	RPC/VTrans	$150,000	Ongoing	Medium	Grant funded
CVRPC will respond to inter-town conflicts or opportunities with mediation or technical assistance services, where appropriate.	Region	RPC / Municipalities	Low	As requested	Medium	CVRPC, Towns
CVRPC will continue to participate in Act 250 proceedings in accordance with our adopted guidelines to advance the goals of this Plan.	Region	RPC	$10,000 annually	As needed	Medium	State agreements
Provide facilitation for municipalities to develop discrete flood prevention and mitigation projects with the goal of short immediate implementation.	Region	RPC /Municipalities / ANR/ CWSP	$25,000	Ongoing	High	Annual funding and grant opportunities

DRAFT

A

APPENDICES

Appendix A. Maps

Appendix B: Enhanced: Energy Plan

Appendix C: Housing Target Methodology

Appendix D: Future Land Use Map Methodology

Commented [LB308]: Required by statute

Appendix E : Environmental Benefits & Burdens Analysis

Appendix F: Statutory Language

Appendix G: Regional Plan Review Committee dates of draft chapter review

~~A-1 REGIONAL HOUSING DISTRIBUTION PLAN METHODOLOGY~~

Commented [LB309]: Replaced with Appendix C: Housing Target Methodology

~~A-2 24 V.S.A. § 4382. THE PLAN FOR THE MUNICIPALITY~~

Commented [LB310]: Not required by statute

~~A-6 REGIONAL PLAN IMPLEMENTATION PROGRAM~~

Commented [LB311]: This has moved to the main body of the test

DRAFT

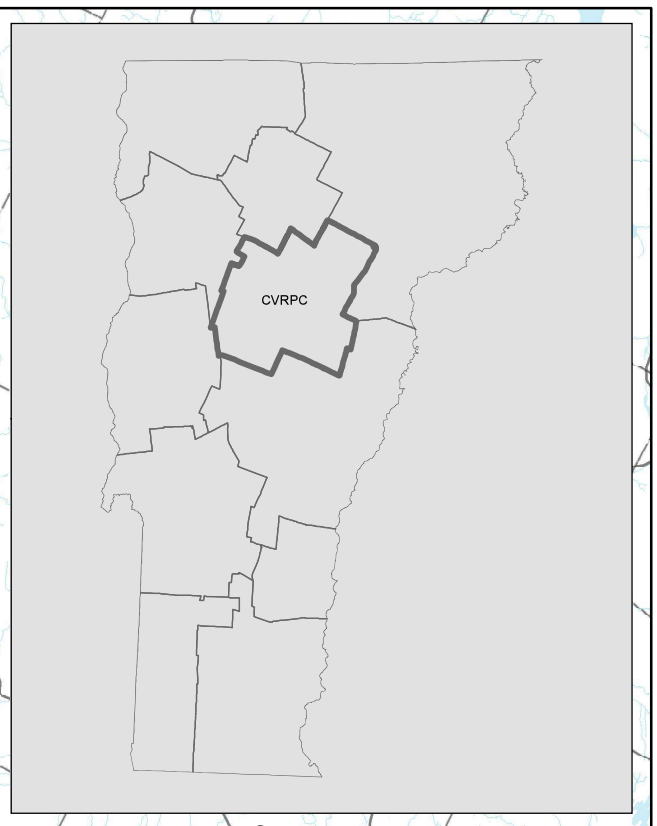
Appendix A: Maps

Existing Maps and Required Revisions:

Map Name	Required Revisions
Future Land Use Amended 2020*	• Update Future Land Use Areas
Central Vermont Topography	None
Central Vermont Primary Agricultural Soils	None
Central Vermont Natural Resources-1	None
Central Vermont Natural Resources-2	• Add vernal pools and river corridors
Central Vermont Natural Resources-3	None
Central Vermont Energy and Communication Map	None
Central Vermont Transportation	• Add new Park and Ride lots constructed since last map
Central Vermont Water Supply & Wastewater Systems	None
Central Vermont Emergency Management	None
Central Vermont Educational Facilities	• Add libraries and State office buildings • Update school locations to reflect recent closings
Central Vermont Public Recreational Resources	None

Central Vermont Region

Future Land Use
Amended 2020



WOODBURY
Woodbury Village
South Woodbury
CABOT
Cabot Village
WORCESTER
North Calais
Maple Corner
Worcester Village
CALAIS
East Calais
Marshfield Village
WATERBURY
Waterbury Center
Colbyville
Putnamville
Adamant
Waterbury Village
Duxbury Village
MIDDLESEX
MARSHFIELD
DUXBURY
North Montpelier
EAST MONTPELIER
East Montpelier Center
Middlesex Village
MONTPELIER
Plainfield Village
East Montpelier Village
MORETOWN
Moretown Village
PLAINFIELD
BERLIN
BARRE TOWN
FAYSTON
Riverton
BARRE CITY
Irasville
Waitsfield Village
South Barre
Lower Websterville
Upper Websterville
WAITSFIELD
Northfield Falls
Lower Graniteville
East Barre
ORANGE
NORTHFIELD
Upper Graniteville
Orange Village
Northfield Village
Cogswell
South Village
Williamstown Village
WILLIAMSTOWN
East Warren
Warren Village
Washington Village
East Orange
WARREN
Roxbury Village
ROXBURY
WASHINGTON

Future Land Use

- Resource
- Rural
- Regional Centers
- Town Centers
- Industrial
- Mixed-Use Commercial

- Hamlets
- Resort Centers
- Villages

N

0 1.25 2.5 5 7.5 10 Miles

Map Adopted 10/13/2015
Updated: 12/19/2019
Revised: 9/10/2020
Readopted: 10/13/2020

Data should be verified during permitting process per the provisions of the regulatory authority. This map is for general planning purposes only. This map may contain errors and omissions. See page 2-19 and 2-31 of the Land Use Element for a complete explanation.

Document Path: M:\Regional Plan\2016 Regional Plan\2018 Amendment\Land Use\Future_Land_Use_ACCD_11x17 amended2020.mxd

CVRPC
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

Central Vermont Topography



Legend

Roads:

- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- State Highway; US Highway
- Interstate
- Stream/River
- Surface Water
- × Summits

Contours (100 ft. intervals)

- 500 - 3900 feet (odd values)
- 600 - 4000 feet; < 500 feet (even values)

0 1.75 3.5 7 Miles

N

1 inch equals 3.5 miles

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

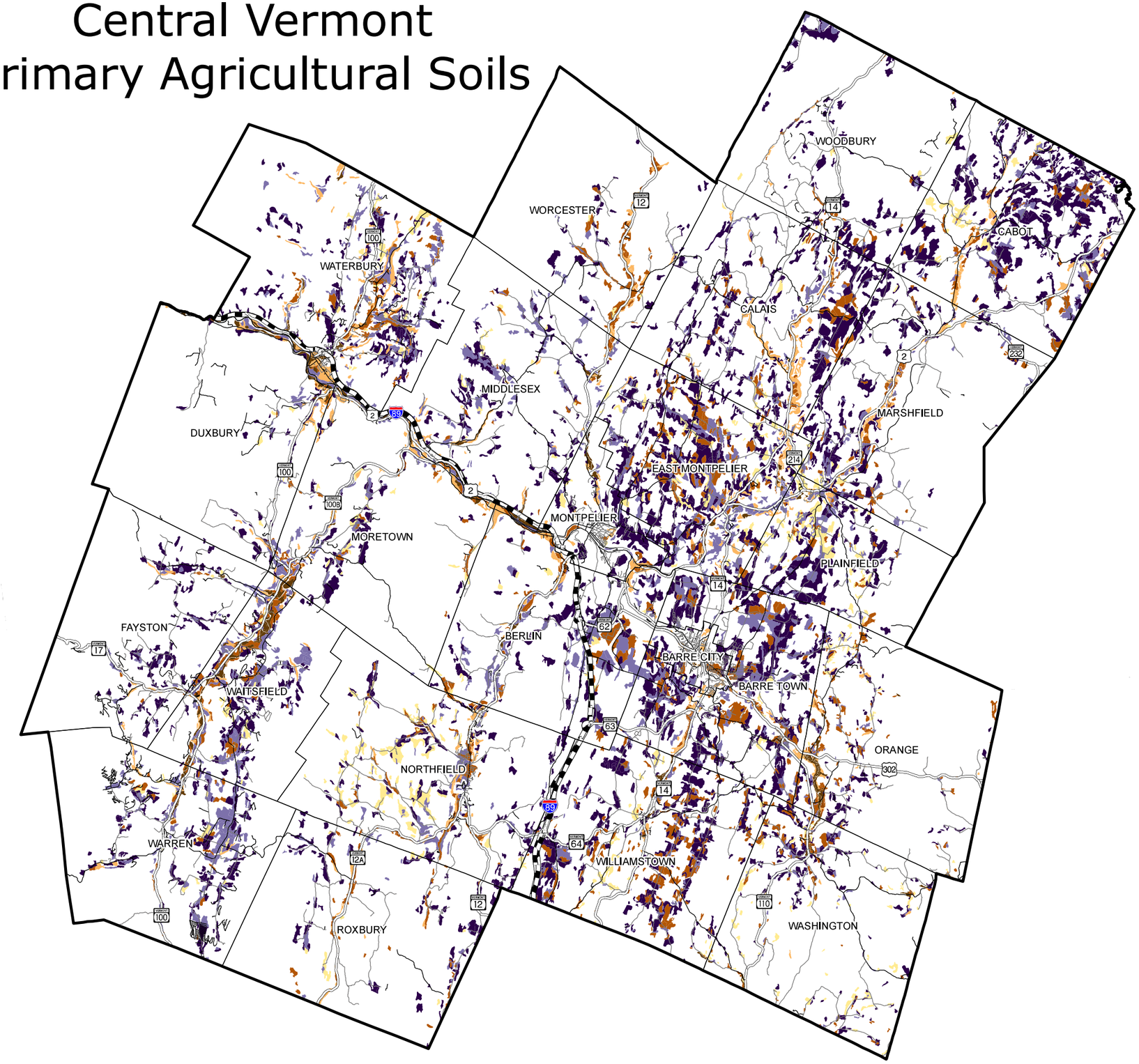
© 1998 Central Vermont Regional Planning Commission

Data Source:
Roads - VTrans, VGIS 2007
Surface Waters - VT Hydrologic Data, VCGI 2007
Regional Boundaries - VCGI 2006
Topologic - USGS 1999

Created 12/19/07 by CVRPC
M:/Region/RegionalPlan_Update2008/GIS/Maps/Topography_HillShade.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Central Vermont
Primary Agricultural Soils



Legend

Agricultural Value

1 2 3 4 5 6 7

|<----Few Limitations ------ Greater Limitations --->|

Roads:

- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- State Highway; US Highway
- Interstate

N

0 1.75 3.5 7 Miles

1 inch equals 3.5 miles

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

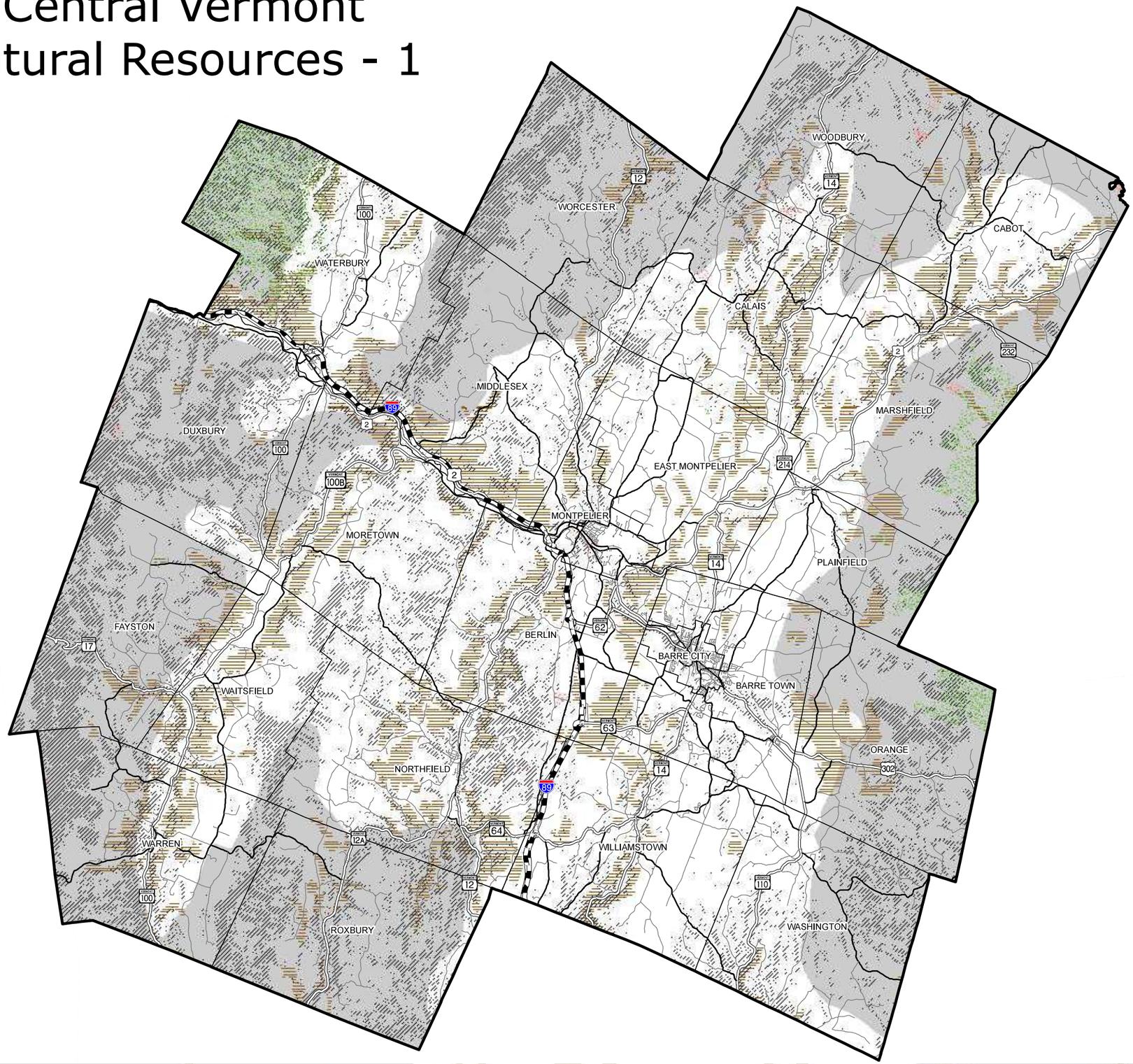
© 1998 Central Vermont Regional Planning Commission

Data Source:
Soils - ANR 2004
Roads - VTrans, VGIS 2007
Regional Boundaries - VCGI 2006

Created 12/27/07 by CVRPC
M:/Region/RegionalPlan_Update200/GIS/Maps/Agricultural Soils.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Central Vermont
Natural Resources - 1



Legend

- Natural Communities
- Endangered Species
- Deer Wintering Habitat
- Bear Reproduction Zones
- 25% Slope or Greater

Roads:

- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- State Highway; US Highway
- Interstate

N 0 1.75 3.5 7 Miles

1 inch equals 3.5 miles

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

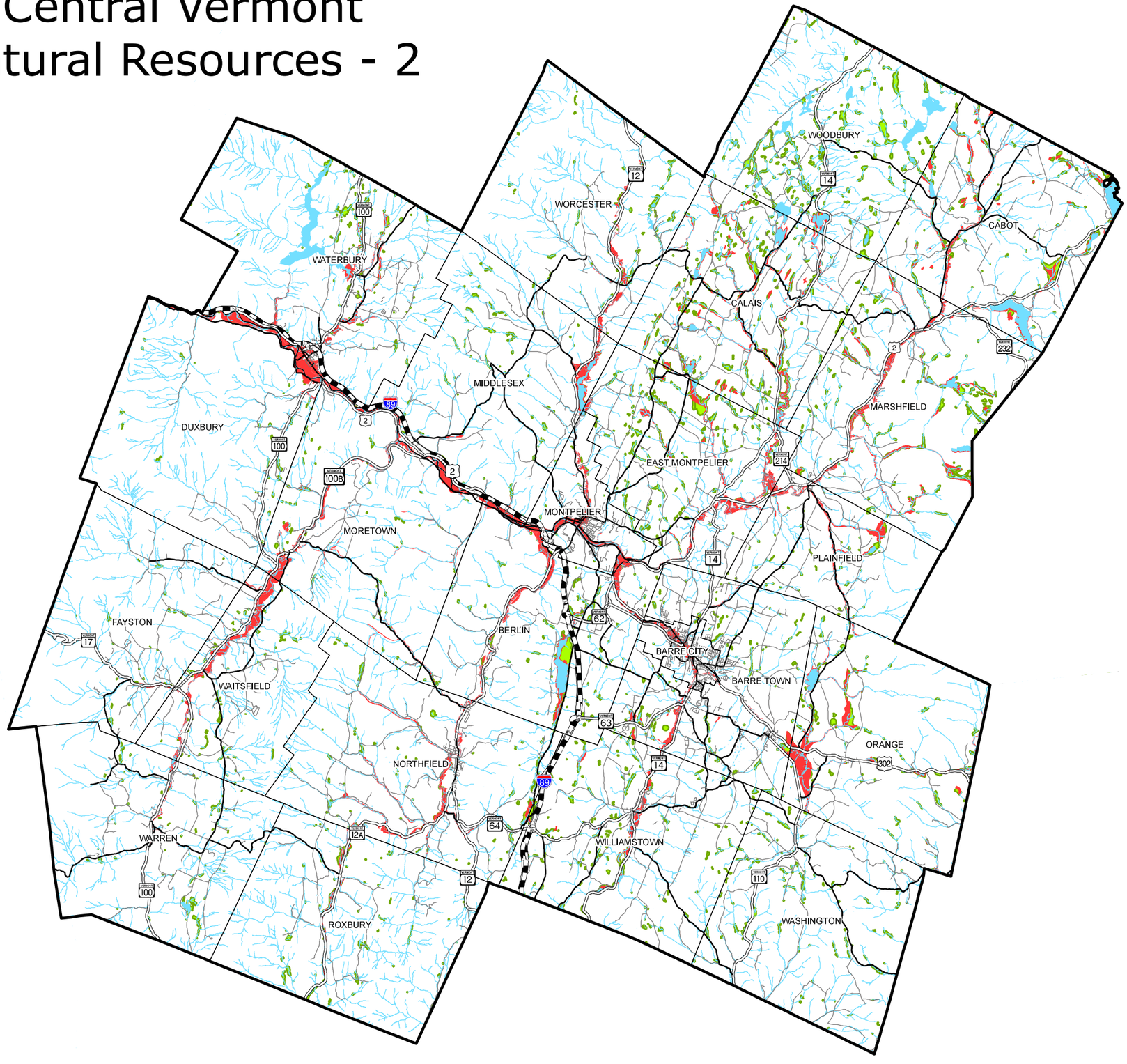
© 1998 Central Vermont Regional Planning Commission

Data Source:
Deer Yards - ANR
Bear Habitat - ANR
Slopes - ANR
Roads - VTrans, VGIS 2007
Regional Boundaries - VCGI 2006

Created 12/27/07 by CVRPC
M:/Region/RegionalPlan_Update200/GIS/Maps/Natural Resources 1.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Central Vermont
Natural Resources - 2



Legend

- Fema Floodplain
- Wetlands
- Streams/Rivers
- Surface Water

Roads:

- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- State Highway; US Highway
- Interstate

N

0 1.75 3.5 7 Miles

1 inch equals 3.5 miles

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

© 1998 Central Vermont Regional Planning Commission

Data Source:
Wetlands - ANR
FEMA Floodplain - FEMA
Roads - VTrans, VGIS 2007
Regional Boundaries - VCGI 2006

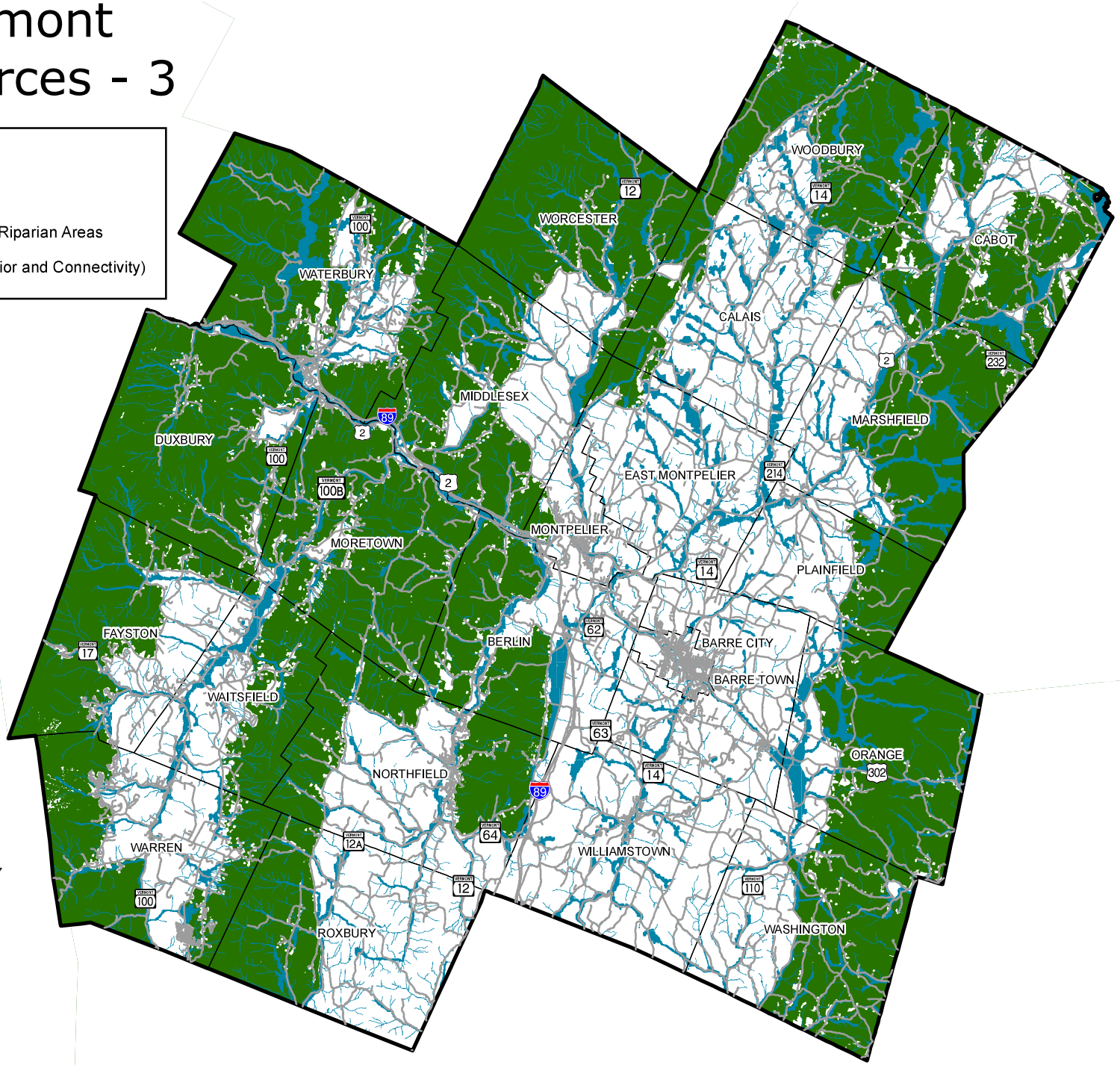
Created 3/10/08 by CVRPC
M:/Region/RegionalPlan_Update200/GIS/Maps/Natural Resources 2.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Central Vermont Natural Resources - 3

Legend

- Roads
- Highest Priority Surface Water and Riparian Areas
- Highest Priority Forest Blocks (Interior and Connectivity)



N

0 1.75 3.5 7 Miles

1 inch = 4.7 miles

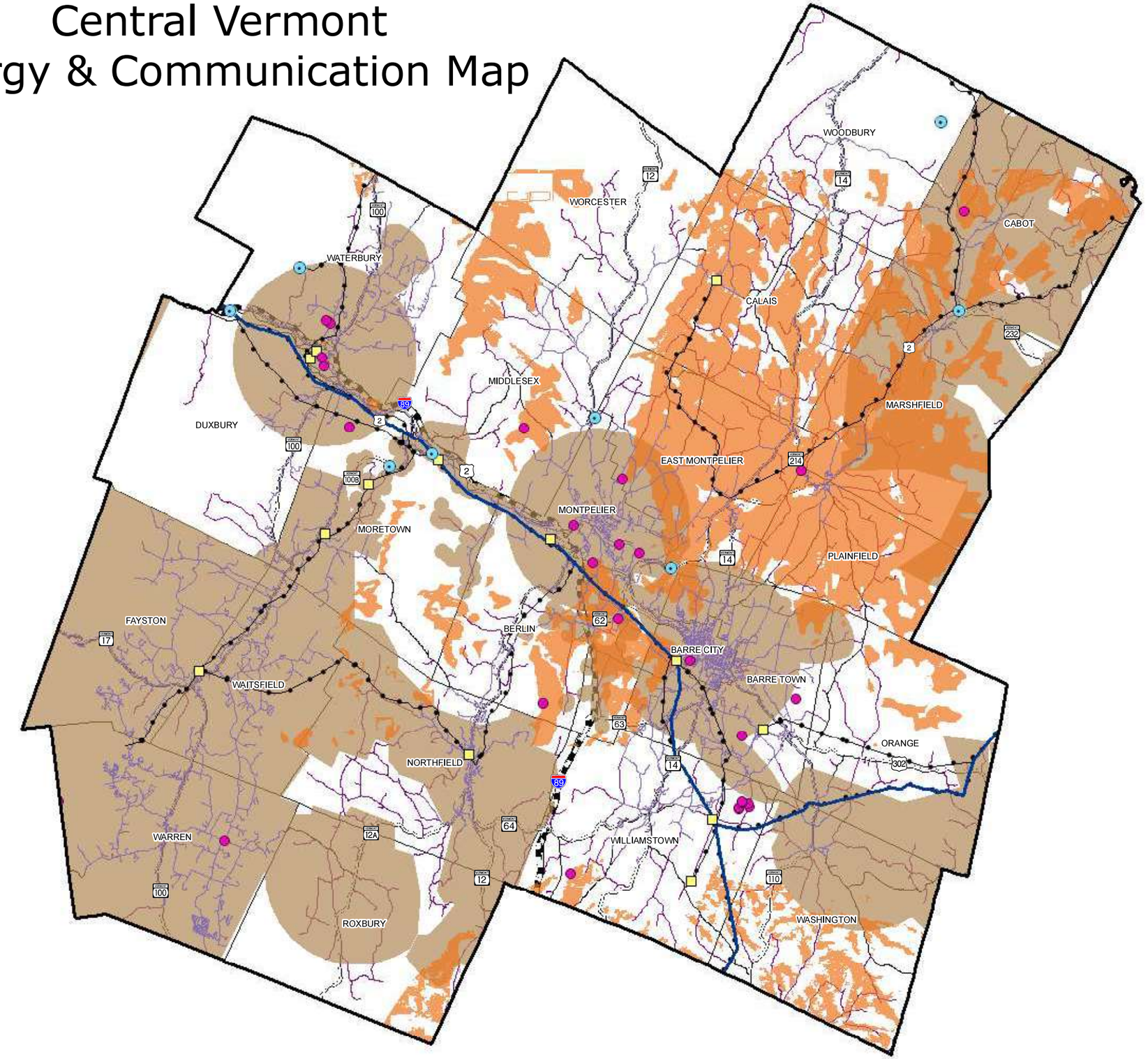
CVRPC
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

Data Source:
Surface Water and Riparian Areas: ANR Biofinder 2017
Forest Blocks: ANR Biofinder 2017
Roads - VTrans, 2017
Regional Boundaries - VCGI 2006

Created 1/18/18 by CVRPC
M/Regional Plan/2016 Regional Plan/
2017 Amendment/Land Use/Natural_Resources3.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Central Vermont
Energy & Communication Map



Legend

Energy Generation
- Substations
- Hydro Plants

Communications
- Cell, Radio, and TV Towers
- Cable TV Lines
- Cable Modem Lines
- Wireless Service Area
- DSL Service Area
- Both Service Areas
- VELCO Transmission Lines
- Electrical Distribution Lines

Roads:
- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- State Highway; US Highway
- Interstate

N

0 1.75 3.5 7

Miles

1 inch equals 3.5 miles

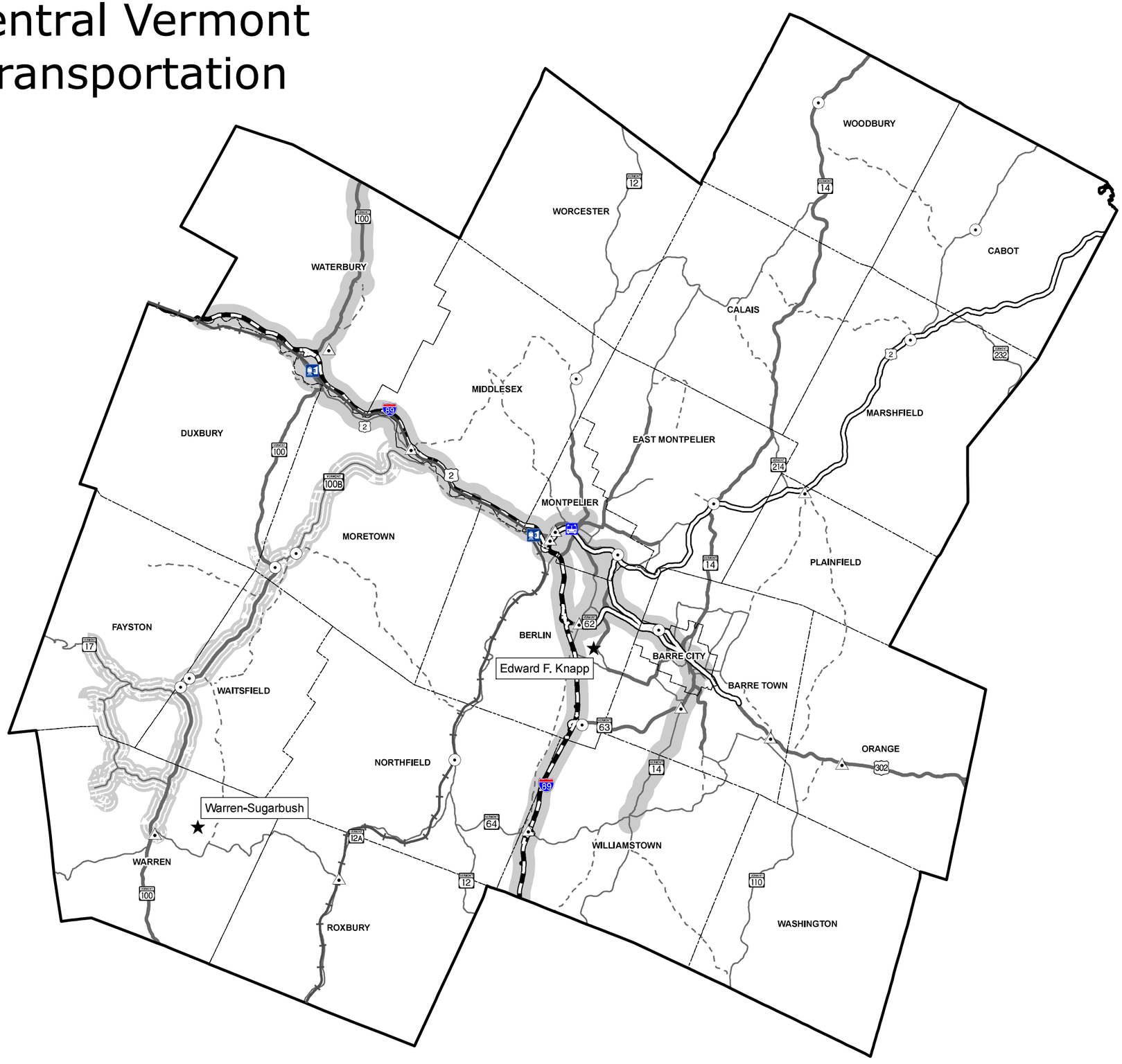
GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION
© 1998 Central Vermont Regional Planning Commission

Data Source:
Telecommunication: Data obtained from VCGI, ANR, and CVRPC
Roads - VTrans, VGIS 2007
Tourism Trails: ANR, 2007
Regional Boundaries - VCGI 2006

Created 2/25/08 by CVRPC
M:/Region/RegionalPlan_Update2008/GIS/Maps/Energy & Communications.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Central Vermont Transportation



Legend

Functional Class

- Interstate/Expressway
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- ★ Airports

Bus Service Areas

- Year Round
- Seasonal
- Vermont Transit Stop

Park and Ride Lots

- Existing Lots
- Future Lots

Amtrak Route

- Central Vermont
- Amtrak Stops

N

0 1.75 3.5 7 Miles

1 inch equals 3.5 miles

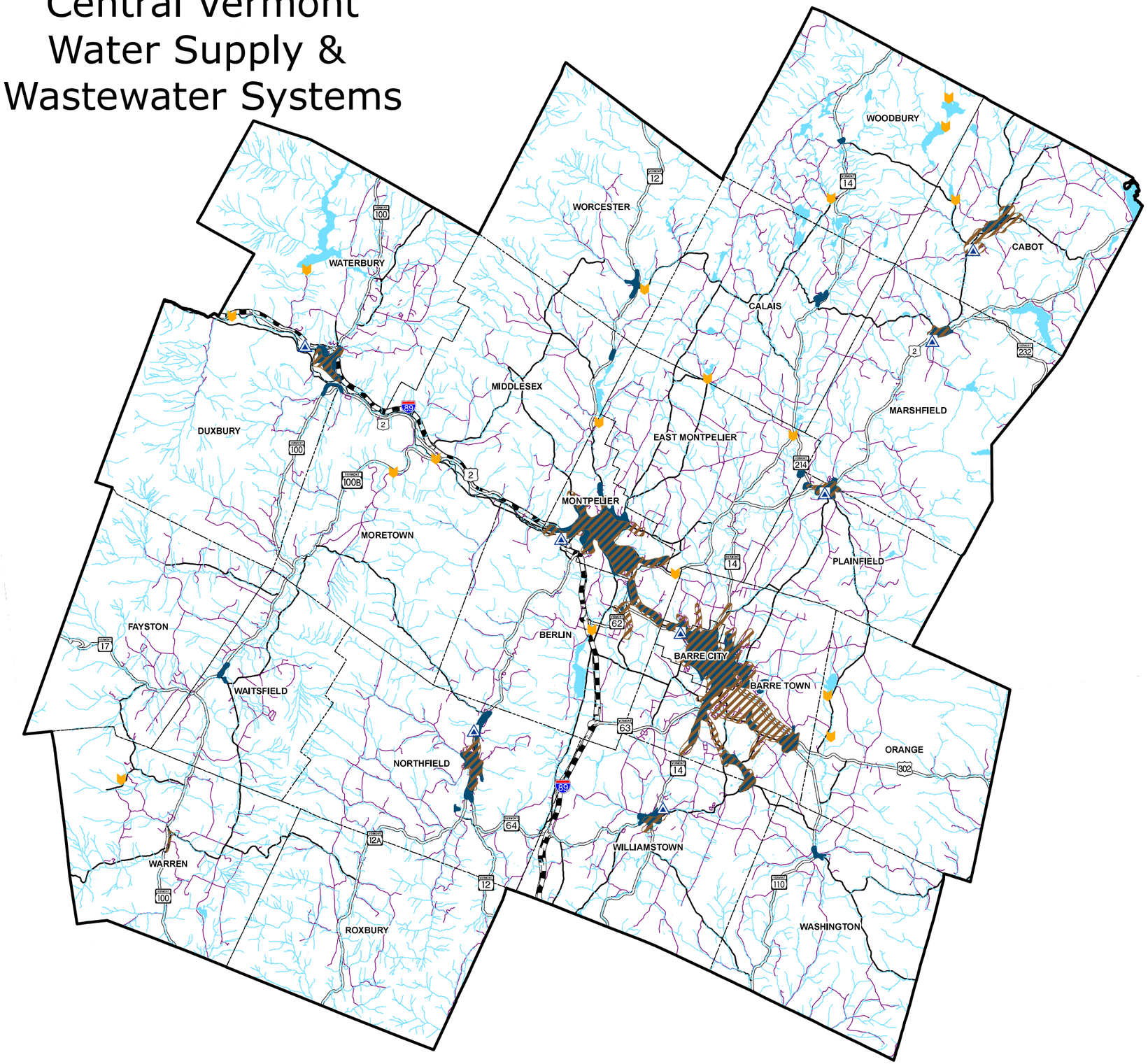
GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

Data Source:
Roads - VTrans, VGIS 2007
Regional Boundaries - VCGI 2006

Created 3/10/08 by CVRPC
M:/Region/RegionalPlan_Update200/GIS/Maps/Transportation.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Central Vermont Water Supply & Wastewater Systems



Legend

Facilities

- Public Wastewater Treatment Plants

Sewer & Water Service Areas

- Public Wastewater
- Public Water Supply

Dams

- In Service (Water Storage, Supply, & Flood Control)

Roads

- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- State Highway; US Highway
- Interstate

Surface Water

StreamRiver

N

0 1.75 3.5 7 Miles

1 inch equals 3.5 miles

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

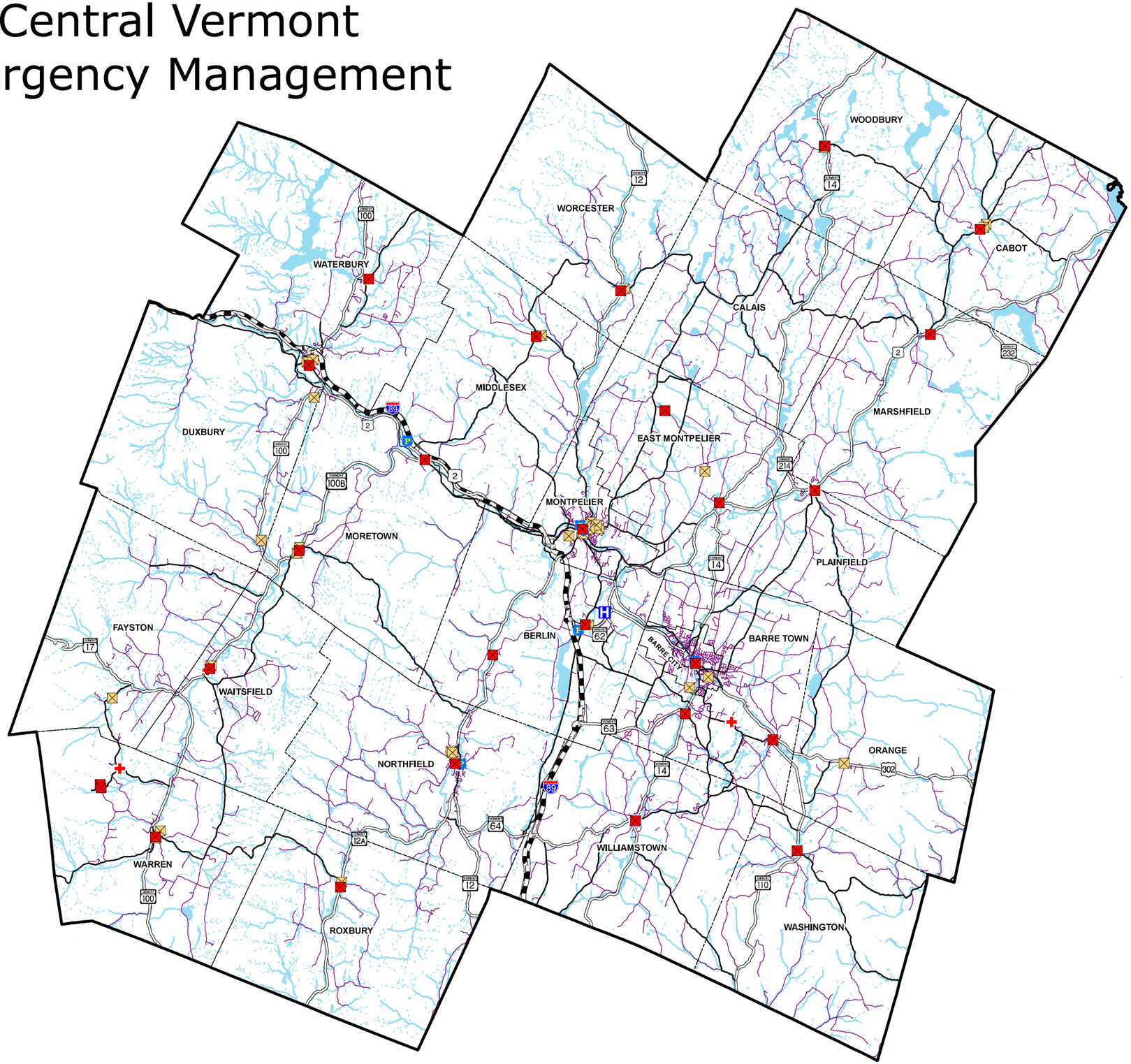
© 1998 Central Vermont Regional Planning Commission

Data Source:
Roads - VTrans, VGIS 2007
Regional Boundaries - VCGI 2006

Created 3/10/08 by CVRPC
M:/Region/RegionalPlan_Update200/GIS/Maps/Wastewater_Systems.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Central Vermont Emergency Management



Legend

Emergency Operation Facilities

- Fire Station
- Police
- Hospital
- EMT Station Locations
- Emergency Shelters

Roads:

- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- State Highway; US Highway
- Interstate

N

0 1.75 3.5 7 Miles

1 inch equals 3.5 miles

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

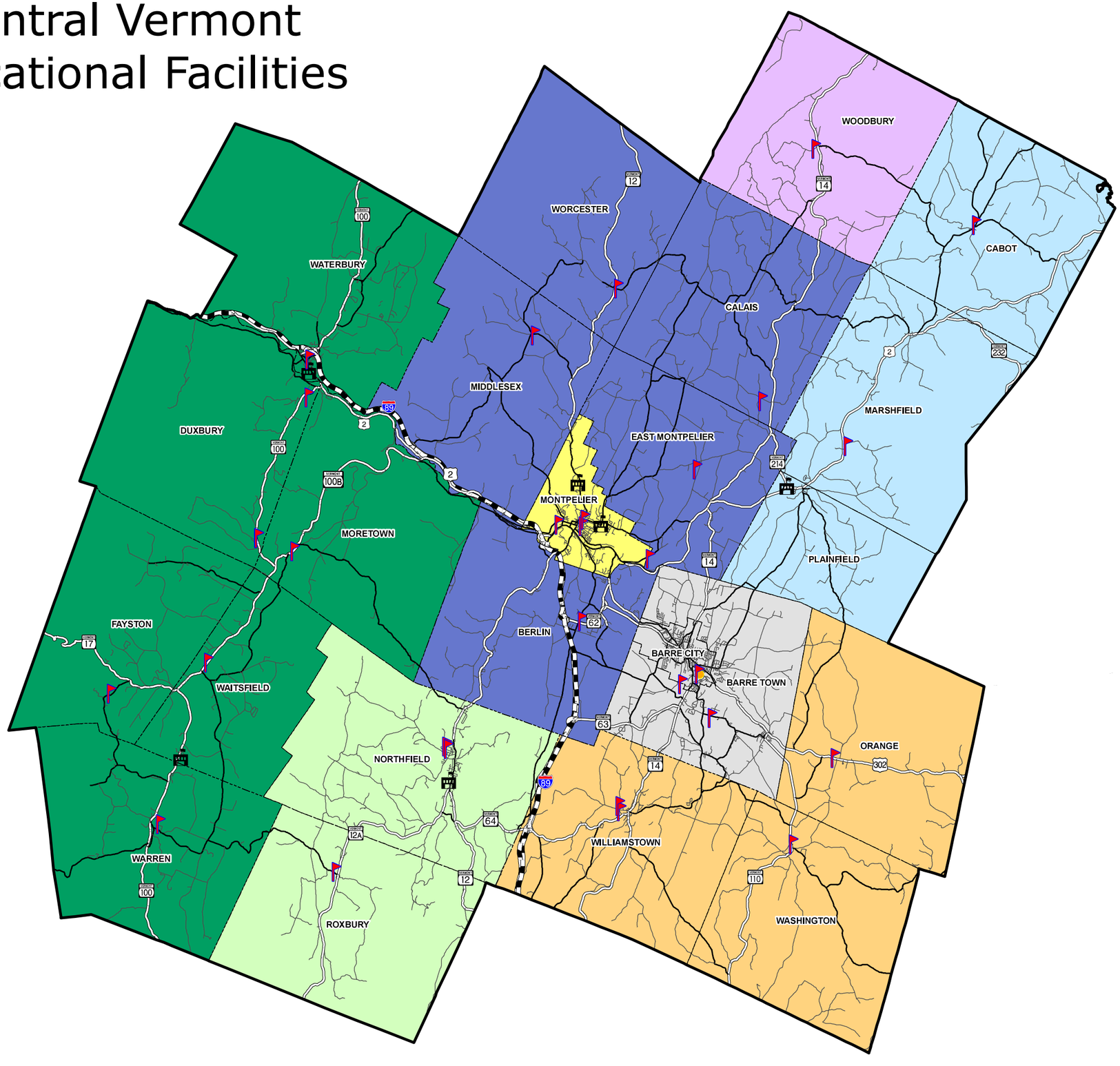
© 1998 Central Vermont Regional Planning Commission

Data Source:
Emergency Operations Facilities - CVRPC, 2007
Roads - VTrans, VGIS 2007
Regional Boundaries - VCGI 2006

Created 2/29/08 by CVRPC
M:/Region/RegionalPlan_Update2008/GIS/Maps/Emergency_Management.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Central Vermont Educational Facilities



Legend

School Districts

- Barre Town/City
- Montpelier School District
- Orange North
- Orleans Southwest
- Washington Central
- Washington Northeast
- Washington South
- Washington West

Public Schools

- Elementary, Middle, High School
- College / Post Secondary School
- Vocational School

Roads:

- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- State Highway; US Highway
- Interstate

N

0 1.75 3.5 7 Miles

1 inch equals 3.5 miles

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

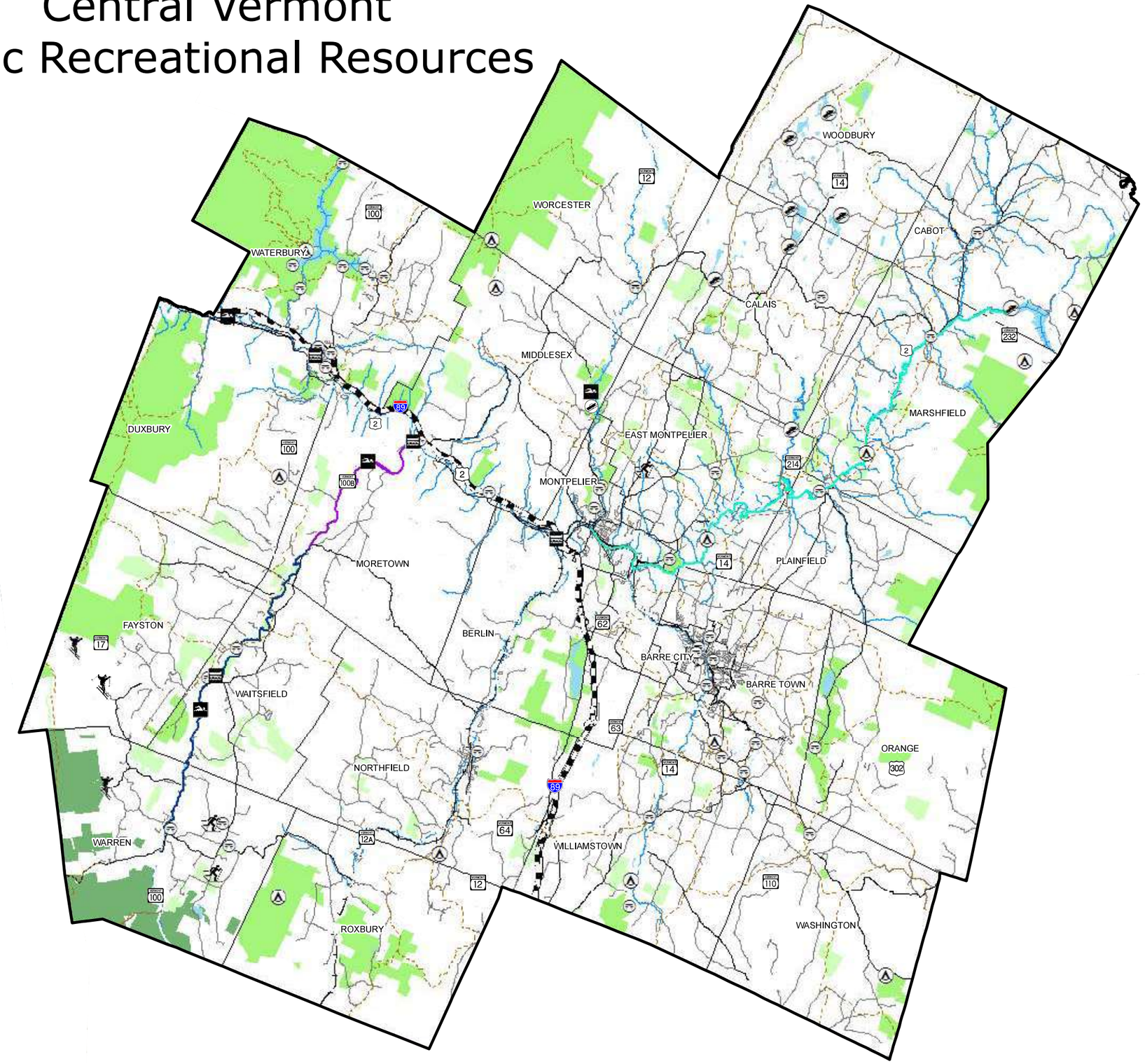
© 1998 Central Vermont Regional Planning Commission

Data Source:
School Districts & Facilities - VCGI, 2007
Roads - VTrans, VGIS 2007
Regional Boundaries - VCGI 2006

Created 12/27/07 by CVRPC
M:/Region/RegionalPlan_Update200/GIS/Maps/Educational_Facilities.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Central Vermont
Public Recreational Resources



Legend

Conserved Lands

- Green Mountain National Forest
- State and Municipal Public Lands
- Private Conserved Lands

Recreational Sites

- Alpine Skiing
- Nordic Skiing
- Boat & Fishing Access (Lakes, Ponds, & Marshes)
- Swimming Areas
- Canoe Access
- Public Campgrounds
- Public Recreational Fields & Parks
- Trails (VAST, Long Trail, Catamount Trail, etc.)

Recreational River Uses

- Expert Kayaks & Open Boats
- Mixed / Whitewater Rapids
- Open Boats

Roads:

- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- State Highway; US Highway
- Interstate

N

0 1.75 3.5 7 Miles

1 inch equals 3.5 Miles

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

© 1998 Central Vermont Regional Planning Commission

Data Source:
Conserved Lands: UVM, 2005
Recreational Sites: VCGI, 2007
Recreational River Reaches: ANR, 2007
Roads - VTrans, VGIS 2007
Tourism Trails: ANR, 2007
Created 2/25/08 by CVRPC
M:/Region/RegionalPlan_Update2008/GIS/Maps/Public Recreational Resources.mxd

Data is only as accurate as the original source materials. This map is for planning purposes. This map may contain errors and omissions.

Appendix B: Enhanced Energy Supplement

Full Supplement Forthcoming.



Update in progress including existing generation, preferred siting, and further siting policy maps as well.

Appendix C: Housing Target Methodology

This page intentionally left blank

.

Appendix D: Future Land Use Map Methodology

Future Land Use Map

The Central Vermont Future Land Use map will be made available online on the website and in a revised link in this document as soon as it is completed. Members of the public will be able to click on individual parcels to see their future land use area category, and will be able to leave comments. For an example of this map, see https://bit.ly/NRPCFLUAMAP

Future Land Use Area Categories

High-Density Growth Areas:

Downtown Center

These areas are the mixed-use centers bringing together community economic activity and civic assets. They include downtowns, villages, and new town centers previously designated under chapter 76A and downtowns and village centers seeking benefits under the Community Investment Program under section 5804 of this title. The downtown or village centers are the traditional and historic central business and civic centers within planned growth areas, village areas, or may stand alone. Village centers are not required to have public water, wastewater, zoning, or subdivision bylaws.

Village Center

These areas are the mixed-use centers bringing together community economic activity and civic assets. They include downtowns, villages, and new town centers previously designated under chapter 76A and downtowns and village centers seeking benefits under the Community Investment Program under section 5804 of this title. The downtown or village centers are the traditional and historic central business and civic centers within planned growth areas, village areas, or may stand alone. Village centers are not required to have public water, wastewater, zoning, or subdivision bylaws.

Planned Growth Area

These areas include the high-density existing settlement and future growth areas with high concentrations of population, housing, and employment in each region and town, as appropriate. They include a mix of historic and non-historic commercial, residential, and civic or cultural sites with active streetscapes, supported by land development regulations; public water or wastewater, or both; and multimodal transportation systems. These areas include new town centers, downtowns, village centers, growth centers, and neighborhood development areas previously designated under chapter 76A of this title, and generally meet the smart growth principles definition

Village Area

These areas include the traditional settlement area or a proposed new settlement area, typically composed of a cohesive mix of residential, civic, religious, commercial, and mixed-use buildings, arranged along a main street and intersecting streets that are within walking distance for residents who live within and surrounding the core. These areas include existing village center designations and similar areas statewide, but this area is larger than the village center designation.

Moderate-Density Growth Areas

Transition/Infill

These areas include areas of existing or planned commercial, office, mixed-use development, or residential uses either adjacent to a planned growth or village area or a new stand-alone transition or infill area and served by, or planned for, public water or wastewater, or both. The intent of this land use category is to transform these areas into higher density, mixed-use settlements, or residential neighborhoods through infill and redevelopment or new development. New commercial linear strip development is not allowed as to prevent it negatively impacting the economic vitality of commercial areas in the adjacent or nearby planned growth or village area. This area could also include adjacent greenfields safer from flooding and planned for future growth.

Low-Density Growth Areas

Resource-Based Recreation

These areas include large-scale resource-based recreational facilities, often concentrated around ski resorts, lakeshores, or concentrated trail networks, that may provide infrastructure, jobs, or housing to support recreational activities.

Enterprise

These areas include locations of high economic activity and employment that are not adjacent to planned growth areas. These include industrial parks, areas of natural resource extraction, or other commercial uses that involve larger land areas. Enterprise areas typically have ready access to water supply, sewage disposal, electricity, and freight transportation networks.

Hamlets

Small historic clusters of homes and may include a school, place of worship, store, or other public buildings not planned for significant growth; no public water supply or wastewater systems; and mostly focused along one or two roads. These may be depicted as points on the future land use map. (Mostly replacing lost historic housing.)

Rural General

These areas include areas that promote the preservation of Vermont's traditional working landscape and natural area features. They allow for low-density residential and some limited commercial development that is compatible with productive lands and natural areas. This may also include an area that a municipality is planning to make more rural than it is currently.

Rural Agricultural/Forest

These areas include blocks of forest or farmland that sustain resource

industries, provide critical wildlife scenic beauty, and contribute to economic well-being and quality of life. Development in these areas should be carefully managed to promote the working landscape and rural economy, and address regional goals, while protecting the agricultural and forest resource value.

No Growth Areas

Rural Conservation

These are areas of significant natural resources, identified by regional planning commissions or municipalities based upon existing Agency of Natural Resources mapping that require special consideration for aquifer protection; for wetland protection; for the maintenance of forest blocks, wildlife habitat, and habitat connectors; or for other conservation purposes. The mapping of these areas and accompanying policies are intended to meet the requirements of 10 V.S.A. chapter 89. Any portion of this area that is approved by the LRB as having Tier 3 area status shall be identified on the future land use map as an overlay upon approval.

VAPDA Methodology

The Vermont Association of Planning and Development Agencies was charged with creating a standard methodology to "develop, maintain, and update standard methodology and process for the mapping of areas eligible for Tier 1B status under 10 V.S.A. § 6033 and designation under chapter 139 of this title."

Documentation which also includes statutory references and links to Act 250 tier eligibility can be found here: https://bit.ly/VAPDAFLUA

Appendix E: Environmental Benefits & Burdens Analysis

EJ mapping is currently in progress.

Appendix F: Statutory Language

Housing Element Requirements

24 V.S.A. § 4348a (9) A housing element that identifies the regional and community-level need for housing that will result in an adequate supply of building code and energy code compliant homes where most households spend not more than 30 percent of their income on housing and not more than 15 percent on transportation. To establish housing needs, the Department of Housing and Community Development shall publish statewide and regional housing targets or ranges as part of the Statewide Housing Needs Assessment. The regional planning commission shall consult the Statewide Housing Needs Assessment; current and expected demographic data; the current location, quality, types, and cost of housing; other local studies related to housing needs; and data gathered pursuant to subsection 4382(c) of this title. If no such data has been gathered, the regional planning commission shall gather it. The regional planning commission's assessment shall estimate the total needed housing investments in terms of price, quality, unit size or type, and zoning district as applicable and shall disaggregate regional housing targets or ranges by municipality. The housing element shall include a set of recommended actions to satisfy the established needs.

Future Land Use Area Definitions

(A) Downtown or village centers. These areas are the mixed-use centers bringing together community economic activity and civic assets. They include downtowns, villages, and new town centers previously designated under chapter 76A and downtowns and village centers seeking benefits under the Community Investment Program under section 5804 of this title. The downtown or village centers are the traditional and historic central business and civic centers within planned growth areas, village areas, or may stand alone. Village centers are not required to have public water, wastewater, zoning, or subdivision bylaws.

(B) Planned growth areas. These areas include the high-density existing settlement and future growth areas with high concentrations of population, housing, and employment in each region and town, as appropriate. They include a mix of historic and nonhistoric commercial, residential, and civic or cultural sites with active streetscapes, supported by land development regulations; public water or wastewater, or both; and multimodal transportation systems. These areas include new town centers, downtowns, village centers, growth centers, and neighborhood development areas previously designated under chapter 76A of this title. These areas should generally meet the smart growth principles definition in chapter 139 of this title and the following criteria:

(i) The municipality has a duly adopted and approved plan and a planning process

that is confirmed in accordance with section 4350 of this title and has adopted bylaws and regulations in accordance with sections 4414, 4418, and 4442 of this title.

(ii) This area is served by public water or wastewater infrastructure.

(iii) The area is generally within walking distance from the municipality's or an adjacent municipality's downtown, village center, new town center, or growth center.

(iv) The area excludes identified flood hazard and river corridor areas, except those areas containing preexisting development in areas suitable for infill development as defined in section 29-201 of the Vermont Flood Hazard Area and River Corridor Rule.

(v) The municipal plan indicates that this area is intended for higher-density residential and mixed-use development.

(vi) The area provides for housing that meets the needs of a diversity of social and income groups in the community.

(vii) The area is served by planned or existing transportation infrastructure that conforms with "complete streets" principles as described under 19 V.S.A. chapter 24 and establishes pedestrian access directly to the downtown, village center, or new town center. Planned transportation infrastructure includes those investments included in the municipality's capital improvement program pursuant to section 4430 of this title.

(C) Village areas. These areas include the traditional settlement area or a proposed new settlement area, typically composed of a cohesive mix of residential, civic, religious, commercial, and mixed-use buildings, arranged along a main street and intersecting streets that are within walking distance for residents who live within and surrounding the core. These areas include existing village center designations and similar areas statewide, but this area is larger than the village center designation. Village areas shall meet the following criteria:

(i) The municipality has a duly adopted and approved plan and a planning process that is confirmed in accordance with section 4350 of this title.

(ii) The municipality has adopted bylaws and regulations in accordance with sections 4414, 4418, and 4442 of this title.

(iii) Unless the municipality has adopted flood hazard and river corridor bylaws, applicable to the entire municipality, that are consistent with the standards established pursuant to 10 V.S.A. § 755b (flood hazard) and 10 V.S.A. § 1428(b) (river corridor), the area excludes identified flood hazard and river corridors, except those areas containing preexisting development in areas suitable for infill development as defined in 29-201 of the Vermont Flood Hazard Area and River Corridor Rule.

(iv) The municipality has either municipal water or wastewater. If no public

wastewater is available, the area must have soils that are adequate for wastewater disposal.

(v) The area has some opportunity for infill development or new development areas where the village can grow and be flood resilient.

(D) Transition or infill area. These areas include areas of existing or planned commercial, office, mixed-use development, or residential uses either adjacent to a planned growth or village area or a new stand-alone transition or infill area and served by, or planned for, public water or wastewater, or both. The intent of this land use category is to transform these areas into higher-density, mixed-use settlements, or residential neighborhoods through infill and redevelopment or new development. New commercial linear strip development is not allowed as to prevent it negatively impacting the economic vitality of commercial areas in the adjacent or nearby planned growth or village area. This area could also include adjacent greenfields safer from flooding and planned for future growth.

(E) Resource-based recreation areas. These areas include large-scale resource-based recreational facilities, often concentrated around ski resorts, lakeshores, or concentrated trail networks, that may provide infrastructure, jobs, or housing to support recreational activities.

(F) Enterprise areas. These areas include locations of high economic activity and employment that are not adjacent to planned growth areas. These include industrial parks, areas of natural resource extraction, or other commercial uses that involve larger land areas. Enterprise areas typically have ready access to water supply, sewage disposal, electricity, and freight transportation networks.

(G) Hamlets. Small historic clusters of homes and may include a school, place of worship, store, or other public buildings not planned for significant growth; no public water supply or wastewater systems; and mostly focused along one or two roads. These may be depicted as points on the future land use map.

(H) Rural; general. These areas include areas that promote the preservation of Vermont’s traditional working landscape and natural area features. They allow for low-density residential and some limited commercial development that is compatible with productive lands and natural areas. This may also include an area that a municipality is planning to make more rural than it is currently.

(I) Rural; agricultural and forestry. These areas include blocks of forest or farmland that sustain resource industries, provide critical wildlife habitat and movement, outdoor recreation, flood storage, aquifer recharge, and scenic beauty, and contribute to economic well-being and quality of life. Development in these areas should be carefully managed to promote the working landscape and rural economy, and address regional goals, while protecting the agricultural and forest resource value.

(J) Rural; conservation. These are areas of significant natural resources, identified by regional planning commissions or municipalities based upon existing Agency of Natural Resources mapping that require special consideration for aquifer protection;

for wetland protection; for the maintenance of forest blocks, wildlife habitat, and habitat connectors; or for other conservation purposes. The mapping of these areas and accompanying policies are intended to help meet requirements of 10 V.S.A. chapter 89. Any portion of this area that is approved by the LURB as having Tier 3 area status shall be identified on the future land use map as an overlay upon approval.

Appendix G: Regional Plan Review Committee Review Dates of New Plan Chapters

When additions or changes were needed to meet new statutory requirements, text was drawn from the ongoing work of the staff and the Regional Plan Committee on the ***new*** Plan whenever possible.

While the regional plan committee has taken no action to specifically endorse any of this language, below are the dates when each element was presented to the Regional Plan Committee and the opportunity to provide comments was provided. Highlights of those discussions are available in the meeting minutes from those dates.

Chapter	Narrative
Housing	3/5/2024, 10/15/2024
Cooperative Planning	3/5/2024
Land Use	3/5/2024, 10/15/2024
Natural Systems	6/4/2024, 7/2/2024
Utilities Facilities and Services	7/2/2024, 8/6/2024, 12/17/2024
Economy and Working lands	7/2/2024
Substantial Regional Impact	8/6/2024
Transportation	9/4/2024
Energy	11/19/2024, 1/7/2025