Rutland Regional Plan

Adopted June 19, 2018



Re-Adopted June 19, 2018

Commissioners of the Rutland Regional Planning Commission



RRPC Staff

Green Mountain College in Poultney

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Regional & *Transportation Plan* Cover Design: Jorden Blucher, Salt Lake City, UT.

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Regional Transportation Plan Cover art work: Rutland Historical Society, "Rutland Train Station, circa 1905." From a watercolor by E.E. Deane of the proposed north end wing of the station prepared for New York architects Reed and Stern, designers.

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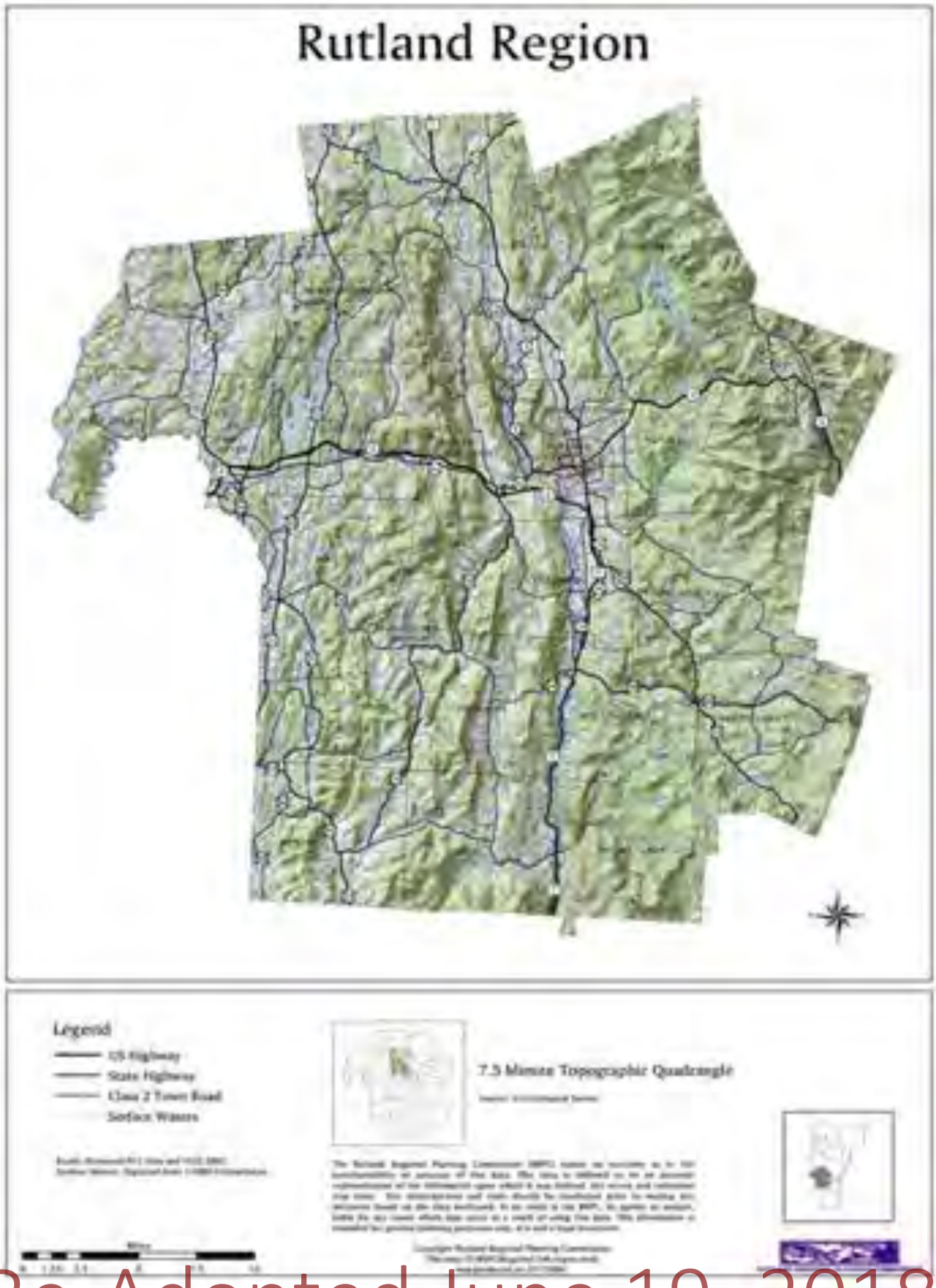
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Chapter 1: Introduction



FOOD FOR THOUGHT

THE RUTLAND REGIONAL PLANNING COMMISSION'S MISSION:

"To develop and implement a regional plan, to provide assistance to municipalities with the planning process and information gathering, to be a central repository of planning information, and to administer regional programs while remaining consistent with our federal and state requirements."

THE RUTLAND REGIONAL PLANNING COMMISSION

The Rutland Regional Planning Commission (one of 11 in the state) was established in 1968, and includes 27 member towns in Rutland County, VT (all but Pittsfield, which due to geography is aligned with the Two Rivers-Ottauquechee Regional Commission). The Commission is enabled under the Vermont Municipal and Regional Planning and Development Act (24 V.S.A. §4341).

The Rutland Regional Planning Commission is led by a board made up of one representative from each of the Commission's member communities plus members representing area-wide citizen interest organizations and four ex-officio partner organizations.

VISION FOR THE REGION

The *Regional Plan* is guided by an overall vision or concept of the kind of place our citizens want it to be in the decades ahead. It is an expression of possibility; it reflects what people want to happen in the community – even if this would be a challenge to achieve. That vision is to be:

- A place with a vigorous economy

  The economy is dynamic, diversified, and resilient. It provides opportunities for traditional industries such as manufacturing, travel and recreation, financial services, agriculture, forest products, mining, power generation and distribution, health care, and transportation, as well as for newer industries such as computers, telecommunications, and international trade. Both small and large firms are successful. The value added to goods produced in the Region is high.

- A place where residents enjoy a high quality of life.

  Residents of the Region as a group enjoy a high level of health and well-being. They feel a strong sense of belonging and responsibility within their communities. Educational and employment opportunities abound, as do cultural, recreational, and civic opportunities. The scale of communities and developed areas is personal. In all aspects of their lives, people feel safe.

- A place with a well-cared for environment.

  The environment is clean and attractive. Resources are used responsibly and not inefficiently, wastefully, or prematurely. Historic resources stand as reminders of the Region's rich past. Negative impacts on natural resources- including air, water, land, and wildlife in various forms are avoided, minimized, or mitigated.

ABOUT THE *RUTLAND REGIONAL PLAN*

The 2014 edition of the Rutland Regional Plan includes some chapters that have been updated since 2008, a new chapter, Child Care, and others that have yet to be updated. By 2016 all chapters will have been updated.

Purpose of the Regional Plan

The purpose of the *Rutland Regional Plan* is to provide a guide for managing change within the Region and a framework within which individuals, businesses, and local governments can make decisions regarding growth and development.

Adoption and Authority

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The first *Regional Plan* for the Rutland Region was prepared in 1971 and subsequently updated in 1978, 1987, 1994, 1999, 2001, 2006, and 2008.

The Rutland Regional Planning Commission is authorized pursuant to the provisions of the Vermont Municipal Planning and Development Act (24 V.S.A., Chapter 117, §4345a.

Implementation of the Plan

The only regulatory authority vested in regional planning commissions, such as the Rutland Regional Planning Commission, is as a statutory party in proceedings under the Public Service Board (Section 248 Hearings), the District Environmental Commission (Act 250), and solid waste issues.

Solid Waste

The Rutland Regional Planning Commission's responsibilities regarding solid waste are described in 24 V.S.A. §2202a(2): "each regional planning commission shall work on a cooperative basis with municipalities within the region to prepare a solid waste implementation plan for adoption by all of the municipalities within the region which are not members of a solid waste district, that conforms to the State Waste Management Plan and describes in detail how the region will achieve the priorities established by 10 V.S.A. § 6604(a)(1).

Public Service Board (Section 248 Hearings)

The Vermont Public Service Board ("PSB") is a state quasi-judicial board with jurisdiction over public utilities, cable television, water utilities, electric utilities, water carriers, gas utilities, telephone utilities, and resellers of telephone services, as described in 30 V.S.A. §203.

An entity that proposes to construct certain types of new/renovated gas or electric facilities must obtain a Certificate of Public Good from the PSB pursuant to 30 V.S.A. §248. The PSB may not issue a Certificate of Public Good unless it finds (among other conditions) that the "...facility will not unduly interfere with the orderly development of the region with due consideration having been given to the recommendations of the municipal and regional planning commissions," 30 V.S.A. §248(b)(1). In addition, 24 V.S.A. § 4345a(14) requires regional planning commissions to "appear before the public service board to aid the board in making determinations under 30 V.S.A. §248."

The Rutland Regional Planning Commission reviews all Section 248 applications in the Region and participates and provides comments on all

WHAT DO THESE SYMBOLS MEAN???



FOOD FOR THOUGHT

Ideas to contemplate. Good for giving the brain a workout.



FAST FACT

Pieces of information that might be useful.



Markers to show some of the many ways in which each chapter of the *Regional Plan* is inextricably linked to all others.



DEFINITIONS

Definitions to a few of the key terms used in the text of the *Plan*.



A LOT OF FOOD FOR THOUGHT

- Promote the mutual cooperation of municipalities and to advise towns on the development and conservation of town resources;
- Advise towns with respect to public financing;
- Provide technical assistance to towns in the preparation and maintenance of plans, bylaws and related implementation activities;
- Cooperate with planning, legislative, or executive authorities of neighboring states, regions, counties, and municipalities to promote planning coordination;

STATUTORY DUTIES OF REGIONAL PLANNING COMMISSIONS

- Prepare a regional plan and amendments that are consistent with the goals established in Section 4302 and that is compatible with approved municipal and adjoining regional plans;
- Develop strategies specifically designed to assist municipalities in managing growth and development;
- Review proposed state capital expenditures for compatibility with the regional plan; and
- Appear before District Environmental Commissions to aid them in determining conformance of proposed developments and subdivisions with the ten criteria set forth in Act 250.

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CONNECTING THE PLAN

Substantial regional impact as defined in this chapter will be affected by issues described in other chapters of the Regional Plan, including Future Use of Land, Housing, Economic Activity, Agriculture and Forestry, Energy, Telecommunications, and Transportation.

applications. A petitioner is required to provide plans to the regional planning commission not less than 45 days prior to filing their petition for the Certificate of Public Good with the PSB. However, a regional planning commission may waive the 45-day requirement.

Act 250

Vermont's Land Use and Development Law (VSA Title 10, Chapter 151), Act 250 as it is most commonly referred, was established in 1970 as part of a statewide planning and development control effort in response to rapid growth across the state. Originally designed to implement a state land use plan that was never approved, Act 250 reviews and issues permits to large residential, commercial, industrial developments, and all public facilities. Permit decisions are based on the applicant's demonstration that the proposed project will not seriously impact any of 10 criteria that include water and air quality, agricultural and forestry soils, wildlife, municipal services, and local and regional development plans.

Under state law, regional planning commissions are a statutory party to any review of projects within the region, and in some cases outside the region. In addition, 24 V.S.A. §4345a(13) requires regional planning commissions to "appear before district environmental commissions to aid them in making a determination as to the conformance of developments and subdivisions with the criteria of 10 V.S.A. §6086."

The Rutland Regional Planning Commission reviews all Act 250 applications in the Region, and participates and provides comments on all applications.

Substantial Regional Impact

As a regional planning commission, the Rutland Regional Planning Commission is particularly interested in developments whose impacts are regional in scope. Chapter 117 of Title 24 in the Vermont Statutes Annotated requires regional planning commissions, in the regional plan, to define the term "substantial regional impact."

The Rutland Regional Planning Commission defines substantial regional impact as "an impact that has considerable and ongoing impact on two or more municipalities."

During review of projects which fall under the requirements of Act 250, Section 248 or solid waste, the Commission will consider the goals and policies of the Regional Plan. It is expected that in most instances the Regional Plan and local plan will be compatible. In cases where the plans are not compatible, the Regional Plan will take precedent when the project has a "substantial regional impact."

Where the provisions of a regional and municipal plan are relevant in these proceedings, the law states:

- the provisions of the *Regional Plan* shall be given effect to the extent that they are not in conflict with the provisions of a duly adopted municipal plan.
- to the extent that such a conflict exists, the *Regional Plan* shall be given effect if it is demonstrated that the project under consideration in the proceedings would have a substantial regional impact (24 V.S.A. §4348(h)).

Cumulative Impacts of Development

When determining whether a project has substantial regional impacts, the impacts produced by the project itself are considered. As the Rutland Region experiences development of varying intensities and densities over time, impacts that are not evident on a project to project basis can become evident when considering the impacts of many projects in a limited geographic area together. Project review should consider cumulative

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impacts in all regional and sub-regional growth centers, transitional growth areas, and in any other area experiencing new development.

Proper implementation of planning goals in particular, master planning can mitigate undesirable cumulative impacts. The Commission strongly recommends that communities work with public and private interests to complete effective comprehensive municipal plans and master plans for sub-regional and regional growth centers and growth expansion areas.

Implications of JAM Golf, LLC Ruling for Act 250 and Section 248 Deliberations

The re Appeal of JAM Golf, LLC vs. South Burlington, 2008 VT 110, resulted in one of the Vermont Supreme Court's more controversial decisions on municipal land use regulation. The decision requires municipal and regional planners to give careful and detailed consideration to zoning ordinances and bylaws. Goals for protecting a community's important resources must be supported by specific standards showing how the goals might be achieved.

USERS OF THE *PLAN*

The steps followed in the development of the 2014 *Regional Plan* were similar to those used in 2008. The users of the document were first determined. Then all efforts from that point forward were made with these audiences in mind:

- **Local officials preparing town plans**

  The *Regional Plan* provides direction and broad policies for local officials to consider when preparing and updating their town plans. It also illustrates key issues, promotes cooperation between neighboring communities, and highlights the links between pieces of a plan.

- **Commission Board members and staff prioritizing work with communities and the Region**

  Board members and staff use the *Plan* to establish an annual work program, identify areas that need attention in upcoming years, guide work with communities on town plans and land regulations, and, where appropriate, provide direction in the Act 250 process.

- **Businesses and developers seeking to enter the Region or expand**

  Those in the development community use the *Regional Plan* to gather basic information about the area, identify suitable locations for projects, and develop business plans.

- **State agencies that have programs or take actions affecting land use**

  State agencies must engage in a planning process to assure that those programs and actions are compatible with regional plans (3 V.S.A. §4020).

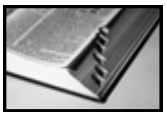
- **Local non-profits and businesses seeking support for activities**

  New projects and successful grant proposals seek to address clearly identified needs in the *Regional Plan.*

FORMAT OF THE *PLAN*

The *Rutland Regional Plan* is divided into chapters concerning a variety of topics important to the Rutland Region. With the underlying assumption that readers have some basic familiarity with the subject about which they are reading, the *Plan* details how the issues relate to and affect the Rutland Region.

Each chapter of the *Plan* deals with a separate subject area. Additionally, many chapters contain a case study of a recent success stories, additional resources that



DEFINITIONS

Users of the Plan:

- Local officials
- Commission board members and staff
- Businesses and developers
- State agencies
- Local non-profits

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FAST FACT

The State of Vermont includes 252 towns and villages, 27 of which are in the Rutland Region.

There are eleven regional planning commissions in the State.



The Rutland Region shares borders and planning issues with five other regional commissions:

- Addison County
- Two Rivers-Ottauquechee
- Southern Windsor County
- Windham
- Bennington County

may be sought out, and side notes of interest to readers.

DESIGN OF THE *PLAN*
PUBLIC INPUT TO THE *PLAN*

The *Rutland Regional Plan* relied on significant community input at all stages of its development.

Staff prepared a rough draft of each chapter using as a base the previous edition of the *Plan*, any available data, and information gathered over the past 3-4 years at local and regional working sessions.

Input was provided by organizations and individuals with expertise in that field. The chapters were then reviewed by the Commission's standing committees (Community Issues and Regional Issues). The Committees also provided input on the drafts, and identified gaps in the draft text.

The Commission held its required public hearings in the spring of 2014 before voting to adopt the *Plan*.

NEIGHBORING REGIONS' PLANS & DEVELOPMENT TRENDS

The Rutland Region is bordered by five other regional planning areas within Vermont. There are a growing number of development and energy issues in these areas that have regional impacts. Below are a series of statements regarding the Rutland Regional Plan's relationship to the development trends and regional plans for these areas:

Addison County Regional Planning Commission (December 2011 Plan*)*

Development Trends

The Rutland Region shares its northern border with Addison County. Addison-Rutland border towns also share many resources as well as energy infrastructure projects, including a proposed natural gas pipeline and hydroelectric transmission line.

Brandon is equidistant from Rutland and Middlebury and serves as a sub-regional hub for communities in both counties. It is also reliant on services, including medical, from both larger communities. Whiting and Sudbury share emergency services and are both rural communities along VT Route 30. Orwell and Benson, both along VT 22A, share a number of services as well, including educational.

Plan Consistency

The four border communities promote mostly rural and forestland development, with most intense uses projected along US Route 7 in Leicester and Vermont Route 30 in Whiting. Rutland and Addison Counties also share Otter Creek, a significant water resource, and are working together on the Basin Plan for the entire Otter Creek Basin.

These anticipated growth patterns are consistent with those projected in northern Rutland County and the plans are compatible.

Two Rivers-Ottauquechee Regional Commission (June 2012 Plan*)*

Development Trends

The Rutland Region shares most of its eastern border with the Two Rivers-Ottauquechee Region. Border communities on Two Rivers Commission side are Pittsfield, Stockbridge, Bridgewater, and Plymouth. The two regions also share development projects, including a resort expansion, that have transportation, services and natural resources impacts on the region.

Because of topography, the only major routes connecting the two regions are US Route 4 (into Bridgewater) and VT Route 100, into Pittsfield. Both

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communities have economies and natural features related to Killington and its resort. A hamlet exists at West Bridgewater, serving local residents and tourists. Pittsfield remains a small community but has several hotels and restaurants geared towards the Killington market. As Killington expands, so will these neighboring communities.

Plan Consistency

Two Rivers-Ottauquechee's *Regional Plan* includes six future land use districts.

Rural and Conservation areas dominate the border communities, with three hamlets and a village designated in Bridgewater and a village area in Pittsfield. These designations are consistent with the goals of the *Rutland Regional Plan*. The remainder of the *Plan* appears to be consistent.

Southern Windsor County Regional Commission (June 2009 Plan*)*

Development Trends

The Rutland Region shares a border with the Town of Ludlow in Southern Windsor County. The two regions also share development projects, including a resort expansion, that have transportation and natural resources impacts on the region.

Ludlow is home to Okemo Mountain Resort, a business with significant effects on neighboring communities, including traffic, economic development, and housing. Ludlow is also an employment and service center for people in southeastern Rutland County.

Plan Consistency

The Southern Windsor Commission *Plan*'s future land use section includes resource and rural areas at the Ludlow — Mt Holly border, resort development, and a village area in Ludlow. All of these uses are consistent with the *Rutland Regional Plan*. Special attention should be paid to the black bear corridor and other natural areas which runs along the border between these communities.

Windham Regional Commission (October 2006 Plan and 2014 Update*)*

Development Trends

The Town of Weston in Windham County shares its northern and western border with two towns in Rutland County. Because of topography, however, only a seasonal National Forest Service road connects Mt. Tabor to Weston. Mount Holly and Weston maintain loose economic links, though neither community is a major employment or service center.

Plan Consistency

The *Windham Regional Plan* is in the process of an update and the 2006 Plan has most of its western border labeled as "resource lands", which is consistent with Rutland's conservation designation. Productive rural lands, rural residential lands, and a village center are projected for the VT Routes 100 & 155 corridor through Weston. This is consistent with projected patterns on the Rutland County side of Route 155.

Bennington County Regional Commission (April 2007 Plan*)*

Development Trends

Four towns in Bennington County, Dorset, Rupert, Landgrove, and Peru, abut the southern border of Rutland County. Two major highways, US Route 7 and VT Route 30 link the regions. Services and employment are equidistant from Pawlet, Danby, and Mount Tabor to Rutland and Manchester. Residential development in Manchester and Dorset, both larger communities than their northern neighbors, has had a spillover effect. The communities share multiple resources including emergency response and



FAST FACT

"A regional planning commission shall contain one representative appointed from each member municipality. All representatives may be compensated and reimbursed by their respective municipalities for necessary and reasonable expenses."

(24 V.S.A., §4342)



FAST FACT

Vermont's regional planning commissions are required to develop, adopt, and maintain regional plans.

Its general purposes, listed in State statute under 24 V.S.A. §4347, are:
"guiding and accomplishing a coordinated, efficient, and economic development of the region which will, in accordance with the 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."

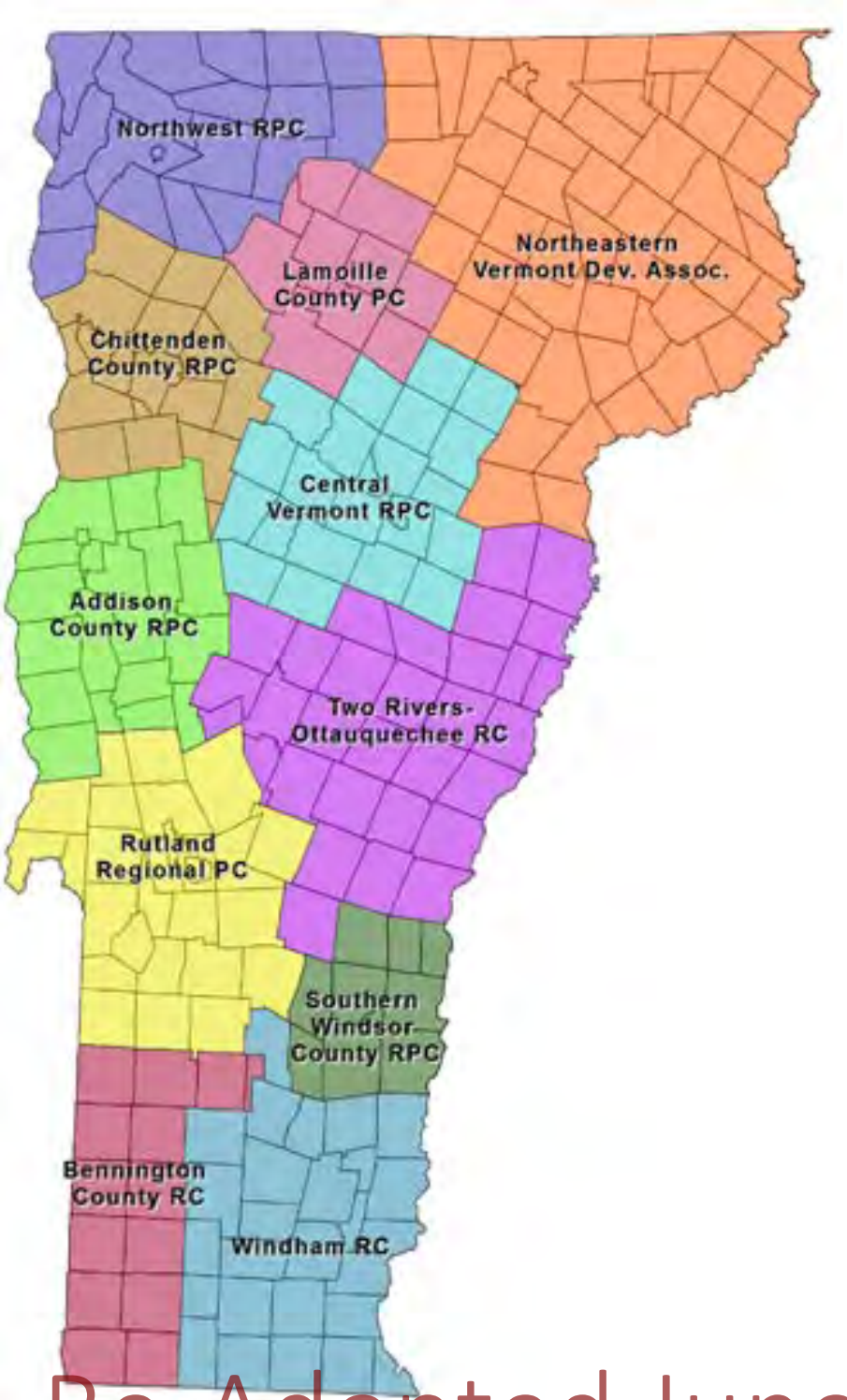
Plans must be re-adopted by regional planning commissions at least every eight years.

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schooling.

The Bennington-Rutland area is also home to shared resources, including the Mettowee Valley, and National Forest Land in the Green and Taconic Mountains.

Vermont Regional Planning Commission Boundaries



Plan Consistency

Bennington County Commission's *Regional Plan* includes a series of future land use designations that are consistent with those in the Rutland Region. The *Plan* calls for conservation of upland forests, rural areas, hamlets and villages in the areas immediately south of the Rutland Region through smart growth practices. Watershed planning in the Mettowee and Otter Creek Basins are also being coordinated. The *Plan* appears to be consistent with that of the Rutland Region.

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Chapter 2: Regional Profile

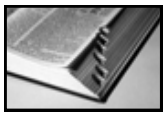
INTRODUCTION

The Rutland Region's landscape is dominated by mountain ranges, lakes, rivers, mineral deposits, and historic settlement areas. Among the Region's key features are its numerous valley farms, forested hills, slate and marble quarries, hamlets, villages, and its urban center, Rutland. Development has generally occurred in the valleys between mountain ranges, along road, rail, and water transportation routes. The Rutland Region's identity is intricately tied to early settlement patterns and industry. In the 1800's, logging increased the amount of agricultural pastureland available, allowing for population growth. Then, near the end of the 19th century, marble, slate, forestry, and the railroad enabled the population of the Rutland Region to spread out into rural towns.

After the rapid population and industrial growth of the late 19th century, the Region saw an overall decline in industrial activity between 1910 and 1940, as many once thriving industrial sites were abandoned or downsized. Most of the industrial villages (with the exception of Rutland City) saw a sharp decline in population, some as great as 30%. With this decline in industry and population, many historic downtowns once supported by these activities fell into disrepair.

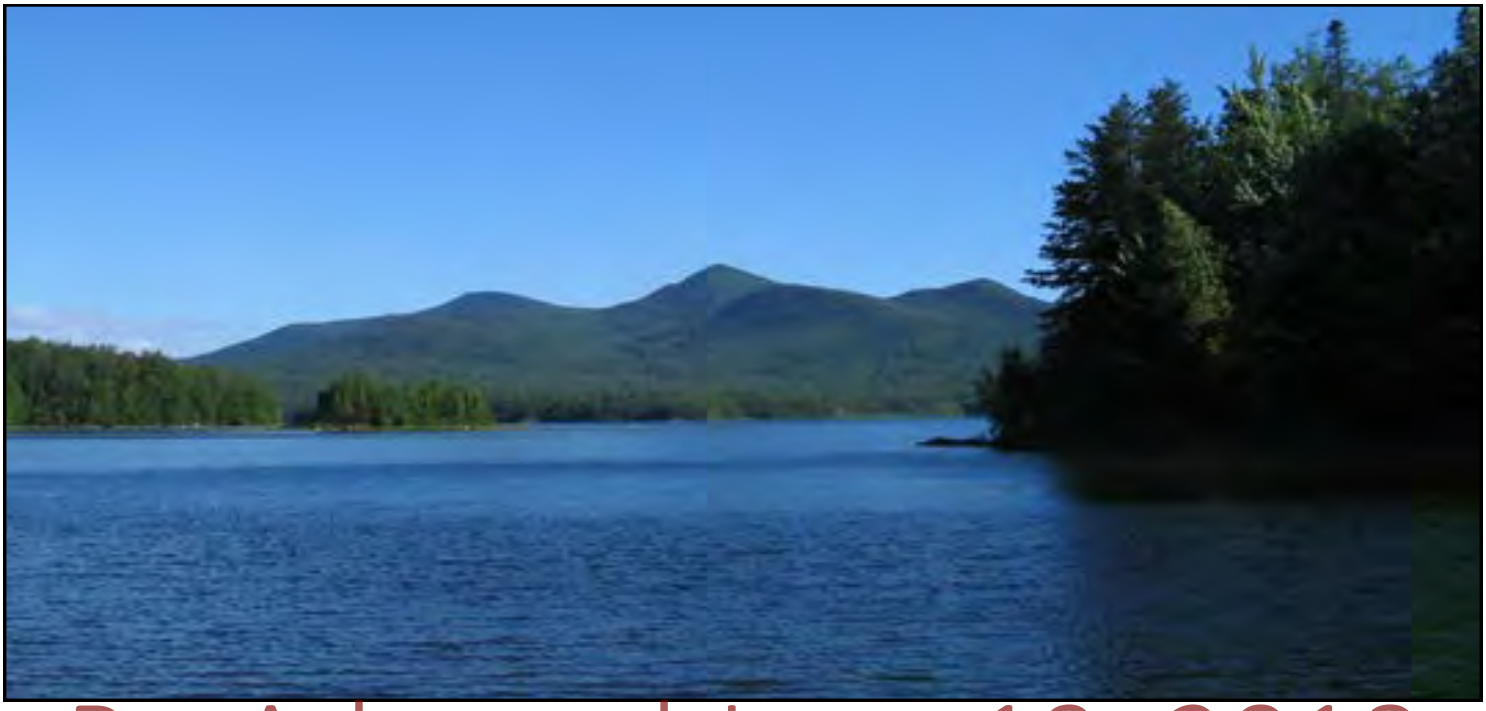
Renewed growth over the past half-century, including a boom in seasonal home production, increased use of motorized travel, and improvements in technology has begun to alter communities, as housing spreads outside traditional boundaries into agricultural and forest land. The transportation and industry related constraints that existed in the 19th and early 20th centuries are no longer insurmountable. Today, communities are not integrally tied to the use of available natural resources and waterways; commercial and industrial activities are not necessarily tied to a village location. Residents are not forced to live in densely populated centers; automobiles, buses, and highway networks allow for increasingly lengthy commutes.

Major transportation thoroughfares, including US Route 4 (the primary east-west route across southern Vermont), and US Route 7 (the primary north-south route along the western side of Vermont), as well



DEFINITIONS

Rutland Region and Rutland County: Rutland County is made up of 28 towns in southwestern Vermont. The Rutland Regional Planning Commission (RRPC) has responsibility for 27 of these towns—a jurisdiction referred to as the Rutland Region. Pittsfield, the 28th town, is a member of the Two Rivers-Ottaquechee Regional Planning Commission.



RRPC Staff

Chittenden Reservoir, a power-generation impoundment, serves mainly as a popular recreation site.

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as a series of railways, serve the county and cross one another in its geographic and population center, Rutland City.

PATTERNS OF DEVELOPMENT

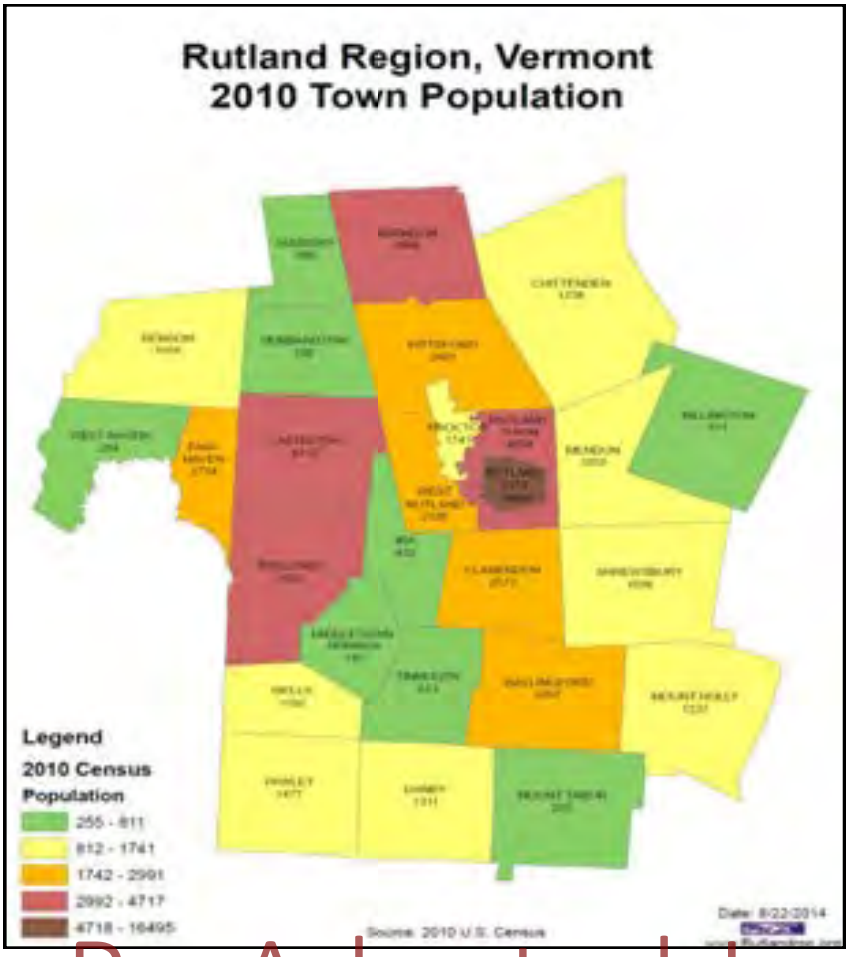
The Rutland Region is comprised of 27 communities ranging in population from under 300 to over 16,000. The Region contains one urban center, five sub-regional centers of economic activity (Brandon, Killington, Fair Haven, Poultney, and West Rutland) and a series of smaller villages surrounded by agricultural and forest land.

Rutland City is the Region's economic and population hub. A street grid established in the 19th century still supports a historic village and a thriving downtown life. The concentrated, brick- and stone-based downtown is surrounded by compact multi-family and single-family homes intermixed with pockets of light industrial activity. More suburban-style housing creates a ring around the older housing. US Routes 7 and 4, previously little more than inter-town transportation routes, have become strips of commercial development radiating outward from the core of downtown Rutland City. This type of development serves a mostly automobile-based audience. The half-dozen larger villages in the Region follow traditional development patterns—compact commercial centers surrounded by neighborhoods of single-family homes. Some of these villages include housing above street-level businesses, which are within walking distance of services and shops.

The evolution of the Region has dictated the reuse of historical structures to meet the needs of current residents of the Region. The conversion of larger homes into either businesses or multiple dwelling units is not uncommon in these village areas. The edges of villages have been extended in recent decades by auto-oriented commercial strip development along major roads, while housing has extended outward from village centers on multiple small rural roads.

Throughout the course of development, hamlets formed at important intersections, while beyond the hamlets, development consisted of scattered rural homesteads and farms. These small hamlets of purely residential development mark the "center" of many rural towns in the Region. Development over the past half century has tended to be in more rural areas, with very few new homes being built in the hamlets. This is due, in part, to wastewater infrastructure needs, as certain soil types must be present to support septic systems or a sewer must be built to support additional houses. Today, some of these hamlets exist only in name or by the presence of a handful of homes, while

RUTLAND REGION COMMUNITIES, BY POPULATION



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others continue to act as centers of local activity.

According to the 2012 Census of Agriculture, the Region lost 22,083 acres of farmland to development from 2007 to 2012. This type of "green field" development outside village and urban centers threatens to undercut a significant element of the Region's identity. It should be noted, however, that recent trends indicate a resurgence in the number of active farms, many of which are small in scale. There are 246 small farms between 1 and 49 acres in size within the Rutland Region, making up more than a quarter of the farms in the Region.

The Region's many lakes and mountains have attracted significant development over the years. The shores of Lake Bomoseen and Lake Saint Catherine in the western part of the Region have been attractive sites for second homes since the late 1800s. In fact, all of the Region has seen an increase in second home growth outside of village centers since the 1980s. Killington, a very popular location for seasonal homes, has promoted service-based businesses and housing in surrounding towns.

POPULATION

Population Growth and Distribution

Founded in 1781, Rutland County's year-round population has grown in two significant bursts over the past 150 years. The first, between 1840 and 1890, coincided with the construction of the railroad and the emergence of marble and granite works and took the population from approximately 30,000 people in 1840 to 45,000 in 1890. The second, resulting in a population increase of 15,000, took place between 1960 and 1990, and was closely related to the overall growth of the state and the country in the post World War II era. Since 1990, population growth for the Region as a whole has been minimal, increasing by less than 2%, the second-lowest rate in the state. Growth rates and current populations, however, vary dramatically on a town-by-town basis.

Rutland City's population has been steadily declining for the past 30 years, while the population of our rural towns continues to increase steadily. Given the overall slow growth in the Region, this essentially equates to a shift in the population from the central city to the outer, more rural towns. Since 1970, virtually all of the population growth in the Region has taken place outside of Rutland City.



FAST FACT

Rutland County was home to 5787 seasonal homes in 2012, accounting for 17% of the total housing stock

Source: US Census Bureau, 2010



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CONNECTING THE PLAN

Maintaining and enhancing the Region's historic development pattern of compact villages and urban areas surrounded by a working landscape and protected natural resources is a primary goal of the *Rutland Regional Plan.*

This goal is reflected throughout this document.

Seasonal Population

Seasonal residents account for significant numbers of people in many of the communities in Rutland County. Approximately 17% of all homes in the county are for seasonal or occasional use (Source: 2010 US Census). This figure is comparable with statewide averages.

The number of seasonal homes grew dramatically in the 1980s, from 3,161 to 5,671, but declined slightly in the 1990s, likely because of people choosing to convert seasonal homes to full-time residences. Seasonal homes are concentrated in the lakes and Green Mountain regions of the county.

Projected Population

The county's population is projected to remain fairly steady over the next 15 years, with an expected increase of only 2% by 2020. While Rutland County is still projected to have about 10% of the overall state population in 2020, its growth rate will likely lag behind other areas of the state due to outmigration of young workers seeking more diverse opportunities. Rutland County's projected growth rate is the second slowest in the state, with counties in the northwestern part of the state expected to see 15 to 20% increases in their populations by 2020.

RUTLAND COUNTY POPULATION 1970-2010



U.S. Department of Commerce: Census Bureau, Federal Reserve Bank of St. Louis

Population Composition

Age: Rutland County, as elsewhere in the state, is aging. The median age for residents has risen steadily over the past 50 years, to 44.3, one of the highest in New England. (Source: 2010 US Census).

Race: Rutland County's population, like much of northern New England's, is predominantly white, with no other race accounting for more than 1% of the total. The most commonly reported ancestries are English, French, and Irish, with large German, Italian, Polish, and French Canadian lineages as well. (Source: 2000 US Census, SF 3)

Household Composition

Rutland County's homes have changed significantly in the past several decades. Most dramatic is the decrease in the size of households from 3.34 people in 1970 to 2.28 in 2010 (Source: 2010 US Census).

This overall trend reflects a series of individual trends created because of changes to both the population and social structure of the Region (Source: 2010 US Census):

- Between 2000 and 2010, the number of people living alone increased by 9.5%, to 7,838.
- Also between 2000 and 2010, the number of single-parent households decreased by 1%, to 2,140.
- In 2010, 26% of households had children under 18, down from 30% in 2000.

Re Adopted June 19, 2018

Single family, wood-framed homes are the main feature of the Region's built environment. Nearly two-thirds of the county's 33,768 housing units in 2010 were single family homes, with the remainder split among two-family homes (10%), mobile homes (7%), and multi-family units. Seasonal homes accounted for approximately 17% of the total (Source: 2010 US Census).

The present style and distribution of homes in the Region is greatly influenced by history. Approximately one third of the current housing stock in Rutland County was built before 1940 (Source: US Census Bureau). Relatively small "New England" homes, many with slate roofs, are present in every hamlet and village. Current and former farmhouses and barn structures dot the rural areas. Larger, historic homes associated with the Region's marble, slate, and other early industries are present in several communities, including Rutland, West Rutland, Poultney, and Danby. The Town of Proctor is home to large numbers of former Vermont Marble company homes.

Homeownership rates have remained virtually unchanged throughout the Region at approximately 70% since 1970. The rate of new, year-round housing construction has fluctuated over that same time period. After a decade of strong growth between 1980 and 1990 (5,490 total new units), a substantially lower rate of new housing growth marked the last decade. Construction of new housing units were down 35.8% for the 1990s. New rental housing units were down 67.2%.

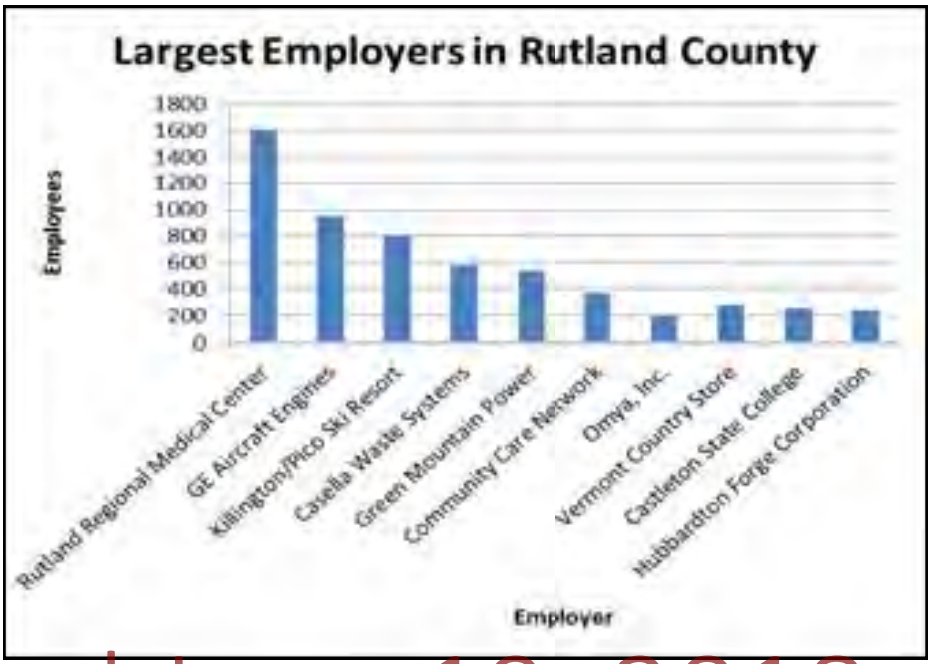
ECONOMY

Rutland County is known for its agrarian and industrial roots. In the 18th century, sheep (and later cattle) farming mixed with timber production were the mainstays of the Region's economy. Later in the 19th century, marble quarrying and processing, and slate mining and processing served as the backbone of the Region's economy. Vestiges of these early industries remain today; several slate mines and one marble quarry operate today and make use of the rail lines originally laid for them.

For the most part, with the notable exception of agriculture, these industries are no longer the primary economic forces in the Region. Today, the Region's economy is fairly diversified and includes a series of small, mid-sized, and large enterprises. The largest include GE Aircraft Engines, Omya, Inc., Killington Ltd, the Rutland Regional Medical Center, other small manufacturing and service-based businesses, state and local government, schools, and four colleges (Castleton State College, Green Mountain College, College of St. Joseph, and the Community College of Vermont).

Employment Characteristics

In 2010, Rutland County was estimated to have had a total residential employment of 30,650 (Source: 2010 US Census). Overall job growth has been slow over the past 25 years. The county added 5,700 jobs during the 1980s, but only 1,500 new jobs since 1990. The county's job growth rate since 1990 has been less than a third that of the state.



Source: Rutland Economic Development Corporation



FAST FACTS

Between 1980 and 2000, the number of workers age 18-29 declined by one-third, to just 13% of the Region's population.

Between 1980 and 2000, the number of workers aged 45-64 increased by 45% and in 2000 accounted for 26% of the population.

In 2000, 25% of all householders in Rutland County were 65 or older. Statewide, just 20.9% of householders are over 65 years of age

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FAST FACT

Fast Fact:

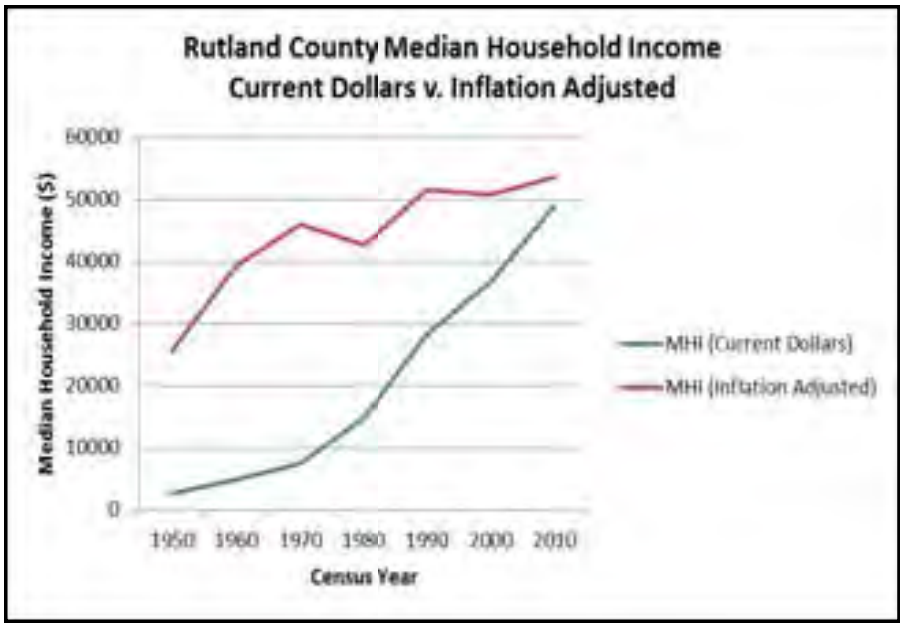
The occupational makeup of the Region is as follows:

- Professional & Managerial (34.7%)
- Sales & Office (22.7%)
- Production & Transportation (13.3%)
- Service (18.4%)
- Construction, Extraction, & Maintenance (10.9%)

Source:2008-2012 U.S. Census

There is evidence that this may be changing, however. According to some major local employers, a large number of people holding good-paying, wage-earning jobs are scheduled to retire in the next five years. The types of jobs that will be opening include manufacturing, management, and health care positions (such as nurses). This is creating an opportunity for many of the younger people seeking employment outside of the service sector. There have been some signs of growth in the creative economy sector as well. Self-employment rates are quite high in many of our Region's towns and a total of 8.1% of the county's labor force (2497 people) reported to be self-employed in the 2010 US Census.

Overall trends in employment indicate likely continued de-industrialization along lines similar to those nationwide. In the earlier days, large numbers of workers were working in factories that manufactured scales, farm implements, lumber and wood products, stone, clay, glass, and finished marble products. In the last decade, the service sector has outstripped manufacturing job growth, followed by the wholesale and retail trade industry. This could also, in part, be due to the influence of new technologies, which make it simpler to automate many of the manufacturing jobs that humans previously performed.



Source: U.S. Census Bureau

Location of Employment

Rutland City was home to 46% of the jobs in Rutland County in 1999. Other large centers of employment included Killington, Rutland Town, Brandon, Clarendon, Castleton, Fair Haven, and Poultney. Together, they accounted for another 35% of the county's jobs.

In 2000, eighty-percent of the jobs located within Rutland County were filled by Rutland County residents. There are a number of notable exceptions that people frequently note such as seasonal agricultural and tourist-related (ski industry) jobs filled by workers recruited from other countries. Employers argue it has been difficult to fill those types of full-time, but seasonal, positions with local residents.

Some of the strongest sectors in this Region include mining, wood product manufacturing, and nonmetallic mineral product manufacturing.

Wages and Income

In 2010, the per capita income for Rutland County was estimated to be $26, 368, only 91% of Vermont per capita income as a whole (Source: US Census Bureau).

Overall, household income has followed a similar trend. Average household incomes across the county have gradually lost ground to the state over the past 34 years. In 1980, Rutland County's median income (MHI) was nearly identical to that of the state. In 2010, median household income for Rutland County was $48,968 as compared to Vermont's $54,168 (Source: US Census 2010). There is, however, a good deal of variation in MHI within the Region, with Shrewsbury having the highest median household income at $69,205 and Wells with the lowest at $41,058.

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PHYSICAL ENVIRONMENT

The Rutland Region contains four distinct geographic areas with different bedrock, soil, and water features. The physical characteristics of each area greatly influences each section of this *Plan* and are critical to understanding past, current, and future conditions. See the profiles at the end of this chapter.

Climate

The Rutland Region's climate is characterized by wide daily and annual variation in temperatures and precipitation. The western half of the Rutland Region tends to be much warmer than the eastern half, due in part to the differences in elevation. This variation, as with elsewhere across the northeastern United States, influences multiple aspects of life, including agriculture activities, business, recreation, tourism, transportation, water supply and disposal, and wildlife activity.

Weather Patterns

The average annual rainfall in Rutland County is 40 inches, spread throughout the year and prone to occasional flooding due to narrow valleys and steep hillsides (Source: NOAA). Higher elevations (Green Mountain Forests) receive more than 50 inches of rain. The northwestern section of Rutland Region receives the least rainfall, varying between 34 and 38 inches. Nearly three quarters of Rutland Region receives between 38 and 42 inches of rain. Rutland County also receives a large amount of precipitation as snow, with an average of 73 inches of snowfall per year (Source: NOAA).

The Rutland Region lies in the path of the prevailing westerly winds coming from the northwest in winter and the southwest in summer. Winds from the northwest are dry and extremely cold and blustery during winter. Air coming from the southwest is mild and humid and is responsible for much of the rain and snowfall.



RRPC Staff

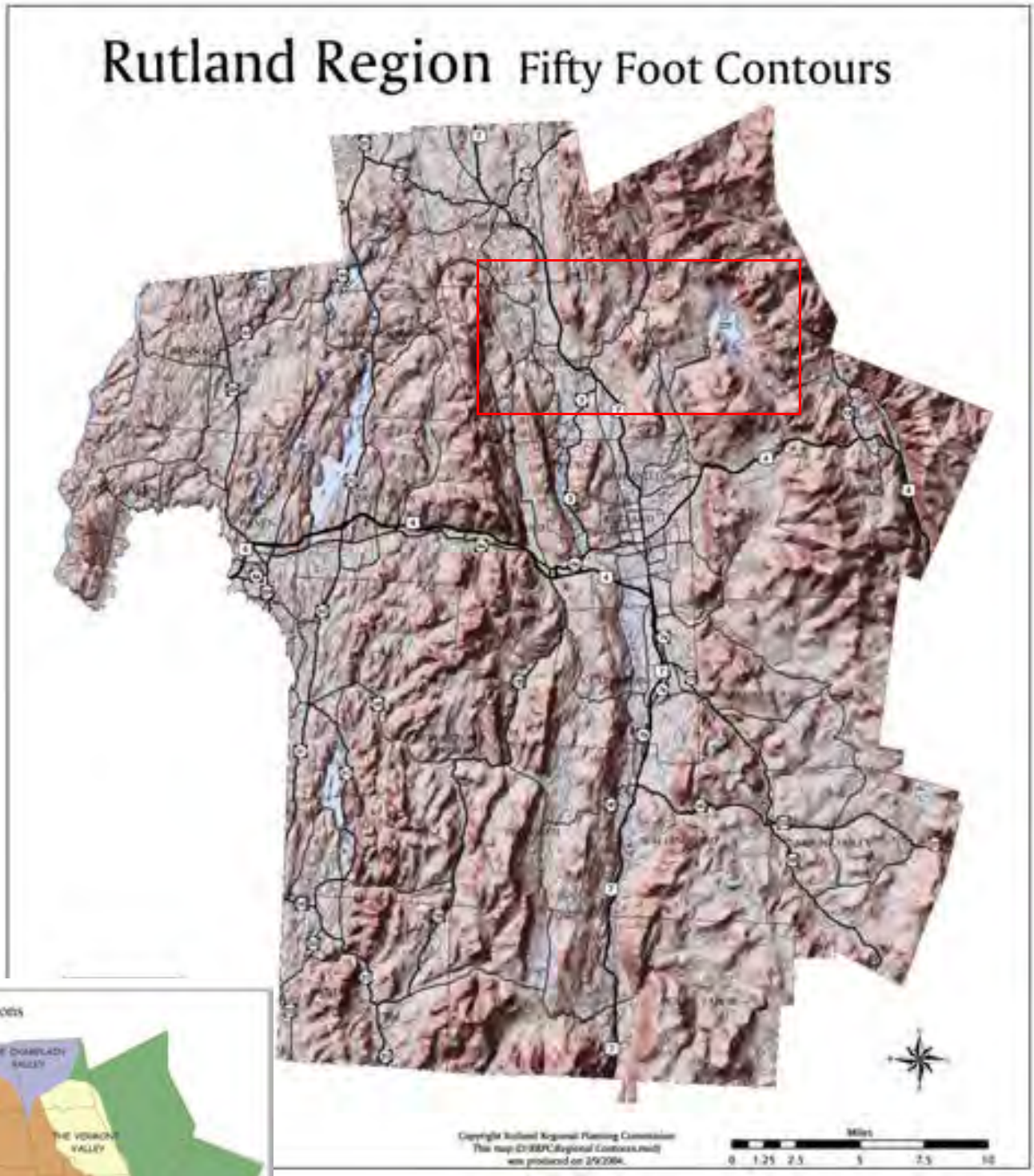


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Economic activity takes place in a variety of settings within Rutland County. Among them are Danby's village center, (above) and downtown Rutland City

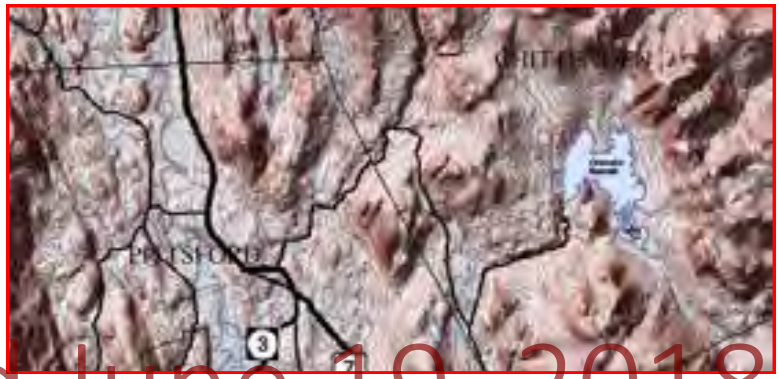
During August 28-29, 2011, Vermont also experienced Tropical Storm Irene, which dropped between 3"-7" of rain across the entire state and caused millions of dollars in damage (Source: Vermont Agency of Natural Resources). Irene changed the face of Vermont, and now all Regional Plans must include chapters on disaster resiliency.

Re-Adopted June 19, 2018





ENLARGED DETAIL OF CONTOURS MAP



Re-Adopted June 19, 2018

Biophysical Regions*: The Southern Green Mountains

Location:

The Southern Green Mountains form most of the eastern border of Rutland County and extend southwards into Massachusetts. (The Northern Greens begin in the Town of Chittenden and extend northward the length of the State).



RRPC Staff

Green Mountain National Forest, Mt Tabor

Primary Characteristics:

- Mountainous, rising eastward from the Otter Creek to form a consistent range.
- Contains several peaks above 3,500' elevation, including Shrewsbury, Pico, and Killington peaks
- Land is primarily on slopes exceeding 20%, with a handful of plateaus in the various towns.
- Two breaks cross the mountain range (where US Route 4 and Vermont 103 are located).
- Home to the Green Mountain National Forest, State Forests and Parks, and other significant conserved land.

Geology and soils:

Precambrian rocks predominate the southern Green Mountains. A narrow band of Cheshire Quartzite occurs along the western boundary. Deep glacial till blankets most of the Southern Greens, except for the highest elevations and steepest topography where there is exposed bedrock. In addition, outwash deposits and glaciofluvial kame deposits are common in river valleys.

Water, vegetation, wildlife:

- The Southern Greens, in Rutland County, feed water principally to the Otter Creek, though eastern slopes feed the Connecticut River. Small ponds are dispersed throughout the area in plateaus. Chittenden Reservoir, an artificial impoundment, sits in a valley between mountains in the region's northeast corner.
- Vegetation is a mix of Northern Hardwood Forests, Montane Yellow Birch-Red Spruce, Montane Spruce Fir Forest, and Subalpine Krummholz forests, depending upon elevation. Particular features include the Cape Old Growth Hardwood Forest in Chittenden and Goshen, Blue Ridge Bog in Chittenden, Gifford Woods in Killington, White Rocks in Wallingford, and several high elevation, sensitive plant communities.



RRPC Staff

Meadowlake Drive in Mendon

- Mammals include deer, black bear, bobcat, fisher, beaver, and squirrel. Warblers and thrushes are common birds.

Settled Areas:

Concentrated development has occurred primarily along the two major transportation corridors, US Route 4 and Vermont 103. Two ski resorts, and associated tourism-based businesses, have established themselves in Killington. Other areas through the Green Mountains have been attractive for large-lot, secluded residential development, silvicultural activity, and the continuance of historic villages. Additionally, much of the land within the Green Mountains is owned and operated by the National Forest Service for wildlife management or forestry.

Land Use Constraints:

Steep slopes, poor soil drainage, difficult access, and short growing seasons have historically limited development in these areas.

*Information for this section is drawn in part from *Wetland, Woodland, Wildland: a Guide to Natural Communities of Vermont.* Elizabeth Thompson & Eric Sorenson, Vermont Department of Fish and Wildlife and The Nature Conservancy, 2000

Re-Adopted June 19, 2018

Biophysical Regions*: The Vermont Valley

Location:

The Vermont Valley is located in a narrow valley between the Green and Taconic Mountains, running north-south through the approximate center of Rutland County.



RRPC Staff

Overlook of Rutland City

Primary Characteristics:

- Otter Creek, the primary water body in the county, flows north through the center of the Valley.
- Slopes are generally gentle, with good soils for various forms of land development
- The Vermont Valley is the main transportation and development corridor in the county.

Geology and soils:

The valley's bedrock is mostly Ordovician in age. The valley floor is comprised of calcareous rocks (limestone and marble), deposited as marine shells and fragments in a shallow sea that once covered the area. Deep and well drained soils are common through much of the valley.

Water, vegetation, wildlife:

- The Otter Creek's headwaters just south of Danby in East Dorset. This river, and its tributaries, including the Clarendon River, the Moon Brook, Cold River, and Mill Brook, are the primary surface waters in the valley. Wetlands are also common. Lakes and ponds are uncommon.
- Vegetation is a mix of active agricultural land, deciduous and coniferous trees, and several rare plant colonies in Proctor, Pittsford, and Brandon in wetland areas.
- Wildlife in the Vermont Valley includes several small mammals and birds common to the northeast. The area is a travel corridor for many mammals.

Settled Areas:

The Vermont Valley is home to Rutland City, the region's most populous community, as well as three of the county's larger communities. Development is concentrated in the general area served by the confluence of US Routes 4 and 7. This area is also the least mountainous part of the county, adding to its historic attractiveness for development. US Route 7, which runs north-south through the valley, is the state's primary western transportation corridor. Village centers are spread approximately six-ten miles apart and include Brandon, Pittsford, Rutland, Wallingford, and to a lesser extent, Danby-Mount Tabor.



RRPC Staff

Farm in Rutland Town

Land Use Constraints:

Wetlands and floodplains lining the Otter Creek have limited development in some parts of the Vermont Valley, particularly in the northern and central parts of the county. The Valley has otherwise been among the more developable areas of the county and the state.

*Information for this section is drawn in part from *Wetland, Woodland, Wildland: a Guide to Natural Communities of Vermont.* Elizabeth Thompson & Eric Sorenson, Vermont Department of Fish and Wildlife and The Nature Conservancy, 2000.

Re-Adopted June 19, 2018

Biophysical Regions*: The Taconic Mountains

Location:

The Taconic Mountains run north-south along the center of Rutland County, splitting the Vermont and Champlain Valleys. The range begins in Hubbardton and extends southwards to the Massachusetts border.

Primary Characteristics:

- Mountains of up to 3,500 feet in elevation with steep slopes intermixed with upland plateaus
- Valleys in Ira, Tinmouth and Middletown Springs provide room for settlement and highway access, as do the larger towns of Poultney, Fair Haven, and Wells.
- Several lakes immediately west of the mountains
- Traditional activities in the Taconics include agriculture, forestry, and marble extraction.



RRPC Staff

View of Dorset Peak from Danby Four Corners

Geology and Soils:

Metamorphosed mudstones make up the majority of the Taconics rocks. They include slate, phyllite, and schist. Bands of slate are home to some of the most colorful forms of the rock in the world. Limestone and marble deposits are present and occasionally visible in the Tinmouth Valley and in Dorset Mountain. Soils include lake and alluvial sediments as well as occasional gravel deposits.

Water, Vegetation, Wildlife:

- Several water courses, including the Clarendon River and Poultney River begin in the Taconic Mountain range and lead towards the lower Poultney River to the west of the Otter Creek to the east. The Tinmouth Channel, a Class I wetland lies in a large upland valley. The largest lake fully within Vermont's borders, Lake Bomoseen, is located west of the mountain range, as are Lake St. Catherine, Lake Hortonia, and several smaller lakes and ponds.
- Vegetation is a mix of active agricultural land, deciduous and coniferous forestland, and several rare plant colonies found in the Tinmouth Channel, cliff areas, and elsewhere.
- The Taconics are home to a significant bear corridor stretching from Dorset Mountain in Danby northwards, pockets of deer, and a wide range of smaller mammals, birds, vertebrates, and invertebrates.

Settled Areas:

No large villages are located within the Taconics, due in large part to difficult access from larger population centers. Middletown Springs is the largest village in the area; its initial growth occurred thanks to a mineral spring discovered in the mid 19th century. Most other settlements in the Taconics— in Tinmouth, Ira, and Danby, are considered hamlets.



RRPC Staff

Lake St. Catherine in Wells

Land Use Constraints:

Severe slopes, poorly drained soils, and poor access have limited development throughout much of the Taconic Mountains.

*Information for this section is drawn in part from *Wetland, Woodland, Wildland: a Guide to Natural Communities of Vermont.* Elizabeth Thompson & Eric Sorenson, Vermont Department of Fish and Wildlife and The Nature Conservancy, 2000

Re-Adopted June 19, 2018

BIOPHYSICAL REGIONS*: THE CHAMPLAIN VALLEY

LOCATION:

The Champlain Valley extends along Vermont's western border from Franklin and Grand Isle Counties, along the length of Lake Champlain. It encompasses the western edge of Benson and West Haven in Rutland County.



RRPC Staff

Benson's Landing on Lake Champlain

PRIMARY CHARACTERISTICS:

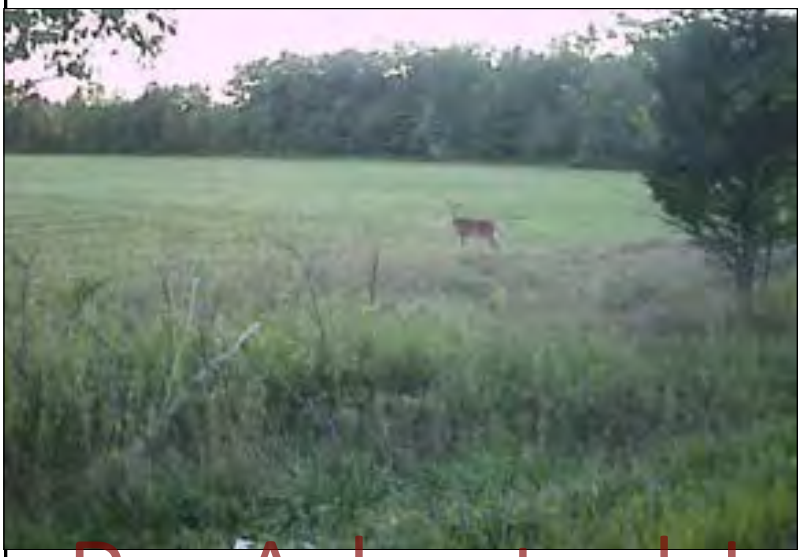
- A wide, gently sloping valley bordered by Lake Champlain and the state's primary mountain ranges, the Greens and the Taconics
- Several small rivers snake through the landscape, including the Mettowee, Poultney, and Hubbardton.
- The Champlain Valley is home to some of Rutland County's most active agricultural land.

GEOLOGY AND SOILS:

The Champlain Valley is home to significant sedimentary deposits left by a former glacial lake (Lake Vermont) and salt-water sea (Champlain Sea). Limestone, dolomite, and shale dominate the region's bedrock. Calcareous soils are common on the lake's edges and are home to a wide array of natural communities. Upland glacial till and fine valley clay are common throughout the area.

WATER, VEGETATION, WILDLIFE:

- Lake Champlain is the principal water feature of the area, but it is also home to a number of rivers and streams, including the Mettowee and Hubbardton Rivers in Rutland County, and a number of wetland areas.
- Vegetation is dominated by agricultural activities, though clayplain forests—home to red maple, beech, hemlock, oak, white ash, and shagbark trees – are present in northwestern Rutland County and parts of Addison County.
- The Champlain Valley provides habitat for a variety of migrating waterfowl. Marsh fowl, barn owls, and sandpipers are among the resident birds. Mammals include white tailed deer, gray squirrel, and numerous rodents. Amphibians are common in vernal pools of clayplain forests. Eastern timber rattlesnakes, spiny softshell turtles, and five-lined skinks are among the rare reptiles found in the area.



RRPC Staff

Deer in a West Haven field

SETTLED AREAS:

The Champlain Valley is home to Benson and West Haven. They host of the Region's farms, and a number of lakeshore homes, both year-round and seasonal. Early settlement in the area was based upon agriculture.

*Information for this section is drawn in part from *Wetland, Woodland, Wildland: a Guide to Natural Communities of Vermont.* Elizabeth Thompson & Eric Sorenson, Vermont Department of Fish and Wildlife and The Nature Conservancy, 2000

Re-Adopted June 19, 2018

Chapter 3: Future Use of Land

INTRODUCTION

This section is the culmination of the entire *Rutland Regional Plan*. Obstacles and solutions identified in each of the previous sections are brought together to create a broad image of a sustainable future for the Region. It is hoped that users of this *Plan* apply the ideas towards cohesive future land development.

CURRENT CONDITIONS

The Rutland Region's settlement patterns are diverse. Rutland City is the prime urban area, centrally located in the Region, nestled in a valley between tight mountain ranges. It is bordered by several communities that contain both urban and rural elements. Elsewhere in the Region – 10-20 miles outside of the urban area, are a series of five sub-regional centers.

Outside of these centers, and in several other communities in the Region, smaller villages and hamlets are present thanks in large part to historic settlement patterns. Working rural landscapes, large tracts of open or forested land, and National Forest Land dominate the remainder of the Region.

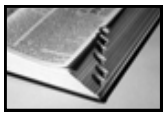
Over the past 50 years, land use has changed dramatically. Land that was once in pasture and agriculture has grown into forests, while traditional compact settlement patterns, and distinctions between rural and village areas have become less clear as development has spread outwards.

FUTURE TRENDS

The slow transformation of the landscape will likely continue. Uses of agricultural lands will evolve to meet changing demands. Development of land will continue to take place, though, according to population forecasts, not at a rapid pace.

Current trends that are likely to continue into the future include:

- Commercial uses are becoming larger and creating impacts. "Big box" stores have entered the local retail market over the past decade and affected the way in which people shop and travel to shop. They generate significant traffic flows, require large parking areas, and make a greater visual impact than their predecessors. Stormwater run-off has also become a concern.
- Residential development is spreading outward, with the majority of new



DEFINITIONS

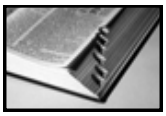
Future Use of Land – the patterns by which development of land is projected to take place in a given area .

SCOTT'S MAP OF RUTLAND COUNTY, 1854



Scott's Map of Rutland County, prepared by J. Chase, Jr., 1854

Re-Adopted June 19, 2018



DEFINITIONS

DENSITY: The range, scale magnitude or concentration of activity affecting the land use, impacting traffic flow, commercialism, and overall land use.

CONNECTING THE PLAN

The Future Land Use Chapter is the culmination of the entire Regional Plan. For background, look at the regional Profile.

homes being built on rural sites outside of traditional village or hamlet areas.

- Suburban type development, with less vernacular architecture, is also becoming more prevalent. Prime agricultural land is being subdivided and used for residential purposes.

Some towns have also been instrumental in promoting new development and redevelopment within their center, through private initiatives and public incentives, like grant programs such as the village/town designation, transportation enhancement grants, and municipal planning grants.

At the heart of the land use issue is a concern that development patterns in the form of low density, auto-dependent, discontinuous strip development is eroding the character of the area.

It is expected, based on current development practices in the Rutland Region and across the country, that this trend will continue.

MEETING CURRENT AND FUTURE NEEDS

The challenges presented by current development are complex.

There is a link between land use and towns' regulatory and nonregulatory controls. The quality of these regulations and plans, consistency with the adjacent towns' plans and that of the *Regional Plan* provide the framework for future land use.

Broad goals and specific actions presented throughout the *Regional Plan* provide the Regional Planning Commission and all users of this document with tools to address the issues highlighted above from a variety of perspectives.

The goals for future land use are the foundation of the Region's planning and development program. They are intended



National Agricultural Imagery Program, 2003, printed from the RRPC's GIS system

This aerial photograph of Fair Haven's village illustrates a compact village surrounded by working farm and forestland

Re-Adopted June 19, 2018

to be applied throughout the Region along with the *Plan's* goals for housing, economic development—in several forms, transportation, public facilities, natural and cultural resources, and energy, among others .

FUTURE USE OF LAND GOALS

The following broad goals for the future use of land in the Rutland Region are presented with the intent that they be read and considered together, as whole, and not as a series of individual statements:

- To maintain and improve the accessibility, livability and viability of existing built-up areas.
- To protect the character of rural areas and resource areas by discouraging scattered development and incompatible land uses.
- To promote competitive and sustainable agricultural, forestry, mineral extraction, and other practices that make use of the Region's natural resources.
- To encourage and facilitate development in existing and future growth centers appropriate to the scale of the centers.
- To promote intensive land uses and development only in areas where adequate public services, facilities, and employment centers are available.
- To protect the natural environment and its economic, ecological, sociological, psychological and aesthetic benefits.

RUTLAND RPC ACTIONS

In addition to supporting activities and developments that contribute to individual communities and the Region, and which help meet the needs identified in this Plan, the Rutland Regional Planning Commission shall:

- Work with communities to develop municipal plans and regulations that promote compact development, mixed use villages and town centers, and productive working landscapes.
- Work with towns to implement their plans through regulatory and non-regulatory controls
- Provide towns with GIS data so when development proposals are presented, towns have the most up-to-date information to make informed decisions.
- Work with communities to retain vibrant village centers.
- Work with interested communities to successfully tie commercial and industrial uses into existing land use patterns.
- Provide ongoing education to local officials and boards on best practices for the review of development proposals.
- Participate in Act 250/Section 248 hearings for projects having Significant Regional Impacts.



FOOD FOR THOUGHT

"Density is an emotional thing masquerading as a scientific ratio.

"We always hear from people that they want a cafe, a bakery, and a bookstore. But all these businesses depend on a certain amount of street traffic. They're a function of density.... you need a certain amount of density at a certain household income within a certain radius to support a grocery store."

– architect Alex Seidel



FAST FACT

Between 1997 and 2002, the Rutland Region lost 7,-000 acres of agricultural land (roughly half the size of Sudbury or Wells) to development.

– US Census of Agriculture

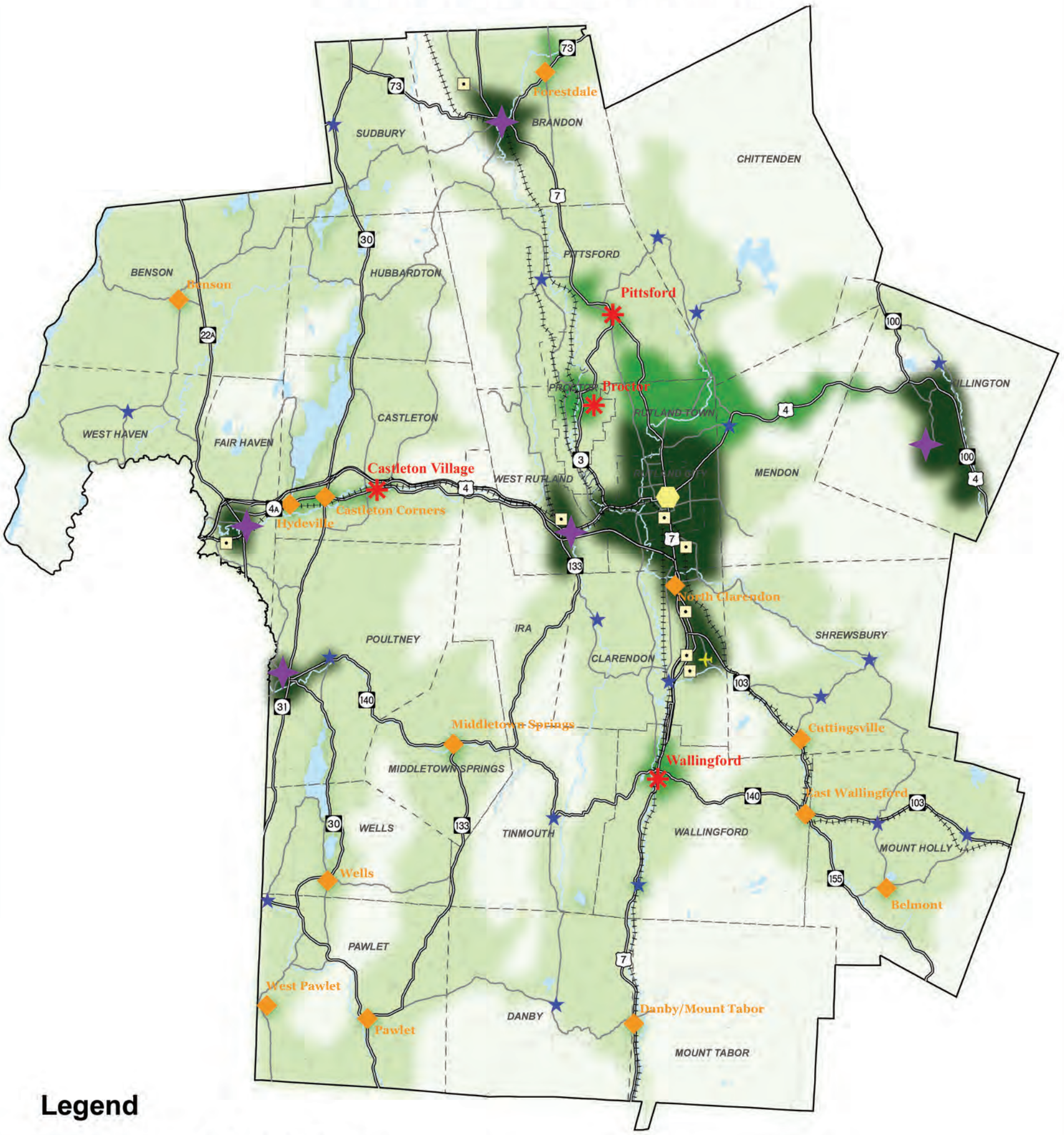


RRPC Staff

Villages such as East Poultney are important features of the Region's landscape.

Re-Adopted June 19, 2018

Rutland Region
Future Use of Land



Legend

- Development Constraint Areas
- Low Density Development
- ★ Hamlets
- Medium Density Development
- ◆ Villages
- ✱ Town Centers
- High Density Development
- ⬢ Urban Center
- ✦ Sub-Regional Centers
- ⊡ Business / Industrial Parks
- ✛ Rutland State Airport

Note:
This map is a generalized land use map. It is not intended to regulate actual uses in specific geographic areas, but instead reflect potential land use patterns. This map is for planning purposes only. Determination of appropriate land uses for a specific site necessitates thorough review of the local plans and by-laws as well as the policies of the Regional Plan. For more information, please contact the RRPC at (802)775-0871 or (800)464-7900, or at www.rutlandrpc.org.

Created January 24, 2006

Re-adopted June 19, 2018

Re-Adopted June 19, 2018

The Future Use of Land Map

The *Regional Plan's* Future Use of Land Map is a general guide for the forthcoming growth of the Region. It is based upon analyses from throughout the *Plan* and attempts to balance competing and complementary goals into a single image.

The map is intended to be conceptual; boundaries between area are imprecise. Specific sites and their prescribed uses are addressed locally.

The map is divided based on preferred densities of development intensity of activity. These include four generalized land use areas, a series of labels for the Region's town centers and villages. Together, these designations promote a cohesive pattern of growth and conservation that advances the intent of the *Rutland Regional Plan*.

Why the Labels and Land Use Areas Exist

The map is based on an analysis of the location, magnitude, and potential of multiple features that make different areas more or less suitable, with a goal of making efficient use of limited infrastructure and maintaining the unique qualities of the Region.

For example, business and industry rely on the presence of public water and sewer, close proximity of major transportation networks, and, in some cases, access to markets for selling their goods.

By the same token, due to physical site limitations (steep slopes and wetlands, among others) and relatively high costs incidental to land development in certain areas, much of the Region is not readily available for development. These areas are suited for less dense and intense development, in keeping with the Region's rural environment.

Additionally, deep, well drained soils, proximity to good roads, and access to markets as key elements of a successful agricultural future for the Region. The *Plan* is also intended to provide for the long-term sustainability of resources, open space and scenic lands.

Finally, the *Plan* seeks to promote housing and small business development within and adjacent to villages that is in keeping with their unique histories.

The attached map depicts both an efficient use of land and a shared vision for the future based on public input. It should be used as a guide for future development of the Region. Planned growth and development is directed to those areas most suitable for such development and away from areas in which the proposed growth would be incompatible, due to the availability of services or protection of resources.

Why the Map is Blended

Boundaries between the four land use areas are intentionally blended to underscore the regional nature of the map and to promote growth and development that is within and contiguous to existing villages, hamlets, town centers, and sub-regional centers.

Using the Map's Legend

High Density Development Areas



Areas shown as "high density" on the map are those most suitable for large-scale activity, within and in areas contiguous to the Region's downtowns, sub-regional centers, and industrial centers. They share a number of common features which make them attractive and suitable for these types of activities:

- Ease of access to major transportation routes
- Availability of utilities, including public water and sewer and high speed telecommunications
- Historic and current areas of concentrated population, business, and education
- Less critical natural resource and wildlife areas

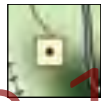
These areas include the following designations within the Region:



Urban Center– The Region's economic, population, education, and service focus areas. Businesses and services in this area draw their employees and clients from throughout the Region. Many of the Region's largest employers are located in area, making use of the conglomeration of people and services.



Sub-Regional Centers-Areas where central public utilities for water and sewer are available and where there exists a central location or locations for commercial activities, schools, and civic activities for the town and surrounding towns.



Industrial / Business Parks – Areas designated by towns around

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the Region and by the Rutland Economic Development Corporation as concentrated locations for business and industrial development. Parks have been designated in Clarendon, Brandon, Rutland City, Rutland Town, West Rutland, and Fair Haven.



RUTLAND STATE AIRPORT- The Region's principal airport offers commercial air travel and general aviation services. It is closely linked to adjacent industrial parks.

For the future:

Development in high density areas, including downtowns, sub-regional centers, and industrial / business parks should be concentrated to make efficient use of the Region's most concentrated infrastructure.

MEDIUM DENSITY DEVELOPMENT AREAS



Areas shown as "medium density" on the map include land in or adjacent to town centers, villages, and areas concentrated immediate around the Region's major lakes and ponds—Lake Bomoseen, Lake St. Catherine, Lake Hortonia, Chipman Lake, and Lake Sunrise. These areas serve a number of purposes and are likely to face the most change in the coming years. These areas are, as a general rule served by some but not all of the features common to "high density " areas.

These areas include the following designations within the Region:



TOWN CENTERS- Areas where central public utilities for water and sewer are generally available and where there exists a central location or locations for commercial activities, schools, and cultural and civic activities for the town.



VILLAGE CENTERS- Areas that have developed into small community centers and normally consist of mixed land uses at medium densities. They also generally have consolidated groups of structures located on or near a major highway.

For the future:

Development in medium density areas should serve to reinforce neighborhood-scale town centers and villages and make efficient use of limited infrastructure and space. Where medium density activities already exist outside these centers, future growth and development should seek to create more efficient use of land and infrastructure.

LOW DENSITY DEVELOPMENT AREAS



Areas shown as "low density" on the map are Rutland County's working landscapes. They include areas with small, historic hamlets as well as actively farmed or logged terrain. Features they share:

- Limited public utilities
- Productive agricultural soils in lowlands
- Little concentration of population and business
- Greater critical natural resources

These areas include the following designations within the Region:



HAMLETS- Areas that contain small groupings of homes and locally supported stores and businesses. Generally, hamlets are not trade centers, nor do they contain community water supply or sewer systems.

For the future:

Agricultural and silvicultural activities should continue to dominate the Region's low density areas. Development in low density areas should be unobtrusive and maintain the rural character and scale of the locale.

DEVELOPMENT-CONSTRAINED AREAS



Areas shown as "development-constrained" have significant limitations upon current or future development because of conservation easements, public ownership, or severe natural limitations. These include lands owned or overseen by the National Forest Service, the State of Vermont, or land trusts, as well as large tracts of land that are on slopes over 25% grade or are wetlands.

For the future

Conservation of the natural landscape and careful management of lands is sought for these areas. Development should remain extremely limited.

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Chapter 4: Housing

INTRODUCTION

Housing is a main feature of the Rutland Region's built environment. Homes, infrastructure and utilities built to support them, are the basis for the majority of all development in the Region.

Needs can vary widely by individual households and by community, but high quality, affordable housing is a key issue throughout the Region.

This chapter is focused on the link between housing and land use, transportation, education, and economic development, and to provide a tool for town officials, non-profits, developers, and individuals to meet each town's unique housing need.

CURRENT CONDITIONS

Number and Type of Housing Units

The county's housing stock includes year-round single family homes, small- and mid-sized multi-family apartments, senior housing facilities, vacation homes, mobile homes, and the upper stories of commercial buildings.

The 2010 Census recorded a total of 61,642 residents and 33,768 housing units in Rutland County. 73 percent of residents live in owner-occupied units and 27 percent are renters. 17 percent of the housing units are seasonal and 9 percent are vacant. There were 25,984 households in the County. This figure has increased by 1 percent since 2000, despite a 3 percent decline in population. (2010 US Census).

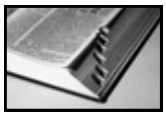
The City of Rutland had approximately 150 vacant structures in 2010. About one third of the vacant structures are located within 200 feet of an undesirable land use such as a prison, rooming house, high-traffic corridor, industrial area, or flood-prone area. (Rutland VT Housing Needs Assessment and Market Study, 2012).

Of the county's housing units: 66 percent are in buildings with one unit (lower than the state rate of 70%); 9 percent of the units are in buildings with two units (higher than the state rate of 6%); 18 percent are in buildings with three or more units (higher than the state figure of 17%) and 7 percent are mobile homes (equal to the state figure). (VT Housing Data).

From 2000-2010 in Rutland City, the number of households fell less rapidly than the population, meaning that on average households decreased in size during this period, mimicking a national trend towards smaller households. The average household size in Rutland County in 2010 was 2.28 people, compared to the State of Vermont average of 2.34. Both of these figures represent a 9 percent decline since 1990.

Over a third of the Region's homes are of pre-World War II construction. The remaining two thirds were built at a relatively even pace, with the biggest gains during the 1970s and 1980s. The 5% increase in housing stock during the 2000s is the lowest housing unit increase since the 1940s. *Only 1% of the county's housing stock has been built since 2005.* (2010 Vermont Housing Needs Assessment).

The county's housing is relatively old compared to the rest of the state. The median year a structure was built for occupied housing units in Rutland County



DEFINITIONS

AFFORDABLE HOUSING – Housing is generally considered to be "affordable" to a household when it is paying no more than 30% of its income for housing costs (rent, mortgage, electricity, water, etc.).

CONNECTING THE PLAN

For more information about the Region's development patterns and demographic data, turn to Chapter 2: Regional Profile.



FAST FACT

According to the US Census, there are 131,704,730 housing units in the United States. 65% are owner-occupied.

BY THE NUMBERS: RUTLAND COUNTY HOUSING

	Rutland County	State of Vermont
Total Housing Units	33,768	322,539
Owner-Occupied Units	18,147	181,407
Renter-Occupied Units	7,837	75,035
Seasonal Units	5,787	50,198
Vacant Housing Units	3,089	25,132

Source: US Census Bureau (2010)

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CONNECTING THE PLAN

Housing is Goal #11 of the Vermont Planning and Development Act V.S.A. T24 Chapter 117, specifically, *"To ensure the availability of safe and affordable housing for all Vermonters."*

A Housing Element is also requirement #10 of V.S.A. T 24, Chapter 117 §4382—*The Plan for a Municipality*

FAST FACT

In 2010, Vermont had the 2nd highest percentage of seasonal, recreational, or occasional use homes at 16%. The United States average was 3.5%. 17% of the county's housing units are seasonal.

Seasonal homes are located primarily in towns with significant lakefront property or adjacent to ski resorts and account for over 80% of all homes in Killington and over 40% of the homes in Wells, Mount Holly, and Hubbardton.

Meanwhile, they account for less than 2% of all homes in Rutland City, Proctor, Fair Haven, and West Rutland. [2010 US Census]

is 1964, compared to the State of Vermont median of 1971. The median year built for owner-occupied units is 1968, the median year built for renter-occupied units is 1955. The State of Vermont figures are 1974 and 1959, respectively. (Rutland VT Housing Needs Assessment and Market Study, 2012; VT Housing Data).

The City of Rutland has a significant amount of old housing stock and small multi-unit stock. About half of the stock was built before 1940, and about a third of the stock is in 2-4 unit structures. (Rutland VT Housing Needs Assessment and Market Study, 2012).

New Housing Construction

The construction of new housing units began to decline in the 1990s and fell sharply in the 2000s, after decades of consistent demand. Only six states had slower rates of construction than Vermont between 2007 and 2009. Only 5 percent of the existing housing stock in the state was built between 2000 and 2010, following an average growth rate of 14 percent during the previous three decades.

Newly constructed rental units in Vermont averaged approximately 35 per year from 1995-2005, compared to approximately 100 new units annually for the 20 years prior to that. (Rutland County 2005 Housing Needs Assessment). Since 1990, only 373 new rental housing units have been created (4.9%) in Rutland County. This is compared to a statewide increase of 15% during that same period. (2008-2012 US Census).

The number of housing units in Rutland City grew slightly from 2000 to 2010, even though the number of households declined. This mismatch has pushed the overall vacancy rate up in Rutland City, from 6 percent in 2000 to 8 percent in 2010. (Rutland VT Housing Needs Assessment and Market Study, 2012).

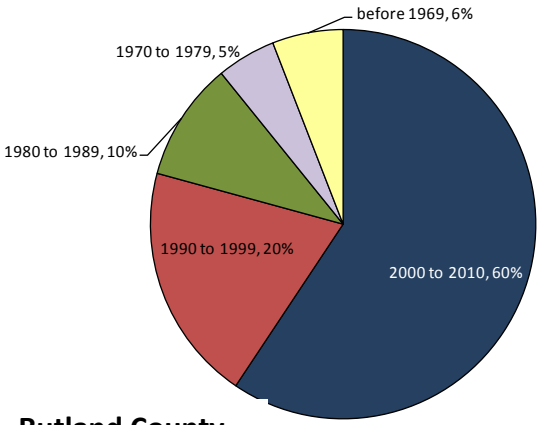
HOUSING'S CONTEXT IN THE BUILT ENVIRONMENT

Housing exists in many different settings throughout the Rutland Region, from farms, to mountain areas, villages and urban sites. These settings represent the different needs and desires of the Region's present and past residents, based on individual preferences and constraints, including cost, safety, accessibility, privacy, and employment.

Housing in the Region can be broadly sorted into three contexts, detailed below. Each corresponds to a different mix and arrangement of housing and other uses of land.

Places Near to Employment, Educational Facilities, or Services

Homes in this context are found in the Region's most populated areas such as: Rutland, Fair Haven, Brandon, and Poultney. These places offer services, employment, and schooling in close proximity to housing. These areas are attractive to people because they provide options for mobility that do not necessarily rely on the automobile and have the widest range of housing types available to their residents. They also put people close to one another and generally have more human interaction and activity present on a regular basis.



Rutland County - Year Householder Moved into Unit

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These areas are also attractive to non-profit housing developers as there is existing infrastructure (sewer/water) and enough residential demand to create developments large enough to generate an economy of scale making the project economically viable. For example, subsidized rental housing is strongly concentrated in the City of Rutland. The city accounts for 61percent of the county's subsidized rental housing units, compared to 28 percent of the county's households and 25 percent of its jobs. Rutland City also makes a convenient location for such housing due to availability of services and amenities.

Population in Rutland County is increasingly concentrated in middle-aged to pre-retirement aged groups. The growing 55 to 64 age bracket is an age where households may begin to shift their housing arrangements and might seek some of the conveniences of an "in-town" lifestyle that these areas provide.

Village Settings with Limited Services

Housing in this context is found in the villages and hamlets of towns such as Proctor, Castleton, Wallingford, Pittsford, Pawlet and Danby. These places offer a traditional form of housing. They differ from one another in size and the scope of their services, but generally provide limited retail, educational and employment functions for households throughout the town. They are attractive to people because they offer some of the amenities of more urban areas while establishing some rural elements such as more separation between homes, less total built area, less traffic, and the other pieces of the small town sense of community.

In these areas, new housing has generally taken the form of single-family dwellings developed by private developers outside of village centers. In these areas the small village centers usually do not provide the residential demand or infrastructure needs necessary to make a non-profit residential rental development feasible.

Rural Areas with Commuting Access to Employment and Services

Housing in this context is found throughout the Region outside traditional villages and hamlets in towns such as Mount Holly, Shrewsbury, Hubbardton, Chittenden, West Haven and Benson. Large tracts of farm and forest land dominate these areas; homes dot the landscape along roads that cross through valleys. These areas are attractive because people can live on or next to large amounts of undeveloped land to use for farming, forestry, recreation, unique views, or privacy. Rural areas are home to both people who commute to work and people who work with the land.

Similar to the village settings with limited services, new housing generally takes the form of single-family dwellings developed by private developers. These areas do not provide the residential demand or infrastructure needs necessary to make a non-profit residential rental development possible.

COST OF HOUSING

Housing costs are among the primary concerns of Rutland County residents. Mortgages, taxes, rents, heating,



Single family homes in an urban setting, on Kendall St. in Rutland City



Housing in each of the contexts described in this chapter places demands on the community for utilities, infrastructure, and services.

The demands will differ by context (for example, more compact housing requires less infrastructure per home but requires more attention to recreational facilities). As communities struggle to contain town costs, they should consider these relationships.



FAST FACT

According to US Census data, Vermont will have an estimated 88,000 additional residents by 2030, a 14 percent increase from 2006. Vermont's senior population (older than 65) is likely to increase by 91,500, effectively accounting for all the state's population growth during this period. [VHFA, 2010]

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FAST FACT

In 1970, the median age in Rutland County was 29. In 2000, it was 39.5. In 2010, it was 43.1. By 2030 it will climb to 44, while the national median age will reach only 39.

Vermont has the lowest birth rate in the nation at 10.4 births per 1,000 of population, compared with 14.2 for the US. [VHFA, 2010]

The changing population distribution, with a significant shift toward older residents, will require housing that is adaptive to multiple needs. 17% of the Rutland County population is 65 or older, compared to 13% nationally. [Rutland, VT Housing Needs Assessment, 2012].

transportation and utility costs spark a great deal of debate and feed many individual and community decisions. The 2012 median household income for Rutland County was $48,190, compared to the State of Vermont amount of $53,422.

In 2012, 41.5 percent of Rutland County householders (owners and renters) paid more than 30 percent of their income for housing, compared to the Vermont rate of 42.5 percent. 18 percent of Rutland County householders were paying more than *half* of their income for housing, which is in line with the state figure of 19 percent (VT Housing Data).

Renters

Median rents have increased 23 percent since 2000. In Rutland County, 35 percent of all renters earn less than $20,000 per year. Currently, 49 percent of Rutland County renters are paying more than 30 percent of household income on housing costs. This is below the State of Vermont average of 52 percent; however, higher than the City of Rutland rate of 47 percent. (2010 VT Housing Needs Assessment).

Twenty-three percent of renters are paying more than *half* of their income on housing costs, compared to the state rate of 25 percent and City of Rutland rate of 22 percent. (VT Housing Data).

The fair market rent for a two-bedroom unit in Rutland County is $825 per month. The State of Vermont rate is $1,007 per month. In Rutland County, to afford this rent an annual income of $33,000 or hourly wage of $15.87 is required in order to not spend more than 30% of income on housing. At the Rutland County mean hourly renter wage of $10.35, an individual has to work 1.5 full time jobs to afford the fair market rent. (National Low-Income Housing Coalition, Out of Reach 2014).

There is a greater supply of rental units per capita in Rutland City, than Rutland County; however, private multifamily rentals in Rutland City are experiencing a decline in value, often with depreciation greater than comparable single-family



A LOT OF FOOD FOR THOUGHT

SEVEN OBSTACLES TO AFFORDABILITY

1. Rent / mortgage

Monthly mortgage or rental payments are the main obstacle to affordability. The causes are diverse, but include land development costs (see below), a lack of units in a particular location or at a particular size, or external pressure from new full or part-time residents.

2. Construction costs

The higher the fixed costs for construction and rehabilitation, the less likely that enough housing will be added to the market. Possible factors causing high up-front costs include:

- Complex septic installation in certain common soils
- Availability of potable water
- Costs of materials
- Permit process: Significant delays and uncertainties in permit requests increase project times and costs
- Regulations that permit only certain types of homes may deter creativity

3. Utility costs

Utility costs including electricity, fuel oil, and telecommunications services fluctuate throughout the year. While fixed costs are higher in Vermont than elsewhere because of the state's rural nature, variable costs may jump or drop depending on weather or international fuel prices.

4. Finance rates

Depending on national economic trends, interest rates on mortgages can have significant effects.

5. Property Taxes

Increases in tax rates may cause home / rental costs to rise (though these must always be weighed against the benefits these taxes provide).

6. Transportation

If a household is forced to own and maintain one or more vehicles or drive long distances for services, this must be added into the equation of affordability. If, on the other hand, a person can walk or take a bus to work, then the costs of living may be reduced substantially.

7. Child care

Working parents with children are faced with the challenge of finding daycare that suits their schedules and budgets.

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housing. In 2010, the median 2-4-unit property sold for approximately $75,000 in the City of Rutland. This median price is 40% lower than the median sale price of a comparable single-family property.

The overall low sale price of these properties suggests that the small multifamily product is not something the market demands, and has contributed to an oversupply of this product. The lack of private investors in multi-family housing contributes to the decline of properties. (Rutland VT Housing Needs Assessment and Market Study, 2012).

Homeowners

Since 2002, the percentage of Vermont households owning their homes has remained above 70%. (2010 Vermont Housing Needs Assessment). The average price of homes sold in Rutland County was $161,208 in 2013, an 8 percent decline since 2006 when the average sale price was $192,557. In Rutland City, prices dropped by a drastic 28% over the same period. This is in comparison to the statewide figures where the prices have increased slightly from $228,318 in 2006 to $229,592 in 2013. (VT Housing Data). Rutland City has become an affordable place for new homebuyers. The Rutland city average sale price is $136,568. (2010 Vermont Housing Needs Assessment).

Even with the leveling off of the housing market during the last six years, median home values of owner occupied homes in Vermont have still increased 30 percent since 2000; due to the large jump in prices before the economic downturn.

In 2012, 34.3 percent of Rutland County householders paid at or above 30 percent of their incomes for housing; for homeowners in the City of Rutland this figure rises to 42 percent. The countywide figure is in line with the State of Vermont average of 33.1 percent. 13.7 percent of Rutland County residents pay more than *half* of their income, which is higher than the state average of 12.1 percent and lower than City of Rutland rate of 15 percent. (VT Housing Data). Mortgage delinquencies have increased significantly since 2005. The percentage of 90+ day delinquent loans in Rutland County increased from 0.8 percent in 2006 to 5.7 percent in 2010. (Rutland VT Housing Needs Assessment and Market Study, 2012).

Federal and State Subsidy Programs

A range of federal and state subsidies exist to reduce housing costs for qualifying residents and for non-profit housing developers to provide below-market cost housing throughout the Region. A total of 1,309 subsidized units are located within Rutland County. 61 percent (801 units) of these units are located in Rutland City, such that 21% of all city rental units are subsidized. (Vermont Directory of Affordable Rental Housing).

The Housing Choice Voucher (Section 8) allows recipients to remit vouchers to landlords in lieu of a portion of their rent. This assistance is divided between project-based assistance and tenant-based assistance and is designed so that a household pays no more than 30 percent or their income on rent. An estimated



New affordable residential rental units in Brandon created by the Housing Trust of Rutland County (RHT)



FOOD FOR THOUGHT

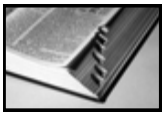
CUMULATIVE EFFECTS: In Mount Holly, new housing construction increased at a moderate pace over the past decade. A total of 170 homes were built at an average of 12 per year. Fifty homes out of the total homes built were considered seasonal residences, almost 30% of the total new housing units.



FAST FACT

More than 70% of all Vermont households own their homes, ranking Vermont among the ten states with the highest homeownership rates. [VHFA, 2010]

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DEFINITIONS

FAIR HOUSING is the right to equal opportunity in rental, sale, and financing of housing under federal, state and local laws.

Local responsibilities under these laws include passing land use regulations that are equitable to all people and promoting the laws and remedies available to current or prospective residents.



FOOD FOR THOUGHT

AFFORDABILITY IS RELATIVE: A single parent earning $30,000 annually may be able to pay for his or her housing unit because they are able to find a cost-effective 2-bedroom unit within walking distance of work.

A dual income family earning $60,000 may not be able to afford their living arrangements, not because of the cost of homes there, but because of a high tax rate and the transportation costs associated with getting to work.



FAST FACT

Rutland County is home to 731 subsidized elderly housing units (located in 10 cities and towns) and 430 subsidized family units (located in six cities and towns). [Housing Data, 2014]

17,500 Vermont households live in housing with rents made affordable through public project-based or tenant-based assistance. About 12,800 units exist in the state.

Two of the largest providers of subsidized rental units are the Rutland Housing Authority and the Housing Trust of Rutland County (RHT). The Rutland Housing Authority provides rental housing for very low-income households earning at or below 30% of the Area Median Income. It builds and manages public housing and administers the Section 8 program. It has 172 units of traditional public housing in 3 properties. The RHT has a portfolio of 214 affordable rental units, 125 of which (60%) are located in Rutland City.

Senior Housing

Housing cost burdens and disabilities are both important issues affecting senior households. Households headed by someone aged 65-74 are the fastest growing segment of the Vermont population. In 2030, 24 percent of Vermonters will be 65 years of age or older, up from 13 percent in 2006. (Vermont Department of Aging and Independent Living).

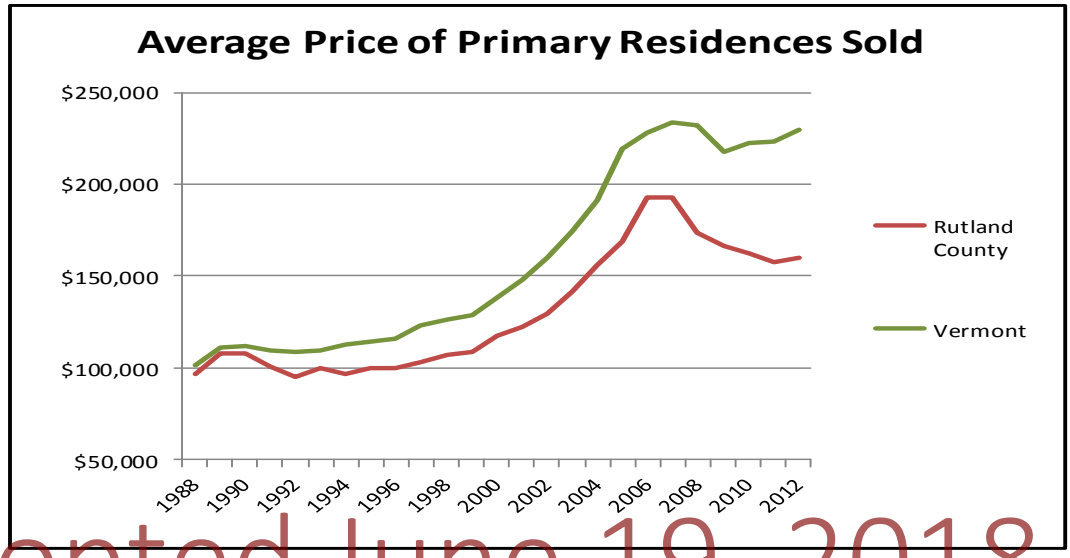
Of the approximately 12,800 affordable housing units in the state 3,400 are age restricted. An estimated 8,713 lower income elderly households rent homes in Vermont. (2010 Vermont Housing Needs Assessment).

17 percent of the Rutland County population is 65 or older. The proportion of Rutland County households with household members over 62 years of age grew at a rate more than double the rate of all other households between 2000 and 2010. In Rutland County, approximately 58 percent (731 units) of the total subsidized housing stock is designated for elderly households. Approximately 45% of senior renters are housing cost burdened and 40% of seniors in Rutland have a disability.

In Rutland City, there are 195 subsidized housing units exclusively for senior housing and an additional 259 subsidized housing units reserved for elderly households with disabilities. Combined this makes up 57 percent of total subsidized rental units in the city. (Rutland VT Housing Needs Assessment and Market Study, 2012).

About 70 percent of Vermont home owners over 65 have no mortgage, compared with 23 percent of younger owner households. Older home owners also live in homes with lower values on average than owners under 65, so those mortgages have average monthly payments about $200 less per month.

As a result of the equity elderly homeowners have in their homes, and



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oftentimes with limited or fixed incomes, some choose to use a federally insured Home Equity Conversion Mortgage, also known as reverse mortgages. Reverse mortgages allow homeowners with sufficient equity in their homes to receive some of that equity as cash. In 2010, there were approximately 616 active reverse mortgages in Vermont. (2010 Vermont Housing Needs Assessment).

Housing for those with Disabilities

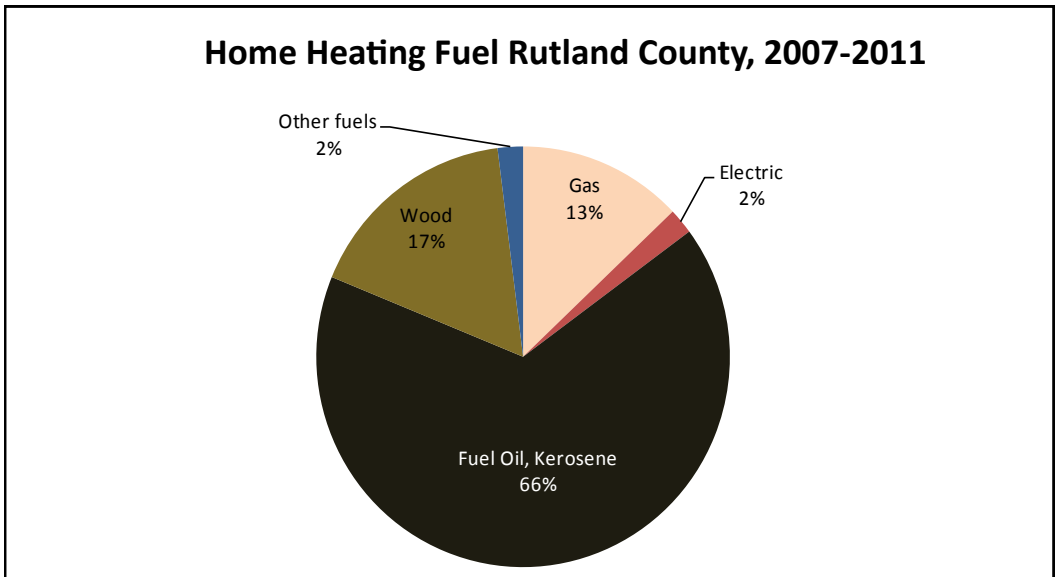
Approximately 50 percent of Vermont's stock of subsidized rental housing is expressly for the elderly and/or disabled (6,324 units). Sixteen percent of all Vermonters (about 95,000 people) have at least one disability and about 40,000 Vermont households have mobility and/or self-care limitations. Sixty-one percent of these households have incomes less than 80 percent of the median.

An analysis of Impediments to Fair Housing report by the state in 2006 reported that the lack of physically accessible housing is an impediment to housing choice. The report states, "Almost one third of fair housing complaints investigated by the Human Rights Commission between 2003 and 2005 were on the basis of disability. Most of these were related to accommodation requests in existing units. (2010 Vermont Housing Needs Assessment). For those communities with little or no subsidized housing, the capacity to provide appropriate housing for those with physical disabilities is virtually non-existent."

According to the Vermont Department of Aging and Independent Living, the projected number of persons in Rutland County with long-term care needs grew 25 percent between 2000 and 2010 and the number of persons needing more intensive levels of assistance grew 44 percent during the same period. This is attributable to the increase in elderly persons, the general aging of the population and increase in the number of younger persons with disabilities.

Homelessness

Homelessness occurs when people are unable to acquire or maintain housing that they can afford. It has a profound, negative impact on the individuals and families who experience it, and it has an effect on all of us, socially and economically. The primary concern for those experiencing homelessness is securing affordable housing and the necessary services to address the issues that put their housing at risk. (Vermont Council on the Homeless: Vermont's Plan





FOOD FOR THOUGHT

UNIVERSAL DESIGN:
One way to help seniors and householders with special needs is universal design. In housing, universal design means constructing a building environment that is convenient and accessible for as many people as possible. Common features include:

- Raised electrical outlets
- Adjustable sink and counter heights
- Wider and non-slip bathtub ledges
- Wider doorways
- Stair-less entrances
- Full-length windows
- More hallway space
- Smooth surfaces on floors
- Room for greater interior circulation

CONNECTING THE PLAN

Utility costs play a significant role in the cost of housing and fluctuate based on international markets and weather. In 2011, 66% of Region households heated with fuel oil or kerosene. This figure has dropped 4% since 2005. In Vermont, only 50% of households heat with fuel oil. [Housing Data.org, 2014]

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FOOD FOR THOUGHT

Spotlight on Rural Housing:

Subsidized rental housing is strongly concentrated in the City of Rutland. The city accounts for 61% of the County's subsidized rental housing units, compared to 28% of the County's households and 25% of its jobs–suggesting a significant imbalance and the need to direct future subsidized housing development to other areas around the county.

The significant barriers to the production of affordable rental units in rural areas are developers' inability to create projects with enough units to meet target returns due to weak demand and the lack of infrastructure such as water and sewer.

Homeownership trends differ from rental trends. House sale data suggest that over the last five years buyers are investing outside of Rutland City, which could be due to the lack of supply of appropriately-sized single-family units available within the city.

Additional Resources

One of the objectives of this Plan is to provide communities with the tools, and the framework, for developing effective local plans and policies. This Plan should be used as a resource for communities preparing plan updates. In addition to the plan, however, a number of other resources are available:

- Rutland Regional Planning Commission: www.rutlandrpc.org— The RRPC maintains a collection of housing and other data for the region's 27 communities.
- Vermont Housing Data Website: www.housingdata.org—has profiles of every town in VT.
- Directory of Affordable Rental Housing: www.housingdata.org/doarh/- lists all subsidized housing in Vermont by town.
- Vermont Housing Finance Agency (VHFA): www.vhfa.org—Mission to finance and promote affordable housing opportunities for low– and moderate– income Vermonters.
- Vermont Housing and Conservation Board: www.vhcb.org—funds the acquisition, rehabilitation, and construction of affordable housing by nonprofit housing organizations.
- US Census: www.census.gov—Contains the most commonly used housing and demographic data across the country.
- Vermont Housing Needs Assessment Guide walks communities through how to do a full housing needs assessment.
- Housing Trust of Rutland County. The RHT operates residential rental and homeownership properties throughout the county and provides resources for individuals.
- Neighborhood Works of Western Vermont. Neighborhood Works provides services to homeowners and operates a revolving loan fund for affordable housing.
- The Vermont Department of Disabilities, Aging and Independent Living (DAIL): www.dail.state.vt.us—information and resources.
- Vermont Planning Information Center www.vpic.info—A clearinghouse of information on all elements of the Town Plan, including housing.
- Vermont Housing Awareness Campaign: www.housingawareness.org—provides current information about the need for affordable housing in VT and available resources.
- Vermont Dept. of Housing and Community Affairs: www.dhca.state.vt.us—Administers numerous grant programs for municipalities for planning and development of housing.



New Hickory Street Apartments (formerly Forest Park) in Rutland City created by the Rutland Housing Authority

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to End Homelessness, 2012).

In 2007, Vermont had the highest rate of homelessness in New England and families and children accounted for a greater proportion of Vermont's homeless population in 2007 than they did in 2000. (Family Homelessness in Vermont, VHFA, 2008).

It is challenging to get an accurate count of the number of people who are homeless because they may be served in shelters or they may be sleeping in public areas. They may be receiving supportive services, or they may be managing on their own with little or no public help. They may be "doubled up" and living on a friend's couch or in an overcrowded apartment with several other families—each scenario brings unique hurdles to data collection. According to the United Way of Vermont, homeless individuals live: on the street (33%), doubled up (26%), in motels (17%), in vehicles (8%), in shelter (6%), camping (3%), and in unknown locations (2%).

The State of Vermont *Point in Time Homeless Survey*—conducted on one day each year to estimate the number of homeless individuals in the state—found that on January 30, 2013 there were 2,094 people without homes in Vermont. In Rutland County, 224 homeless individuals were recorded, which comprises 10.5 percent of the state total. Of that number 15 people were considered chronically homeless, 83 were single individuals, and 67 were children (according to HUD, "chronically homeless" persons are unaccompanied individuals with disabilities who have been continuously homeless for a year or more, or have had at least four episodes of homelessness in the past three years).

In 2012, 498 homelessness related calls were made in Rutland County to Vermont 2-1-1, which connects callers with community resources. This figure was up 150% from 2012. The primary stated cause of homelessness among emergency housing applicants in Rutland County was, in order of prevalence: household conflict or change in size, domestic violence/child abuse, eviction with cause, and eviction without cause/non-renewal [United Way].

Families experiencing homelessness are a concern, since the effects of homelessness on children can be especially difficult. From September 1, 2012 to May 31, 2013, 23 families with 25 children in Rutland County were homeless at some point. (Rutland County Head Start, Program Information Report, 2013).

From July of 2012 through June of 2013, 4,285 individuals throughout the state utilized Vermont's Emergency Solutions Grant-funded shelters (including emergency shelters, domestic violence shelters, veteran's shelters, and youth shelters). 3,469 were adults and 816 were children, with an average length of stay of 30.7 days. (Emergency Solutions Grants Vermont Annual Report, State Fiscal Year 2013).

Substandard Housing and Poverty

Housing stock that meets an individual or family's needs in a safe and sanitary manner is a right, not a privilege. In Vermont, the Department of Health maintains the Rental Housing Health Code which spells out specific standards the owner must meet for sanitation, heating, lighting, and construction, among others. The code reads, in part: "It shall be the responsibility of the owner to bring any dwelling unit into compliance with this code before renting it to any occupant."

Part of substandard housing issues stem from a complex cycle of homeownership. Homes that are in poor condition are often priced lower than other homes, and comprise a substantial portion of the housing affordable to lower income households.

While initially in the price range of low and moderate-income households, these homes are often accompanied by



FOOD FOR THOUGHT

CAUSE OR RISK OF BEING HOMELESS IN VERMONT:

According to the United Way, the following were the most likely causes of homelessness in Vermont in 2012 (in order of occurrences):

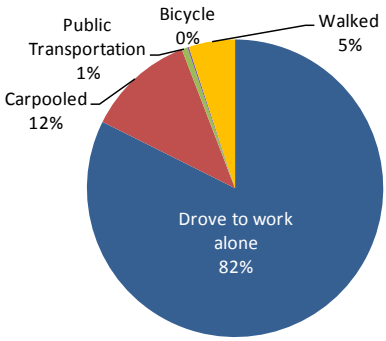
- Forced out by family/friend/spouse/significant other
- Eviction
- Not safe in home, domestic violence
- Moved from another state
- Change of circumstances
- Income decrease
- Substandard Housing
- Post Incarceration
- Disaster fire/flood
- Discharge from hospital/treatment center
- Chronically homeless
- Stranded, car troubles
- Asked to leave shelter
- Medical illness/injury
- Divorce/separation
- Kicked out of motel/hotel
- Substance abuse
- Utilized maximum AHS Emergency Housing Benefit
- Foreclosure
- Transient, passing through VT

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CONNECTING THE PLAN

Transportation infrastructure, design and services are integrally tied to housing. Housing located in mixed-use settings, close to employment centers and accessible to multiple modes of transportation allows residents the ability to afford more or higher quality housing due the savings associated with not having to take a personal automobile for all trips.

MODE OF TRANSPORTATION TO WORK: RUTLAND COUNTY



FAST FACT

In Rutland County the average travel time to work is 21 minutes. This is slightly lower than the State of Vermont average of 22 minutes. [Vermont Housing Data.org, 2014]

increased maintenance and energy costs. For low-income households, this linkage could mean forgoing the upkeep needed to maintain livable conditions in order to allocate resources for other necessities, leading to further deterioration of the structures

Homes lacking sufficient plumbing or kitchen facilities are among those considered to be substandard. In Rutland County, 3 percent (844 units) of all housing units lack sufficient plumbing facilities, and 2 percent (792 units) lack sufficient kitchen facilities. [housing data]. These figures are similar to the State of Vermont percentages. (VT Housing Data).

Overcrowded conditions, or situations with more than one family member per livable room, can occur when a community lacks a diverse range of housing types to accommodate all income levels. Overcrowding has only been recorded in 1 percent of the housing units in the Region, similar to the statewide figure of 1.2 percent overcrowded housing stock (3,401 housing units). An estimated 339 of these Vermont households live in severely overcrowded housing, with more than 1.5 occupants per room.

Approximately 62 percent of Vermont's residential housing stock was built before 1978, when lead was banned in residential paint. An estimated 82,000 Vermont homes built before 1950 continue to contain lead-based paint. About 65 percent of these homes are owner occupied, while the remaining 35 percent are rental units. (2010 Vermont Housing Needs Assessment). Funding sources for purchase and renovation are critical. According to housing developers, there is not capital available now, as the banking industry is restricted locally based on national banking problems.

Poverty is concentrated in Rutland City and especially in the downtown and northwest Census Tracts. The overall poverty rate in Rutland City is 16 percent compared to 12 percent for the county. The northwest Census Tract #9631 has a poverty rate of 25 percent. (Rutland VT Housing Needs Assessment and Market Study, 2012). High poverty neighborhoods exert significant "neighborhood effects" that impact school performance even on non-poor children, employment chances for residents of such neighborhoods, crime rates, health outcomes, local government costs, and reduced private sector investment.

According to the US Census, Rutland County's lowest-income households were much more likely to have mobility and/or self care limitations, as well as housing problems (as measured by cost burden, and/or overcrowding, and/or without adequate plumbing or kitchen facilities). These housing issues extended to both renter and owner households. This trend is particularly noteworthy for very-low income households (below 30% of median family income), where 78 percent of households had some type of housing problem at the same time they struggled physically.

UNMET NEEDS

Gaps in Housing Affordability

- Public funding for housing development is oversubscribed and many eligible housing developments are not awarded funds due to the lack of available resources. The investment market for the largest source of rental housing funding, the Low Income Housing Tax Credit has shrunk, leaving less equity available for new developments.
- As of 2009, an estimated 99,000 Vermont households have incomes at or below 80 percent of the state median. Half of the homeowners are 65 or older, while 80 percent of the rental householders are younger than 65. (2010 Vermont Housing Needs Assessment).
- The market for moderate-income, first time homebuyers is tied closely to employment opportunities. A concern

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for potential first-time homebuyers is the need for a stronger local job base to provide households with the minimum income of about $32,000 to afford a first home. (Rutland County 2005 Housing Needs Assessment).

- Private residential rental developers and other housing providers in small village centers and rural areas report that they are looking for higher rates of return because risk is high due to limited capital, weak resale demand and low tenant quality. The result is a pass-through to renters in the form of higher rents.
- Older multi-family stock in the City of Rutland is undervalued relative to single-family housing, and its concentration in certain areas is contributing to neighborhood revitalization challenges. This stock also creates special needs for housing rehabilitation (such as remediating lead paint hazards). (Rutland VT Housing Needs Assessment and Market Study, 2012).

Gaps in Housing Supply

- The county's non-elderly, low-income renters are currently underserved by the supply of subsidized rental housing in rural areas, especially with respect to the distribution of Section 8 housing certificates.
- Existing housing units have low vacancies and long waiting lists. The waiting list for a rental assistance voucher is often several years long. Affordable residential rental providers report long waiting lists for heavily subsidized units, which serve the very low-income renters. Of these units, the longest waiting list is for 1-bedroom units.
- Rutland County has a significantly higher share of housing stock owned by householders 65 years old and over. A market opportunity likely exists for moderately priced, accessible condominium units for seniors located near services.
- Housing for residents with physical disabilities is among the most widely shared housing gaps in the county. An analysis of Impediments to Fair Housing report by the state in 2006 reported that the lack of physically accessible housing is an impediment to housing choice.

FUTURE TRENDS

Changes in the Region's population structure and an ongoing need for additional housing units will continue to shape housing needs into the future. Among the key trends:

- Senior populations are expected to increase, and with it demand for senior housing. By 2030, 24 percent of Vermonters will be 65 years of age or older. By 2030, Vermont's median age will climb to 44. In Vermont, almost all household growth will be by householders 55 and older. Most new Vermont households headed by those 65 and above will own their homes. However, the number of elderly, lower income renter households (with incomes less than



The Wallingford Inn provides subsidized senior housing in a historic village structure



FAST FACT

In 2006, the average cost per resident in an assisted living facility in Vermont was $47,928 per year; higher than the national average of $35,616. In 2030, the national average is projected to rise to $109,300 a year.

The average annual cost of nursing home care per resident in the state was $73,730, lower than the national average of $75,190. The 2030 national estimates show an increase to $190,600 per person annually.

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CONNECTING THE PLAN

In 2006, the Vermont Housing Finance Agency collected surveys from Vermont employers across the state:

- 89% described the cost and availability of housing as an obstacle to economic development.
- 92% said a shortage of homes for sale that are affordable to their employees was a problem.
- 88% said a shortage of rental housing that is affordable to their employees was a problem.
- 60% of respondents stated that their companies felt pressure to pay higher salaries so employees could afford housing.
- 50% said housing costs had posed problems in their efforts to recruit employees.

80 percent of median) is expected to increase. (State of Vermont-HUD Consolidated Action Plan for Housing and Community Development Programs, 2012). The result will be an increased need for assisted living facilities, accessible apartments and housing that can be served by non-automobile modes of transportation.

- In Rutland County, renter-occupied households tend to be younger than owner-occupied households. Roughly 30 percent of the current owner occupants are age 65 and above. As this segment of the population ages out of their homes there will be an increased opportunity for first-time homebuyers to purchase homes, or conversely, potentially increase the risk to neighborhoods if those homes are not sold to new homeowners or responsible investor owners. (Rutland VT Housing Needs Assessment and Market Study, 2012). According to a Rutland Region realtor, "There are less young buyers of housing, as the economy trends more toward services."
- Household sizes have declined steadily over the past 30 years and are expected to continue to do so into the future. The number of 1 and 2 person households will rise, making for a glut of larger homes and a need for smaller units. (Ready for Renewal-Improving America's Housing Stock, 2013).
- Seasonal populations are likely to continue to grow, especially in areas near to Killington and Okemo resorts. These influxes will add additional competition for homes and house sites and may inflate purchase and rental costs in certain communities.
- New construction in all towns will place additional burdens upon municipal services and continue to challenge town officials with how and where to accommodate new housing.
- The availability of empty lots, both within existing urban and village centers and on their outskirts, is limited throughout most of Rutland County. Where infill sites do exist, higher development costs and potential contamination issues limit their appeal. Areas on the fringes of villages and urban areas, often among the Region's more productive agricultural soils, continue to face development pressure.
- There will continue to be significant challenges in the rental market, including lack of capital for financing purchase and repair, regulatory issues that increase the costs of providing housing, competition between subsidized and private-market rental housing providers and declines in tenant quality.
- Future affordable housing creation will avoid adding significant net new units to the City of Rutland housing stock, when possible, given flat to declining expectations for future overall housing demand and lack of available land. Conversion of existing stock to affordable housing will continue.
- Between 1992 and 2005, nursing home utilization by seniors age 85 and older fell from 22 percent to 13 percent and is expected to continue to fall 3.6 percent annually through 2016. This will put added strain on the housing stock as more seniors require more community-based housing options, especially affordable ones. (2010 Vermont Housing Needs Assessment).

MEETING CURRENT AND FUTURE NEEDS

Informed Land Use Decisions

There is a clear link between housing and land use. What is less clear is the nature of that relationship. The challenges

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and opportunities faced in Rutland City differ greatly from those faced in Ira. Equally important, the issues faced within a town's village area may be very different from those in its more rural areas. Because the issues are different between (or within) communities, the solutions must also be different.

It is the community's responsibility to support the creation of housing that meets the needs and desires of residents in a manner that enhances that community's character. It is also important that communities allow a mix of housing types, forms, density, transportation options and price ranges in order to meet the varied needs of residents.

It is important to be aware that housing does not take place in a vacuum. Even the best housing development or redevelopment can be a poor fit for residents and the community if transportation, employment (including agriculture), and services are not built following the same framework.

Advocacy

Many of the factors that affect the availability of housing are not under the direct influence of local decisions. Where this is the case, individuals and organizations must advocate for change in policies at a broader level. Among those cited:

- Changes in state regulatory mechanisms to promote compact development, mixed-use and increased density in urbanized and immediately adjacent areas.
- The need for greater availability of Section 8 housing certificates and support for subsidized housing.

RUTLAND RPC GOALS

- Make efficient use of land in new housing development by maximizing density, utilizing a connected street network, and incorporating cluster development/conservation subdivision design.
- Meet housing needs of diverse socioeconomic groups by including affordable, subsidized, and below-market housing.
- Make housing accessible to employment, services, educational, and recreational facilities by multiple forms of transportation.
- Locate new housing, including multi-family housing, in village centers, areas of mixed-use development and adjacent to existing settlement patterns. Avoid Greenfield development outside of existing settlement areas.
- Improve substandard housing to comply with State and Federal Fair Housing laws and nationally recognized building codes.
- Redevelop former industrial, commercial, brownfields and institutional buildings into housing and/or mixed-use structures.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes, training and education, information dissemination, preparing funding applications, and GIS mapping.



FOOD FOR THOUGHT

Spotlight on Child Care:

A key issue related to housing affordability is the presence (or lack thereof) of child care alternatives for residents.

Safe and affordable child care is integral to families' ability to have jobs that meet financial obligations and ongoing schooling.

In 2010, 4.6% of the County's population, or 2,832 people, were under the age of five. Rutland County is served by approximately 86 registered and 70 licensed child care providers.

Child care is a multi-facetted issue. Services must be provided in various locations (close to homes for some families, close to work for others) and with flexible schedules for those parents who work service-based or second-shift jobs and are in need of child care at non-traditional hours.

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Chapter 5: Economic Development

INTRODUCTION

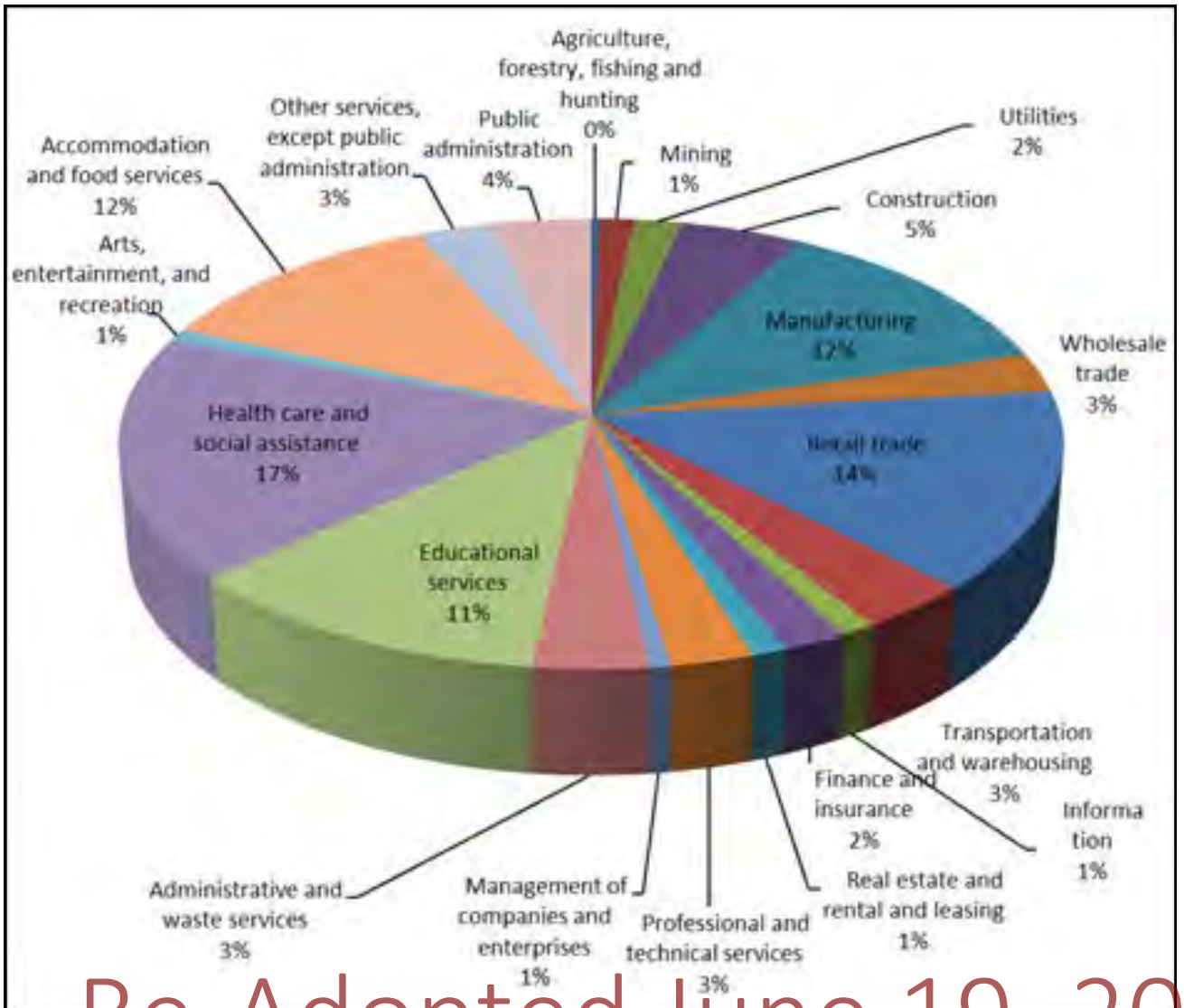
Economic activity is a fundamental part of the overall well-being, comfort and maintenance of the population of the Region. This chapter seeks to define the strengths, challenges, and opportunities that constitute the Rutland Region's economy and that can influence its future. The emphasis is on supporting the development of a dynamic, diversified, and resilient economy characterized by a strong workforce and a solid base of small and large firms.

A snapshot of Rutland Region's current economic activity shows that more than half (54%) of all jobs in the Rutland Region are in service sectors: retail, accommodation/food, education and health/social services. Manufacturing jobs have decreased to just 12% of the total.

CURRENT CONDITIONS

The major revenue generators in the county include health care, professional/ technical services and manufacturing industries. (VT-REAP 2014).

RUTLAND REGION EMPLOYMENT



Source: VT Dept. of Labor, 2013 Annual Averages

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FAST FACT

WHAT IS A FOOD SYSTEM?

It is Farm-to-Plate initiatives and regional food hubs that work to increase the amount of fresh, local foods to schools, institutions, restaurants and homes.

In Vermont, investment in such local food production has proven to stimulate economic growth.

The total economic input from Vermont's food system in the last five years has amounted to $1.7 billion in new economic activity, including 3,400 jobs.

Source: Vermont Sustainable Jobs Fund

RUTLAND'S PROXIMITY TO MAJOR MARKETS

The Rutland Region is located less than one hour's drive from several small cities with strong economies that influence our area, notably Ludlow, Middlebury, Manchester, and Woodstock. Burlington, VT and Albany, NY – both sizable metropolitan areas – are within a couple of hours drive of this Region. Several major metropolitan centers including New York City, Montreal, and Boston are all within half-a-day driving distance.

Eighty-one percent of Rutland County businesses have fewer than 20 employees. That means only 19% of them have more than 20 employees. (2011 County Business Patterns, US Census Bureau).

There is only one business in the Region employing over 1,000 workers - the Rutland Regional Medical Center. In terms of total jobs, health care provides the most jobs of any business sector, followed by manufacturing, education services and retail trade. (VT Department Labor, 2013)

Although much smaller in terms of overall jobs, agricultural-related businesses in Vermont's food system, which includes crop production, the sale of animals or animal products, and food manufacturing, have experienced the largest new job gains than any of economic sector in the last 10 years. Construction and manufacturing are among those sectors seeing the largest losses in jobs. (VT Department of Labor 2004-2014).

In the past five years, the growth in agriculture in Vermont has generated nearly two times as many jobs as all other sectors combined. Agriculture-related pay is going up as well; average wages are up 40% since 2008. (VT Dept. of Labor 2009-2014).

Rutland County has also experienced an impressive boost in agriculture-related jobs. The region's food system saw 344 new jobs from 2003-2013 - a 7% increase. (Vermont Farm to Plate Network, 2014.)

Emerging Economic Sectors

- In a few years time, Vermont and the Rutland Region have become a national leader in solar energy, adding more solar jobs per capita than any other state in 2013.
- Seventy-four percent (74%) of all private businesses in the county are small, unincorporated businesses with owner operators and no employees. Although small independent businesses account for a large number of establishments, they only account for seven percent (7%) of total business receipts in Rutland County.
- The fastest growing sector of the economy are those that work from home; the so-called *1099ers*. This is an invisible workforce that is not included in economic statistics. It is estimated it makes up 25-30% of the national workforce.
- Broadband coverage has been extended to 99% of the state.

Top 10 Employers in Rutland Region

Rutland Regional Medical Center	1,604
GE Aircraft Engines	950
Killington/Pico Ski Resort	800
Casella Waste Systems	583
Green Mountain Power	540
Community Care Network	374
Omya	200
Vermont Country Store	279 (year round); 558 seasonally
Castleton College	257
Hubbardton Forge	240

Source: REDC 2014

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Factors Influencing Economic Growth

- The Rutland Region has a well-educated workforce, low unemployment, relatively easy business entry, and relatively low wages.
- Vermont has an established brand that is advantageous for both selling goods and services and attracting workers throughout the state.
- The Region is within a few hours drive of several major east coast metropolitan areas and markets.
- The Region's transportation networks are generally adequate. Principal arterials, rail, and a state airport all provide connections to larger markets elsewhere. Roads and bridges serve as the primary transportation method for goods and people, making their upkeep an important economic issue.
- The Rutland Region is home to a wide variety of natural resources.
- Vermont has enjoyed relatively stable electricity prices over the last 20 years and at rates comparable to the rest of New England. However, electricity rates for residential, commercial and industrial uses in Vermont are 32-46% higher than the national average. (EIA, 2014)
- Existing water supply and wastewater treatment infrastructure systems in the Region function well. The lack of this type of infrastructure in many parts of the Region, however, makes these areas more suitable for local businesses than for large scale economic growth.

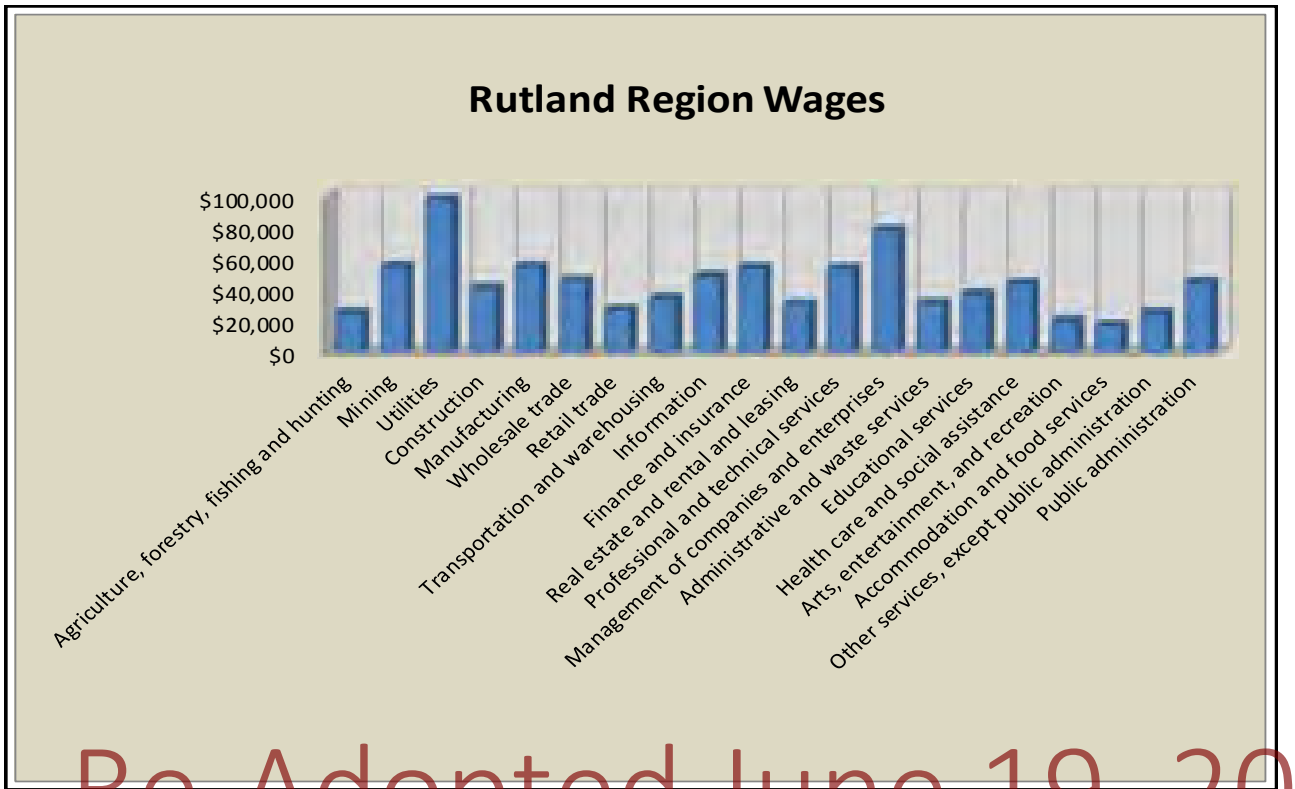
UNMET NEEDS

- The Rutland Region's relatively small size makes it difficult to establish a concentration or clustering in many business sectors.
- The Region's small size makes it difficult to access capital from the larger Eastern U.S. financial markets.
- The ongoing presence of a few large employers may be tenuous.

CONNECTING THE PLAN

The movement of goods is integral to the Region's economy. See Transportation chapters for discussion of needs and strategies.

There is uncertainty about the future electricity supply as large contracts are set to expire. See the Energy chapter for a fuller discussion of the issue and potential solutions.



Source: VT Dept. of Labor, 2013 Annual Averages

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RUTLAND COUNTY INDUSTRY EARNINGS 2000-2013

Major Industry	2013 Earnings (1000s)	Percent of Total	2001-2013 Share Shift
Farm Earnings	$ 9,161.00	58%	1%
Forestry, Fishing, and Related Activities	$ 2,696.00	17%	-4%
Mining	$ 25,597.00	161%	-17%
Construction	$ 106,860.00	673%	5%
Manufacturing	$ 243,648.00	1535%	-107%
Retail Trade	$ 141,235.00	890%	-105%
Information	$ 18,270.00	115%	-43%
Finance and Insurance	$ 39,951.00	252%	2%
Real Estate and Rental and Leasing	$ 20,563.00	130%	-29%
Educational Services	$ 19,436.00	122%	17%
Health Care and Social Assistance	$ 275,394.00	1735%	372%
Arts, Entertainment, and Recreation	$ 7,411.00	47%	10%
Accommodation and Food Services	$ 78,611.00	495%	-132%
Other Services (except Public Administration)	$ 55,712.00	351%	-10%
Federal Civilian	$ 24,977.00	157%	-36%
Military	$ 13,340.00	84%	18%
State Government	$ 77,618.00	489%	91%
Local Government	$ 161,349.00	1016%	76%
Other/Suppressed Industries	$ 265,828.00	1674%	-110%

Other/Suppressed Industries are data that are unavailable due to confidentiality restrictions.

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RUTLAND COUNTY INDUSTRY EARNINGS
1969-2000

Source: Vermont Regional Economic Analysis Project, 2014

Major Industry	2000 Earnings (1000s)	2000 % of Total	1969-2000 Share Shift
Farm earnings	$ 8,147.00	74%	-283%
Agricultural Services, Forestry, and Fishing	$ 8,832.00	80%	12%
Mining	$ 9,750.00	88%	-99%
Construction	$ 74,071.00	672%	-230%
Manufacturing	$ 217,654.00	1975%	-558%
Transportation and Public Utilities	$ 75,159.00	682%	-61%
Wholesale Trade	$ 47,631.00	432%	16%
Retail Trade	$ 132,620.00	1203%	-84%
Finance, Insurance, and Real Estate	$ 46,847.00	425%	-20%
Services	$ 316,140.00	2868%	1160%
Federal Civilian	$ 21,504.00	195%	-57%
Military	$ 5,822.00	53%	-12%
Other/Suppressed Industries	$ 138,015.00	1252%	216%

Other/Suppressed Industries are data that are unavailable due to confidentiality restrictions.

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- A pervasive mismatch between the skills of entry level workers and needs of expanding companies.
- The Region's small size and changing demographics result in a decline in the number of traditional working age adults.
- Chronic poverty keeps some Rutland Region residents on the economic sidelines.
- An aging infrastructure, in particular wastewater and stormwater infrastructure, is making it increasingly difficult to build or expand.
- The perception that the Region is not a business-friendly area.
- There is a continued disparity in earnings between male and female workers. In 2011, women made 67.6% of what men made in Rutland County. (US Census Bureau and VT Department of Labor). Since many households are headed by women, this disparity has impacted poverty levels of the Region's residents, especially children.

FUTURE TRENDS

- **The population of Rutland County continues to age.** The median age of residents in 1970 was 28.5, 39.5 in 2000, and 44.3 in 2010. The number of residents age 62 and over was 37% of the population in 2010.

  Between 2000 and 2010, the population of Rutland County dropped by 3%; across Vermont, the number of residents increased by 3%.

  However, recent census figures indicate that outmigration of youth is relatively unchanged in the last 10 years and may not be as large of a factor as once feared. The number of 20-35 years olds as a percentage of the total population was 16.9% in 2000 and 16.5% in 2010. (US Census Bureau).
- **A structural shift in the Rutland Region economy continues to move from manufacturing to services, including health care.** From 1969- 2000, manufacturing declined by 558%; services increased by 1,160%. These structural trends are mirrored in more recent data as well.

Economic Gardening and Economic Hunting

Economic Gardening and Economic Hunting are two very different approaches to generating economic activity.

An **economic gardening** approach sets out to create jobs and entrepreneurial activity by investing in local people and their talents, cultures, passions and skills. It is an endogenous "arising from within" approach to community and economic development. The starting point for economic gardening says that 'in this community we have all that we need to build a vibrant and sustainable future'. It may need careful nurturing to help it thrive but the seeds of our future success are already sown.

This contrasts with **economic hunting** which sets to create jobs and entrepreneurial activity by attracting investment and employment into a community from outside. The starting point here is one that says 'our community is deficient. We lack the entrepreneurs to create employment so we have to attract them from elsewhere. Then perhaps some of the entrepreneurial pixie dust will rub of onto local people. And if it doesn't, well at least we will have attracted entrepreneurs who will provide them with jobs.'



Historically most of the Rutland Region's investment has gone into economic hunting strategies.

Potential opportunities for economic gardening in Rutland: **alternative energy, food systems, tourism/recreation, climate change/flood resilience.**

Source: GROWFL

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- **Agriculture continues its shift to smaller, diversified farms and into the state's food system as Vermont's localvore movement continues to lead the nation.** The 2012 Census of Agriculture shows the number of farms in Vermont increasing, reversing a century of decline. Statewide, Vermont's food systems has added at least 2,200 new jobs since 2009.

  While this has led to an overall increase in the number of farm operations in the Rutland Region as well, this could also result in a somewhat different landscape. The wide open meadows associated with this region's history of dairy farming may be replaced with a smaller agricultural "footprint."

- **The tension between the need for new development and the desire to maintain the rural character of the Rutland Region will continue.** While compact growth to increase density in village centers is one solution to these development patterns issues, it is only accepted or practical in a few municipalities in the region.

  On the other hand, controlled growth is one of the things that make this Region appealing to people accustomed to and/or seeking a rural lifestyle that is different than much of the rest of the country.

  Communities need to consider the best balance for them yet include job creation, transportation, and housing affordability as priorities for the next generation of Vermonters.

- **Like the rest of the state, the Rutland Region remains a net importer of energy.** Three quarters of the energy consumed is petroleum-based, primarily for home heating and transportation (EIA 2014). As a result, the Region's relatively high energy costs are expected to be a factor in for new and existing businesses.

- **Area businesses are likely to be increasingly affected by the costs of climate change damage. Recent** data suggest that the region is projected to be subject to "super variability" and extreme weather events in coming years. (Vermont Climate Assessment, 2014).

RUTLAND RPC GOALS

1. **Develop workforce**. In order to attract a more skilled and higher quality workforce, that incorporates young professionals and non-traditional employees, promote higher wages, cultural and recreational opportunities, affordable childcare, and other quality of life efforts.
2. **Improve infrastructure**. Strengthen the road and bridge network, improve rail infrastructure, improve and expand water and sewer infrastructure, increase public transportation and bicycle and pedestrian network, and improve telecommunications.
3. **Develop small business and entrepreneurship by encouraging networking especially in the food systems and alternative energy sectors.** Embrace both the "Economic Hunting" and "Economic Gardening" to create a balanced approach to economic development.
4. **Improve business climate**. In order to foster a more favorable local economy, there must be more available lands for development, delays and uncertainties in permitting process must be mitigated, and resources should be used to promote high-tech light manufacturing and rail-oriented businesses.
5. **Ensure availability of quality housing**. The supply and affordability of quality housing in the region must be increased. Housing attractive to



FAST FACT

Rutland Young Professionals

Each month since June 2013 up to 75 local professionals, ages 20 to 40-something, meet over appetizers and drinks to network and socialize. Their mission is to create social and professional opportunities, engage with the community, and attract and retain young professionals to the Rutland area.

Re-Adopted June 19, 2018

young professional families as well as independent senior citizens should be constructed.

6. **Develop downtown and villages.** Support development that increases the vitality of villages and town centers which also helps preserve a landscape desirable to visitors, businesses and residents. Encourage design of commercial architecture in keeping with Region's unique character. Identify and assist in the redevelopment of vacant lots in city or village lots appropriate for infill development.
7. **Promote healthy lifestyles.** Use improve transportation options and compact development concepts to help foster good public health and attract new residents.
8. **Promote the creation and expansion of social and cultural amenities to** improve residents' quality of life and attract new residents.
9. **Plan for climate change refugees.**
10. **Ensure consistency among economic development programs by working with other regional organizations.** Using the Economic Development District in East Central Vermont as an example., seek federal funding to help coordinate economic development.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes, training and education, information dissemination, preparing funding applications, and GIS mapping.



FAST FACT

Food Systems as an Economic Engine

Vermont's local food system is outpacing that of the state's overall economy by a rate of three to one and is creating thousands of new jobs. Over the past five years, local food systems have grown at a rate of three percent, while Vermont's economy as a whole has grown at a rate of one percent. The total economic input from Vermont's food system over the time frame has amounted to $1.7 billion in new economic activity, including 3,400 jobs.

Source: Vermont Sustainable Jobs Fund

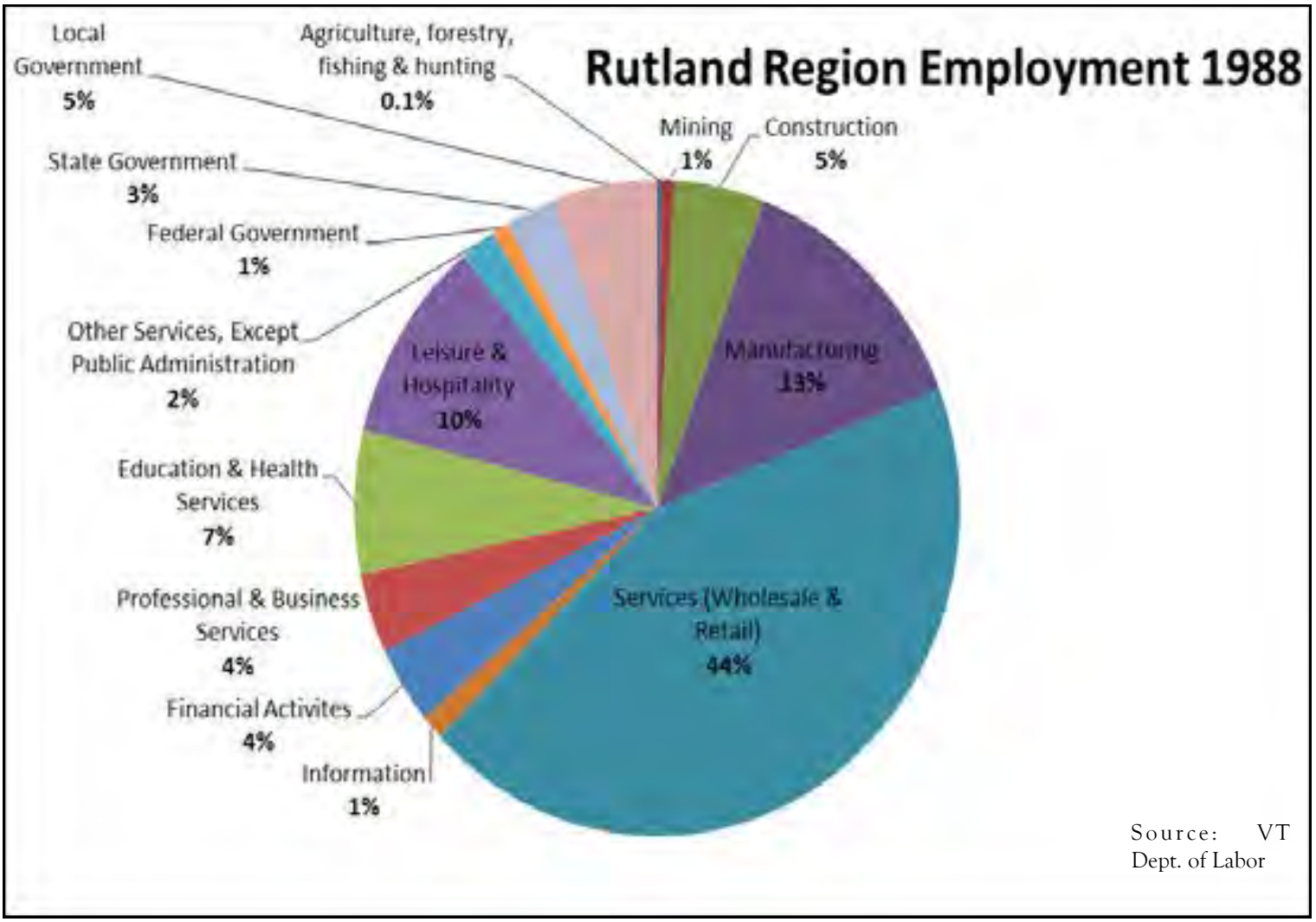
Agritourism in the Rutland Region

With funding from USDA Rural Development, RRPC collaborated with a number of state organizations to create a series of guides for Best Management Practices and Tips for area farmers interested in exploring agritourism or hoping to expand their agritourism enterprises.

ADDITIONAL RESOURCES

Preliminary Next Steps from *Finding the Sweet Spot* economic summit on October 1-2, 2014, Prepared by consultant Erik Pages.

Re-Adopted June 19, 2018





Courtesy: Princeton Review



Courtesy: Bob Handelman

CONNECTING THE PLAN

Several higher education institutions are located in the Region: Castleton College, College of St. Joseph, Community College of Vermont, and Green Mountain College. In addition, Stafford Technical Center serves both youth and adults.

These resources are well placed to help fill the gap in skilled labor needed to make the region more competitive.
See the Education chapter for more.

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Finding the Sweet Spot

Erik Pages' Report

Assets:

- Good quality of life
- Attractive communities
- Strong competitive positions in many industries

Challenges:

- Improving regional branding and marketing
- Increased connections and networks in the region – across communities, across disciplines, and across institutions
- Engaging youth in community building efforts and in developing better life habits and more ambitious education and career aspirations

Finding the Sweet Spot
Preliminary Next Steps



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Regional Entrepreneurship Ecosystem

What Needs To Be Done:

- Create an "entrepreneur-friendly" environment
- Develop local networks for entrepreneurs
- Provide more educational training and support

Stronger Regional Brand and Identity: Renewable Energy & Food Systems

What Needs To Be Done:

- Do a better job publicizing & supporting the development of these clusters
- Assess potential future activities

Re-Adopted June 19, 2018

Chapter 6: Historic and Cultural Resources

INTRODUCTION

Thriving cultural environments and historic preservation are important components of the overall health of the Rutland Region. Together they promote the area's unique characteristics, broaden understanding of issues and cultures around the world, and contribute to the economic vitality and overall quality of life of the Region.

The time and effort required to carefully inventory, protect, and promote these assets, such as archeological sites, artifacts and structures, is significant and important. For the thoughtful management of historic and cultural resources helps provide the taxable real property base needed to maintain the region's unique identity, its heritage, and the course of its future development.

CURRENT CONDITIONS

Overview

The Rutland Region has a rich and dynamic cultural history beginning with the Western Abenaki who have been referred to as "the original Vermonters." It continued with the emigration of settlers from western Connecticut, Massachusetts and the Hudson River Valley; the French traveling south from Canada; and then Welsh, Irish, Italian, Swedish and Polish immigrant populations that grew with the stone and slate industries of the area.

That rich history has led to the Region's distinctive heritage of archeological sites, military sites, quarries, and an enduring agricultural infrastructure of farmsteads, barns, stone walls and covered bridges. It is a heritage based on agriculture, quarrying and military conflicts, such as the site of the 1777 Battle of Hubbardton, the only land battle of the Revolutionary War to be fought entirely on Vermont soil.



Courtesy: Killington Arts Festival

Today, structures in the Rutland Region that have historical and cultural significance also include churches, cemeteries, grange halls, residences, libraries and commercial structures. Building materials, especially marble on institutional buildings and slate roofs on all types of structures, link back to the cultural identity of the Region.

Over the years, the Region has creatively employed adaptive reuse of many of these historical sites; turning churches into libraries, old stores into town halls, schoolhouses into museums and houses into offices.

The wealth created by the Region's heritage, especially in the stone industries, remains a solid foundation for cultural amenities in places such as Proctor and Rutland.

The Rutland Region is also using its past to promote a heritage-based tourism, such as along the Stone Valley Byway, which runs along the heart of the stone industry region. The Killington Resort is fusing culture and recreation, with events such as the Killington Music Festival, to create another component to the Region's cultural scene. It is designed to enrich the lives of fulltime residents as well as make the area attractive as a four-season recreation center.

In addition, the Region's historical



Kingsley Bridge, East Clarendon

CONNECTING THE PLAN

Vermont Planning and Development Act, Ch. 117 § 4302:
"To plan development so as to maintain the historic settlement pattern of compact village and urban centers separated by rural countryside."

Municipal Development Plan, Ch. 117 § 4382:
The Plan for a municipality shall include:
"A statement of policies on the preservation of...historic features and resources."

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FAST FACT

Among the Rutland Region's cultural assets:

- Chaffee Art Center
- The Carving Studio and Sculpture Center
- Vermont Marble Museum
- Wilson Castle
- Killington Music Festival
- The Paramount Theatre
- Actor's Repertory Theater
- Fair Haven Opera House
- Killington Arts Guild
- Castleton State College Fine Arts Center
- Green Mountain College
- RutBusters
- Poultney Artists Guild
- New England Maple Museum
- Many local artists

downtowns and villages are being revitalized through state designations and shifting market preferences to keep these areas the center of activity in their communities, maintain their unique character, and promote mixed use to keep them economically viable. In turn, communities throughout the Rutland Region, such as Brandon, Pawlet, and Fair Haven, get technical assistance and state funding for revitalization projects.

State designations and creative reuse of historical structures and areas has led to an influx of artists, musicians, craftspeople and other cultural resources.

Centers of History and Culture

The Region is flush with cultural and historic institutions. Museums, music festivals, galleries of local artists, libraries and organizations offering arts and culture education enhance the Region's culture. Within the past five years, there has been a noticeable increase in the number of organizations and institutions on the cultural scene. The work to become distinct components to the cultural landscape, and meet the regional community's needs—from young school children to the elderly.

The Rutland Region's 23 historical societies and 10 historical museums, as well as its many granges, preserve cultural and historical town traditions and educate the public about them.

The Region's 19 public libraries also add to area's culture by offering an array of community services such as lectures and speaker series, book discussion groups, children's activities, community meeting spaces, on-line research capabilities, video and other film media as well as services not traditionally associated with libraries.

Granges, once focused on servicing farmers and their families, now serve as general community service organizations. Community events such as parades and barbeques have also become part of the Region's cultural fabric.

Both Castleton State College and Green Mountain College are outstanding cultural resources for the Rutland Region, as are the area's other colleges and high schools.



Courtesy: Chaffee Art Center, Rutland

CURRENT UNMET NEEDS

As the basic economy and culture of the Region evolves, the challenge will be to preserve valuable components of its past, while incorporating innovative ideas and new perspectives on the physical changes to the built environment that address the expanding connections our communities have with the state, nation, and world.

Loss of Historical Appreciation

Historic structures are deteriorating as age and high maintenance costs overwhelm their owners' resources. Historical artifacts are lost through fire or lack of care. Local histories around the Region are often forgotten as the Region's older residents age and either move or pass away.

Generally, the Region's historical

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societies are facing a declining number of active members. This is due in part to the number of members that are second home owners in the Region or live out of state, and in part to the challenges of relevance that all volunteer organizations face today. The Region's schools have also experienced cutbacks in arts and cultural programs.

A focus on the enhancement and expansion of cultural and historical resources, and on the associated increase in the quality of life available in the Region to this population, will help reverse this trend.

Disparity in Resources

Despite having a sense of pride in history as well as a wealth of historical assets, there are significant gaps among communities in the Rutland Region in terms of their ability to fund the preservation of these resources.

For instance, in Benson, parts of the town remain as they did in the Civil War. Benson Village is included in the National Register of Historic Places and a number of other structures in town are individually listed as historic places. However, the town does not provide specific protections to any of its historical sites and buildings because Benson does not have the administrative capability or public support for such a program.

On the other hand, there are communities like Brandon that take great pride in their historical legacy and view it as an economic development tool. Several parts of town are on the National Register of Historic Places, and it has three State Historic Districts. The town also has a number of organizations dedicated to historical preservation, such as the Friends of the Brandon Town Hall, as well as many active groups working to enhance the community's culture, such as the Brandon Arts Guild.



Courtesy: Town of Wallingford

Marketing the Region's Historic and Cultural Assets

While the Rutland Region is steeped in history and culture, it is not very well known for either. Organizations across the Region are working to "put Rutland on the map" as a stimulating place to visit and live.

An updated record of the history and culture in the Region would go a long way in ensuring a continuous record of the area's culture, history, and identity.

Lack of a Regional Arts Organization

In the last couple of decades, there have been several cultural organizations that have come and gone in the Rutland Region. Groups such as the Arts Alliance, the Rutland Area Cultural Alliance, and Crossroads Arts Council have formed but have not been able to stay organized. The lack of a regional group to pool resources further impairs the Region's ability to market its arts, cultural, and historical offerings.

FAST FACT

The National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources.

Note: legislation was proposed in the 2015 Vermont Legislative Session to allow municipalities to pass bylaws to regulate commercial building facades in designated areas to ensure that the facades are not left in a state of disrepair. (S.50)

CONNECTING THE PLAN

Housing and work space for artists and young people, especially in the Region's downtown areas, is extremely important in providing the critical mass of users (of cultural opportunities), and to support economic development.

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FUTURE TRENDS

- As the Rutland Region continues to become a destination for those seeking second homes or a place to retire, this change in demographics will have both positive and negative effects on the Region's historical and cultural resources. Since new residents are not as historically and culturally tied to the area, that will increase the importance of local organizations and communities in promoting the stories of their unique identities and sense of place. On the other hand, new residents can be an infusion of "new blood" if they bring with them an interest in history and culture.
- Historic buildings are getting older. Many are in need of updated wiring and other work to make them less vulnerable to fire and deterioration, work that can be more costly than building a new structure.
- Towns will continue to face the challenge of integrating historical features with current needs and goals.
- Support for arts education in the schools is limited and will most likely continue to be so.
- With each generation, globalization and the desire to understand greater global issues increases. The demand for access to cultural resources that link Rutland to the greater world/society will inevitably increase.
- As the Region continues to grow, new residents offer opportunities to expand the available cultural opportunities by supporting cultural experiences that may not currently be provided. Cultural institutions will play important roles in bringing old and new communities together.
- Historical societies will continue to find they need to develop new mechanisms to effectively connect with people.
- The creative economy will receive increased emphasis and support, and help further general revitalization efforts throughout the Region.

HOW-TO LIST FOR HISTORICAL PRESERVATION & CULTURAL GROWTH

- Develop regulations that encourage the preservation of historic & unique structures, and that allow for creative businesses. Historic districts and design review districts are options available to interested towns.
- Encourage compatible uses and densities adjacent to historical districts and cultural resources in their Town Plans. (For example: no big box store next to historic district)
- Take historic, archeological and cultural resources into consideration when planning and designing public improvements like street widening, roadway reconstruction, utility distribution systems, and lighting.
- Make use of the many grant programs that support historic preservation and community improvements. Among them are ones dedicated to transportation enhancement, scenic byways, barn preservation, and historic preservation.
- Become a Certified Local Government, Designated Village, or Designated Downtown. Each of these programs offer access and priority ranking for various grant and may provide tax breaks for rehabilitation.
- Nominate sites to the Vermont and Federal Historic Sites Registries.
- Support local libraries and schools and recognize the value of their locations within village and downtown centers.
- Address historic and cultural resources in Town Plans.

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RUTLAND RPC GOALS

Protect and Preserve Historic and Cultural Resources in the Region

- Use the How-To List on the preceding page as a foundation to assist municipalities in promoting historic preservation.
- Encourage the restoration or rehabilitation of historic structures, neighborhoods or sites.
- Discourage unnecessary destruction or removal of historic structures, buildings or sites.
- Encourage towns to design public improvements such as street widening, roadway reconstruction, signage and utility distribution systems to avoid unnecessary degradation of historic sites or areas.
- Work with towns to support projects that employ adaptive reuse of pre-existing structures, especially when the structure has historic value.
- Be a resource for towns in supporting design on a human scale and good design through land use patterns that support walkability and Complete Streets to create enduring places.
- Work with towns to promote the construction of new buildings that will become historic because of good design.
- When new buildings within historic areas are proposed, work with towns to ensure their design is compatible with the character of the neighborhood.
- Encourage towns to use town plans and GIS tools to identify and plan for these resources.
- Encourage communities to apply for village and downtown designation which will support the revitalization of historic town centers.
- Participate in short and long-term efforts to promote economic development that use the Creative Economy approach. (Refer to sidebar).

Increase Recognition and Awareness of Historic Resources in the Region

- Identify, preserve, and celebrate the Region's historical and cultural resources. Cultural and art programs offered to schools and communities shall be an important component of this effort.
- Reorganize a regional arts organization to help provide sustainable funding for cultural assets and to ensure that the Region is effective in reaching residents and visitors.
- Promote historical and cultural resources' role in marketing, tourism, and economic development across the Rutland Region.
- Find ways to make the history of the Rutland Region relevant to our current population to help ensure continued interest in the historical record of the area.
- Cultivate a greater appreciation of historic and cultural resources in both the public and private sectors by fostering partnerships among businesses, the arts community, planners, and policy makers.
- Seek new avenues to reach people and have incorporated websites, community access television and other informational means to educate the public, instead of only relying on visitation to their Society offices and events.
- Develop stronger relationships with local libraries on local and regional planning issues.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes, training and education, information dissemination, preparing funding applications, and GIS mapping.



FAST FACT

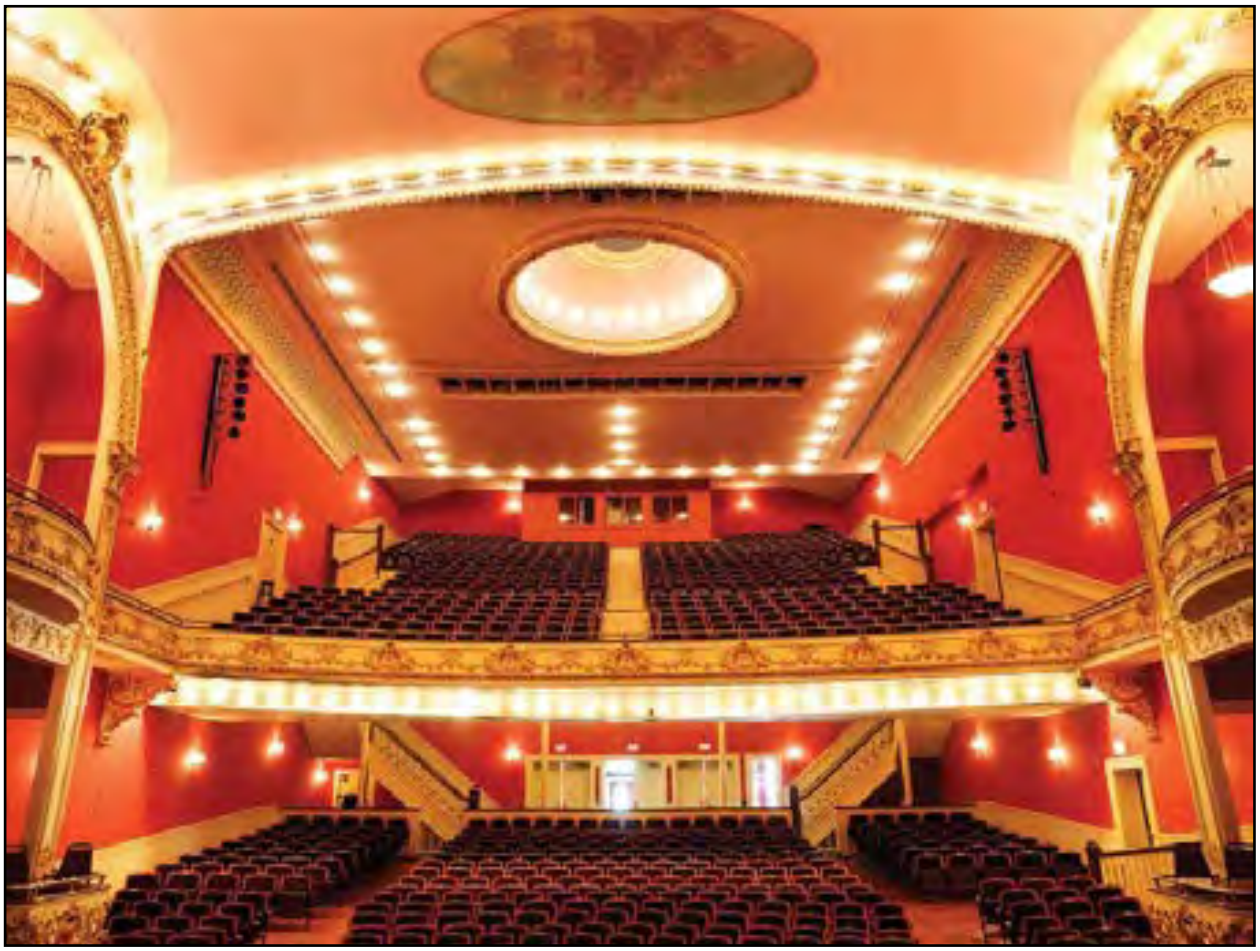
CREATIVE ECONOMY

In Vermont, a creative economy is one that acknowledges that there are social and economic benefits to investing in the arts and culture.

Since 1964, the Vermont Arts Council has operated under the premise that communities that have thriving cultural centers are more likely to attract business and entrepreneurs than those that do not.

The Rutland Region has also endorsed that concept in its economic development planning.

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Paramount Theatre, Rutland
Courtesy: Carolyn Bates



FOOD FOR THOUGHT



Courtesy: Town of Brandon

Old buildings often outlive their original purposes. **Adaptive Reuse** is the process of using old buildings for new activities while retaining their historic features. An old factory may become an apartment building. A rundown church may find new life as a restaurant or a restaurant may become a church. This type of reuse of our historic and culturally significant structures to meet present day commercial, industrial and residential needs ensures that these resources are continuously maintained and appreciated as a bridge between the Region's history and future.



Courtesy: Rutland Historical Society

Re-Adopted June 19, 2018

Chapter 7: Health and Wellness

INTRODUCTION

Community health and public welfare are becoming increasingly important planning issues. As the Region's population continues to age, reliance on medical facilities, outpatient services, and elder assistance grows. Meanwhile, regional land use and infrastructure is continually oriented towards vehicles, limiting opportunities for people of all ages to walk or bike safely and enjoyably through their communities and adding to health concerns. Sitting in between these issues of medical health and the built environment is civic health in the form of community safety, civic engagement, and related subjects. Several parallel trends – of an increasing elder population, more single-parent households, and of widespread obesity among youth and adults– are presenting new challenges for service providers and those looking at the built environment as a whole.

This chapter of the *Plan* focuses on the health and wellness of communities within the Rutland Region. Regional focus on health and wellness is important for the following reasons:

- **It is a growth, development, and redevelopment issue:** The location, types, and patterns of land use all shape individual behaviors, influencing local and regional health outcomes.
- **It is a transportation issue:** Options for mobility have a profound influence on public health. Some modes of transportation also affect air quality, which have negative health impacts such as asthma, heart, and lung diseases.
- **It is an environmental issue:** Air quality, water quality, and access to nature and open space also affect the health of both humans and the environment.
- **It is an economic issue:** Health care is a booming industry and it impacts the costs for all businesses and their ability to attract and retain employees. The lack of good health for individuals affects their employment, affordability and access to housing, transportation, education, and nutrition.

This chapter will address the subject from three perspectives: physical facilities, such as the Rutland Regional Medical Center, nursing homes, and sidewalks; health of individuals, such as nutrition programs for students and in-home care organizations; and health of the communities.

CURRENT CONDITIONS

Current Public Health

The overall physical and mental health of Rutland County residents is tracked by three separate organizations. Rutland



FAST FACT

The overall physical and mental health of Rutland County residents is tracked by three separate organizations.

- The Rutland Regional Medical Center, though its bi-annual Community Needs Assessment, measures physical health as it relates to hospital visits.
- The Vermont Agency of Human Services uses its annual "Vermont Well-Being" social indicators source book to examine eight broad public health issues each measured by 10 -20 data indicators.
- The national Centers for Disease Control (CDC) provides annual statistics on a set of seven behavioral risk factors for micropolitain areas throughout the Country, including Rutland County.



RRPC Staff

Rutland Regional Medical Center provides primary and emergency care to people throughout the region.

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FAST FACT

Rutland Regional Medical Center (Fiscal Year 2013)

- Number of Beds: 133
- Emergency Department Visits: 34,589
- Number of Births: 378
- Rehabilitation Visits (Physical, Occupational, Speech Therapy): 27,971
- Medical and Radiation Oncology Visits: 20,518
- Outpatient Registrations: 228,980
- Inpatient Admissions: 5,908
- Medical Staff: 284
- Medical Specialties: 37
- Employees: 1,480
- Volunteers: 353
- Volunteer Hours Contributed: 51,852

(source: www.rrmc.org - visited 10/7/2014)

Regional Medical Center, as required by federal regulations, conducts a Community Needs Assessment every three years. The most recent assessment was completed in the fall of 2012.

Managed by the Rutland County Health Needs Assessment Steering Committee, the Needs Assessment include a broad range of data and input from within the hospital and around the community and Region. Information includes secondary data from other sources as well as individual input through consumer surveys and focus group meetings. The purpose of the assessment is to:

- Describe the health status of the community
- Identify the community's health needs
- Compare current needs to those identified previously

The assessment is used to monitor changes in the health of the community, serving as guidance for the development of services and the allocation of resources based on opportunities and needs. The Rutland Regional Medical Center's Community Needs Assessment further analyzes needs and priorities for action in the Rutland Region. This is accomplished through data collected by the Medical Center and state agencies and input from local medical providers and municipal officials. Topics addressed in this assessment included: overall measures of community health, cancer, maternal and child health, mental health and child abuse, chronic disease, prevention, access, lifestyle and behavior, injury and violence, workforce, and health care services.

The Vermont Agency of Human Services uses its annual "Vermont Well-Being" social indicators source book to examine the health status of Vermonters and to guide the work of public health through 2020. This report presents more than 100 public health indicators and goals carefully chosen by state government, health, and human services professionals.

The CDC provides annual statistics and indicators that suggest that the health of residents of Rutland County is similar to their counterparts throughout the country. Overall health, as reported by surveyed individuals, was rated better in Rutland County than elsewhere in the country.

The Vermont Well-Being 2006 study reveals analogous results, with Rutland County at comparable levels to the rest of Vermont in most categories. In the Rutland Region, higher than average rates of poverty and an older than average population present additional challenges to health in the area. Trends throughout the state in most health categories – smoking rates, infant mortality, births to unmarried teens, and teen depression symptoms – have been positive over the past several years. In others areas, including incarceration rates and immunization rates for children, statewide figures show little progress or some backsliding (Vermont Well Being 2006 Survey).

Facilities

Physical facilities are the most outwardly apparent feature of the Region's health and wellness system. Facilities include those supporting medical needs, civic order, special needs, and physical fitness. In the Region's recent history the primary focus of those involved in community health has been on supporting medical facilities and facilities promoting civic order. This is in the process of changing, with the past decade placing a greater

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emphasis on prevention.

Medical Facilities

- The Rutland Regional Medical Center I (RRMC) n Rutland City is the Region's hospital. The RRMC supports two satellite medical centers, in Brandon and Castleton.
- A number of private offices and clinics offer primary care services throughout the Region. The majority of these are concentrated in Rutland City.
- Medical specialist offices, ranging from eye care, to pediatrics, and all other areas, are scattered throughout the Region.

Civil Order Facilities

- Five courthouses serve the Rutland Region, all located within Rutland City. They are: Family Court, Probate Court, U.S. Bankruptcy Court, the Rutland Superior Court, and the Rutland County District Court.
- There is one incarceration facility in the Region, the Marble Valley Regional Correctional Facility. All other inmates are housed elsewhere in the state or country.

Special Needs Facilities

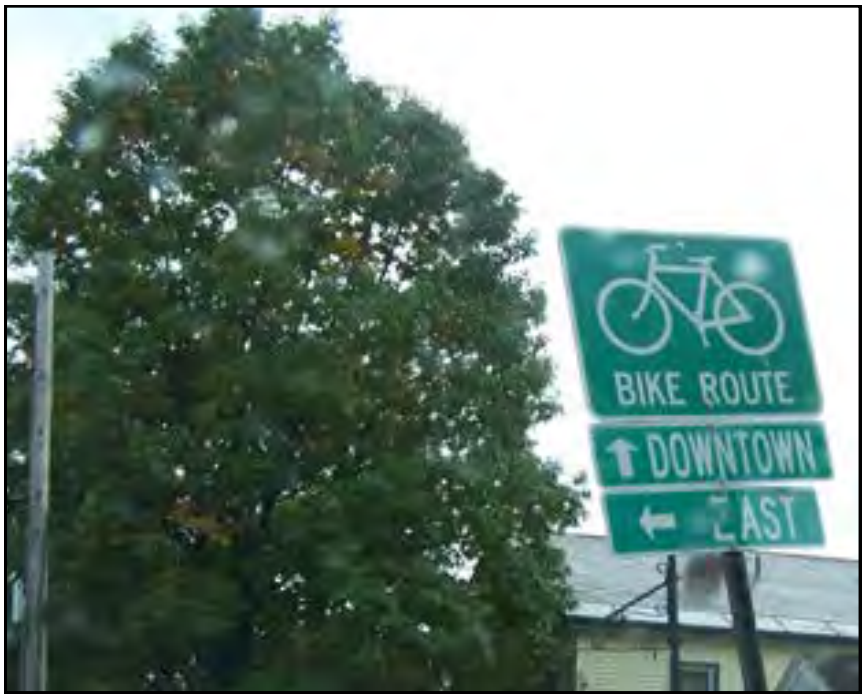
Special needs facilities include a wide range of establishments intended to provide support to the public on a short-term or longer-term basis.

- There are currently three nursing homes in Rutland County: Rutland Healthcare and Rehabilitation Center, The Pines at Rutland Center, and Mountain View Genesis Elder Care. Together, they have 406 beds (VT Department of Disabilities, Aging and Independent Living). In 2014, they reported occupancy rates of 73.74%, 93.71%, and 89.81% respectively. An additional nine facilities providing nursing overview, are spread throughout the Region's larger communities (Southwestern VT Council on Aging).
- Multiple group homes exist within the Region and provide housing, counseling, and medical assistance to residents. They tend to be small, typically serving eight residents each.
- Within the Region, a series of half-way homes, including Dismas House, provide temporary housing and a sense of community for former inmates seeking to re-integrate themselves into the general population.
- One homeless shelter, the Open Door Mission in Rutland City, provides 15 beds to the public for overnight stays and another 18 beds to Veterans in need of temporary housing. BROC—Community Action in Southwestern Vermont can also assist the homeless with limited transitional housing.

CONNECTING THE PLAN

The Future Use of Land chapter of the *Plan* charts the Region's population, economic, and service centers.

For detail and analysis of facilities promoting physical fitness, see the Recreation and Open Space chapter



RRPC Staff

Signage helps bikers navigate the safest routes through Rutland City.

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FAST FACT

SUPPORT SERVICES available in the Region include:

- Mental health providers such as Rutland Mental Health,
- Assistance to the elderly, including the Southwestern Vermont Council on Aging and Meals on Wheels At home care providers, including the Rutland Area Visiting Nurses Association and Hospice, Professional Nurses Association and several medical equipment providers, and
- Resources from the state, including Child Care Services, Vermont Department of Health Offices, and others.

Finally, Rutland is home to The Dodge House, temporary housing for homeless veterans with honorable discharges.

- There are several private, non-profit educational and behavioral assistance facilities within the Rutland Region, including the Smokey House Center in Danby, Spring Lake Ranch in Shrewsbury, and Serenity House in Wallingford.

Physical Fitness Facilities

There are several facilities that support the physical fitness and rehabilitation of Rutland Region residents. They include indoor and outdoor, public and private, formal and informal facilities. While the majority are intended to be used for recreation, a small number, including a pool at the Vermont Achievement Center, are also intended for medical rehabilitation.



RRPC Staff

Primary care facilities and specialized services dot the neighborhoods adjacent to Rutland Regional Medical Center.

Public Space Facilities

Research has shown that physical activity (and public health) is closely related to the physical environment of a place. In short, this refers to having a built environment that supports and favors walking and biking as means of transportation over use of the automobile. A combination of well-maintained sidewalks, building placement that makes walking between stores, businesses, schools, and homes feasible, safe lighting and patrolling, and attractive built and natural environments plays a critical role in the health and welfare of a community.

Rutland Region communities have a long history of built environments that support walking and physical activity. The Region's sub-regional centers, Brandon, Killington, Fair Haven, Poultney, and West Rutland, were built with pedestrians in mind, with buildings close together, important public spaces, high quality architecture for key buildings, and room for sidewalks. The majority of new construction in the last fifty years, however, has been designed around the automobile. This has particularly been the case along US Route 7 and US Routes 4 and 4a. These types of more recent infrastructure developments have had the unintended consequences of limiting physical activity and contributing to increasing obesity rates among the Region's population. There are many studies that link current, automobile oriented land-use patterns with increases in obesity and heart disease and decreases in community ties and social capital.

> "The more integrated we are with our communities, the less likely we are to experience colds, heart attacks, strokes, cancer, depression…"(Leyden, K. 2003)

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Programs

Social programs complement the physical facilities that influence the health of the Rutland Region. These include insurance providers, state human services, advocacy groups, and organizations providing education, training, and support services to the public.

Primary Care Physicians, Dentists, and Specialists

Family doctors and dentists provide the majority of medical support and help meet residents' primary healthcare needs. Traditionally, family doctors have worked with patients to treat problems as they occur. According to the Rutland Community Needs Assessment, however, it has become clear that preventative care begins with medical professionals, who have the most consistent contact with adults about their health (Act 53 Community Health Needs Assessment). The network of specialists throughout the Region supports the work of the primary care physicians.

Mental Health

Mental health is addressed by both family doctors and local organizations such as Rutland Mental Health. Both work with individuals to address issues such as addiction, alcohol and substance abuse, and depression. The Rutland Regional Medical Center treats individuals with emergency needs, while Rutland Mental Health works with individuals for longer-term treatment.

Advocacy, Education, and Special Needs Support

For many residents, there is an urgent requirement for special needs support that is equal to or greater than the services provided by doctors. Support services include mental health providers (such as Rutland Mental Health), assistance to the elderly (including the Southwestern Vermont Council on Aging and Meals on Wheels), at home care providers (including the Rutland Area Visiting Nurses Association and Hospice, Professional Nurses Association, and several medical equipment providers), and resources from the State of Vermont, including Child Care



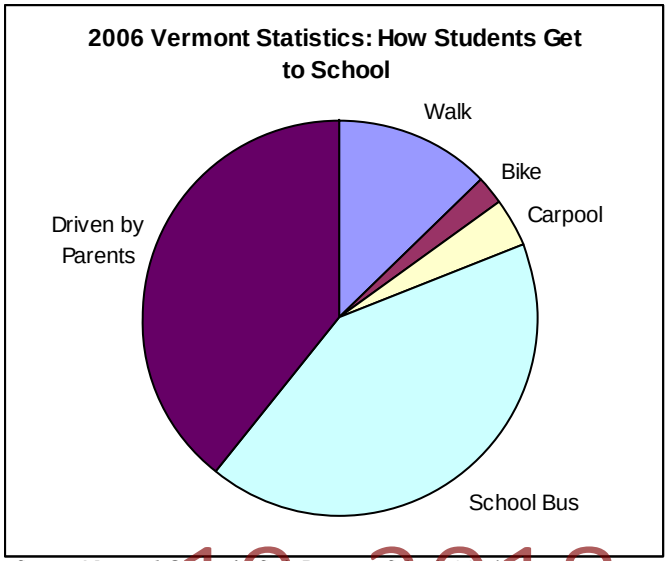
FOOD FOR THOUGHT

THE SAFE ROUTES TO SCHOOL PROGRAM

Safe Routes to Schools is a program which intends to diminish the prevalence of obesity across the country by promoting healthy alternatives to riding a bus. In the Rutland Region, two communities participated in the first round of the program: Fair Haven and Chittenden.



The two have participated in a study of current commuting patterns and are developing plans for promoting high rates of walking and cycling to school.



Source: National Center for Safe Routes to School, 2006

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CONNECTING THE PLAN

A need for nurses and other health professionals has been identified within the Rutland Region and nationwide. See the Education chapter for details.

The Recreation and Open Space chapter of the plan, meanwhile, examines facilities and program available and needed at all ages in the Region.

Services, Vermont Department of Health Offices, and others.

Public education related to community health is a principal activity of many of the types of organizations listed above. Several other groups, including the Rutland Area Physical Activity Coalition, the Rutland County Nutrition Coalition, and the Rutland Worksite Wellness Initiative, focus their efforts entirely on education and advocacy.

Employer Health and Wellness Programs

The Rutland Region Worksite Wellness Initiative is the primary local provider of employer-based services in the Region. The organization has worked with larger employers in the Region to develop worksite wellness initiatives. A small but growing number of employers today are seeking assistance to develop such programs using local and national wellness organizations. Programs are paid for either through in-house funds or by partnerships with health insurance providers. These programs vary in degree and scope from a basic, annual health fair to regular consultant visits with employees.

School Health and Wellness Programs

Health in school is addressed primarily through physical education classes and extracurricular activities (prevention and health maintenance), and services provided by the school nurses' offices (immediate health needs). Active schools have also developed partnerships with Region organizations such as the Rutland Area Physical Activity Coalition to provide education and training on safe and fun walking and bicycling for students. Many schools are also investigating the Safe Routes to School program, based on the premise that all kids should be able to walk and bike safely to school. "Safe Routes to School programs combine education, engineering, enforcement, evaluation and encouragement to get more kids walking and biking to school and make conditions safer and more convenient." (Safe Routes to School Vermont)

Economic Activity

The state of the economy is also important to consider when discussing health and wellness. Medical care can be very expensive, even when residents are insured. Since 2008, the economic downturn has made it increasingly difficult to access affordable health care. As being unhealthy also affects a person's ability to work well, becoming ill can lead to a cycle of needing health care, but not being able to afford it because of a lack of work. Some steps, such as health care reform, have been taken to address this problem, but the economy will still be a factor when residents are seeking medical support.

Health Insurance

Insurance programs fund the majority of the work that helps provide the facilities and programs for Vermonters health care.

Private insurance providers (principally Blue Cross/Blue Shield, MVP, and Cigna) are supplemented by federal (Medicare and Medicaid) and state (Dr. Dynasaur and others) insurance programs to provide funding for the public to receive medical care from primary care physicians, specialists, hospitals, and other facilities. Together, these programs provide the majority of Vermont residents with some level of health care coverage.

In 2006, the Vermont legislature added

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a new piece to the puzzle, the Catamount Health Plan, with goals of reducing the number of Vermonters left uninsured by the existing programs and lowering the rate of increase in health costs. However, the Catamount Health Plan ended in March of 2014. Vermonters who were covered by Catamount Health may now enroll in either Medicaid or a private insurance plan. Residents may enroll in Medicaid and Dr. Dynasaur at any time through Vermont Health Connect.

Substance Abuse

One of the major challenges of the Rutland Region today is substance abuse, particularly of opiates. Vermont ranks in the top ten states for substance abuse, including illicit drug use and alcohol abuse (Rutland County Community Health Needs Assessment). Opiates are the biggest challenge, however Rutland is taking steps to combat substance abuse problems. In 2013 Rutland opened the West Ridge Center for Addiction Recovery, a methadone clinic treating addiction problems that serves approximately 300 Vermonters a day. "The Center's services are comprehensive and thorough, treating all aspects of addiction including social, psychological and medical problems. Emphasis is placed on recovery, personal health and the patient's connection to family and the community." (Rutland Regional Medical Center)

UNMET NEEDS

Public Health

The 2012 Rutland Community Health Assessment, which included extensive outreach to health professionals and local officials, combined with outreach completed by the Rutland Regional Planning Commission, has identified several key public health issues in the Rutland Region. These key issues have proven to be closely related to the principal causes of reduced quality of life and death among Rutland County Residents. They include:

- **Adult Obesity:** According to a 2002 telephone survey of Rutland County residents, 56.7% of respondents reported themselves to be overweight or obese, with the highest averages among the lowest income and less educated subgroups of the survey (2004 Rutland Community Needs Assessment) Comparatively, data from the 2012 Rutland Regional Medical Center Community Health Assessment reports that 63% of Rutland County adults are overweight or obese. Severe weight problems are among the leading factors in a host of medical



Pine Hill Park in the northwest corner of Rutland City has undergone substantial renovations in the past few thanks to a coalition of organizations and volunteers. The Park offers a series of walking, hiking, bicycle, cross-country ski, and snowshoes trails for people of all ages and abilities. A copy of this map can be found at www.walkbikerutland.org

www.rapac.info

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CONNECTING THE PLAN

The health of the Region's population is lined not only to recreation, as noted on the previous page, but also to several other chapters in the Regional Plan:

- Economic Activity, through poverty, employment, and health insurance;
- Air Quality, for its impacts of public health;
- Regional Profile, for its description and analysis of current and future population trends in the Region;
- Emergency Management, when short term health care becomes an emergency; and,
- Housing, for the need to provide age-appropriate housing and housing for the homeless.

conditions, including heart disease, diabetes, joint problems, and many others.

- **Child Weight:** According to the 2012 Community Health Assessment, approximately one in four (24%) ninth- through twelfth graders is overweight or obese. This is slightly higher than the state of Vermont, which has a reported 23% of overweight or obese high school aged youth (Rutland County Community Health Needs Assessment).
- **Tobacco Use:** While the number of smokers in the total population remains elevated above state and national targets, Vermont has seen success in reduction in smoking over the past twenty years, especially among teenagers. Among Rutland County adults, smoking rates have fallen from an average of 24.6% in 1996-2000 to 23.7% in 2000-2004 and has fallen further to about 19% in 2009 (Vermont Well Being). Among teens on a statewide level, smoking rates from dropped from 40% in 1995 to 18% in 2005 and then to 13% in 2011.
- **Smoking During Pregnancy:** While Vermont ranks among the states with the lowest proportion of smokers, it ranks among the highest in the percentage of smokers during pregnancy. According to the Agency of Human Services, 19.7% of mothers smoked during pregnancy in 2004. A 2001-02 federal study ranked Vermont 47th in the county, with 20.1% of all mothers, and 48% of all 15-19-year old mothers smoking during pregnancy. Earlier versions of the study, in 1990-91 and 1995-96, had 36.1% and 38% of 15-year year old mothers smoking, respectively (Center for Disease Control and Prevention).
- **Alcohol Abuse:** According to the Community Health Assessment, 7.4% of Rutland County residents are at risk for heavy alcohol consumption and 19.5% are at risk for binge drinking. Both figures are above statewide averages.
- **Mental Health Needs:** The proportion of Rutland County residents at risk for depression and the county's suicide rate are both above statewide averages, according to the Rutland County Health Assessment.

Facilities

A recent upgrade to the Rutland Regional Medical Center's Emergency Department has relieved the current need for emergency facilities, with the exception of peak hours. However, unmet needs are still prevalent and include:

- **Nursing Homes:** According to the Vermont Department of Disabilities, Aging, and Independent Living, there is not an extreme need for new nursing homes at the present time. However, Rutland County is projected to have almost a quarter of its population age 65 and over by 2030, so there will likely be a higher need in the near future.
- **Homeless shelters:** At present, there are only two homeless shelters in the Rutland Region, and none for youth following the closure of Spectrum in 2005.

Services Providers

A need persists for service providers to address the issues identified above. They include:

- **Nurses:** There are ongoing Regional and nationwide nursing shortages in hospitals and other facilities. The number of nurses graduating from schools – including Castleton State

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College – is not large enough to meet the demand.

- **Primary Care Physicians:** According to the 2004 Rutland Community Needs Assessment, there is a lack of primary care physicians, especially in areas outlying Rutland City and Rutland Town.
- **Hospital Doctors:** The Rutland Regional Medical Center reports that it is a challenge to attract and retain top medical professionals, in part because of the difference in salary scales offered in Vermont versus more metropolitan areas

Physical Fitness Facilities

The majority of new development in the Rutland Region over the past fifty years has not been conducive to active lifestyles. Automobile-oriented strip development has created a land use system in which individuals are essentially forced to use automobiles to travel between home, work, and stores. "…certain development patterns, such as a lack of sidewalks, long distances to schools, and the need to cross busy streets, discourage walking and biking to school. Eliminating such barriers can increase rates of active commuting." (Sally and Glanz, 2006) In some cases, this was and is inevitable, notably in the most rural parts of the Region. In Rutland, and the sub-regional centers – and to an extent in every village – there is a history of pedestrian-oriented development that has been ignored over the past fifty years in favor of automobile oriented development. This has led to a built environment that discourages physical activity. There is a lack of opportunity for casual recreation (i.e., safe and enjoyable walking and cycling) in most communities within the Rutland Region, though several, including West Rutland. Rutland City, and Poultney, are taking active steps to increase amenities for pedestrians.

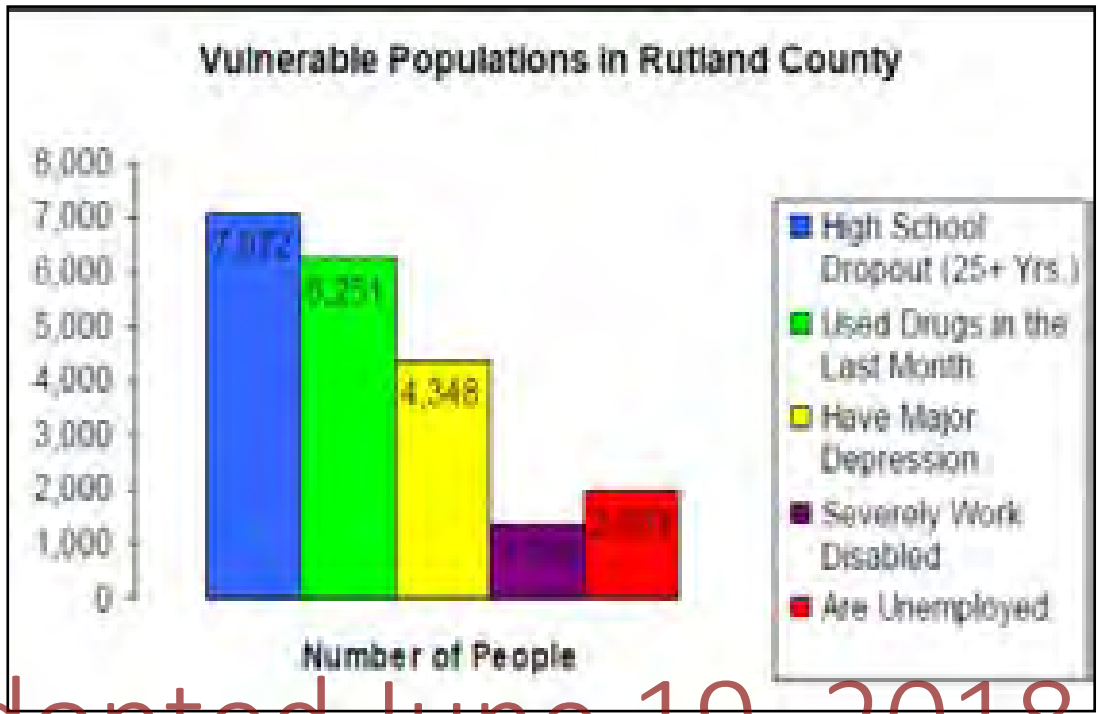
Programs

There is a great need for physical and mental health services in the Rutland Region. Key aspects include:

- Affordable access to health care is the most dominant unmet need in the area of community health. According to the 2012 Needs Assessment,12% of adults had no health insurance. According to the Assessment, lack of health insurance is concentrated in low income families.

"Among respondents, the biggest barriers to accessing services are a lack of insurance and the cost of the service. Location and transportation do not appear to be barriers to access. Services with the greatest access issues were alcohol and drug treatment, and mental health services." Rutland County Health Needs Assessment, p. 31.

- Funding for prevention programs is another unmet need. The James T. Bowse Health Trust, a non-profit funder associated with the Rutland



Source: Rutland County Community Health Needs Assessment 2012-2015

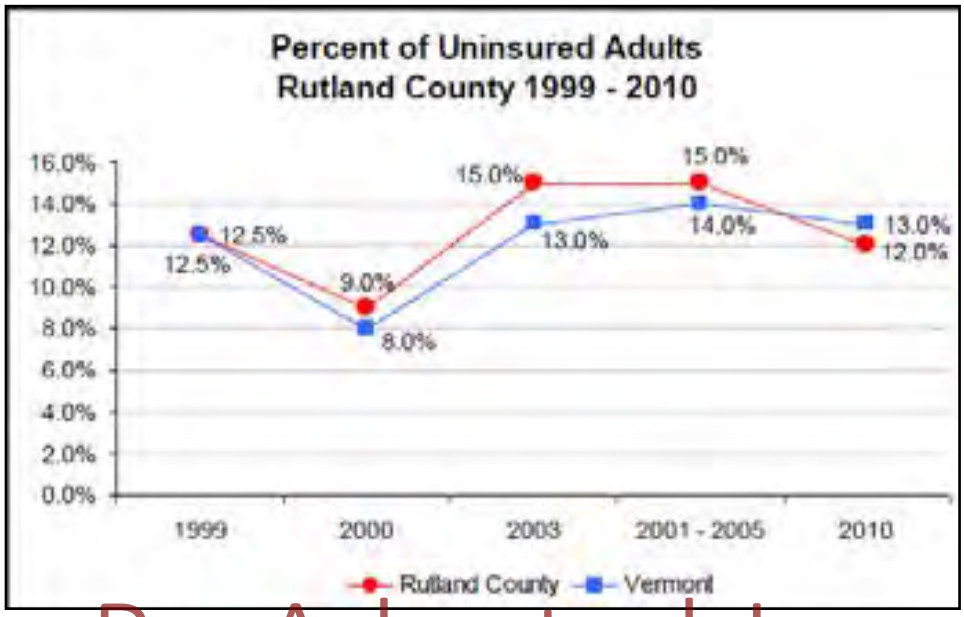
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Regional Medical Center, has provided $2.6 million in grants to support local prevention activities since 1996. The need for such programs severely outstrips availability of funds, however, with several applications rejected each year.

FUTURE TRENDS

The Rutland Region will experience a major demographic shift as the residential population ages. In 2000, 19% of the Region's population was 60+, and 11% was 70+. By 2020, those figures are projected to rise to 31% and 16% respectively. In the health care field, these numbers will likely result in a greater need for services in all three categories, but most notably in the short-term and long-term care fields. This is a trend throughout the northeastern United States, one that is not likely to change. This trend will dramatically impact access to and provision of services, including:

- **Transportation:** Automobiles are not an option for all seniors, due to cost or ability to drive. Transportation systems will need to accommodate seniors need for mobility, not only for access to medical services, but for quality of life as well.
- **In-patient and out-patient care facilities and services:** Medical facilities will need to expand to meet a growing population of elderly residents of the Region. Services, such as the Rutland Area Visiting Nurses Association and Hospice, and emergency medical services, will also be relied upon by greater numbers of people and a larger proportion of the total population.
- **Increased need for housing accessible to seniors:** Over the next several decades, the Region must focus on developing age appropriate housing for its growing senior population. This includes housing units without stairs, homes within a short distance to services, and homes with access to medical care. The communities with the highest concentration of seniors (Rutland City, Rutland Town, Proctor, Fair Haven, West Rutland, Pawlet, Wells, and Mendon) should focus on this issue immediately.
- **Declining vehicle miles:** People are travelling less by personal automobile. This could be due to many factors, including changing driving habits from the Great Recession, older citizens who feel unsafe driving, and younger residents who do not want to drive, but would rather live in walkable communities and urban centers. This is not just a Vermont trend, decreasing vehicle miles travelled is seen throughout all of the United States. Therefore, planners and politicians should take this trend seriously and plan for providing alternative modes of transportation.



Source: Rutland County Community Health Needs Assessment 2012-2015

FUTURE GOALS

It is clear from the Regional and statewide health assessments, and from meetings with organizations in the Rutland Region, that the principal focus of health care must be prevention. Where prevention is not possible, health care should be the least disruptive possible.

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The Rutland County Community Health Assessment identifies three top priorities for health care:

- Increase the availability of mental health and substance abuse services
- Decrease heart disease and associated risk factors
- Improve access to the primary care system

Making progress towards attaining these goals will rely on four broad categories of health and wellness: prevention, short term treatment, long term treatment, and land use patterns.

Prevention

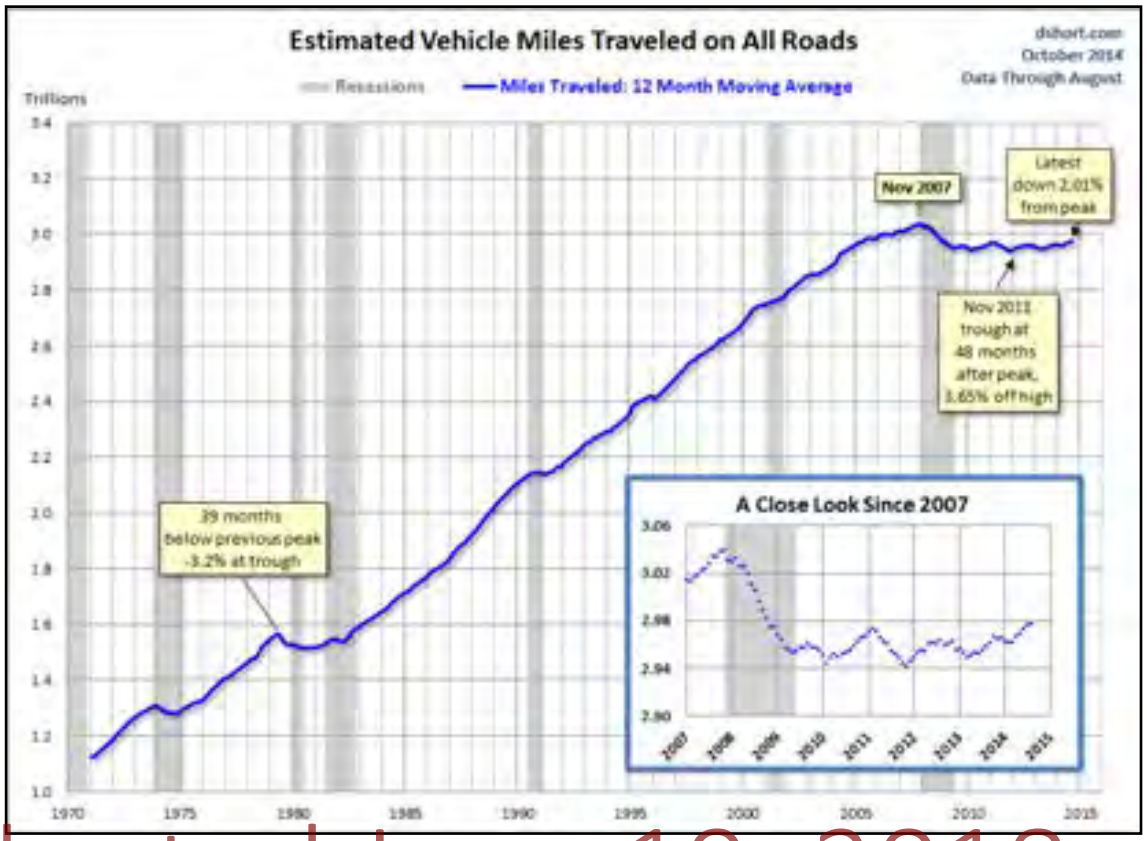
Prevention must be the cornerstone of health and wellness in the 21st Century. From both a quality of life and financial perspective, multiple sources have demonstrated that the most effective way to address the physical and mental health needs of the Region's current and future populations must be perpetuating good health. This must take multiple forms to address the wide-ranging needs of the Region's population, including but not limited to:

- Improving access to dentists and family doctors, along with increased training for medical professionals to include stress prevention in treatment regimens.
- School based education about healthy living, including encouraging healthy eating habits, exercise, education about substance abuse, and education about sexual activity.
- School commitment to physical education and extracurricular activities that are of interest to students and provide physical activity.
- Health clinics for adults focused on preventative care, education, and immunization.
- Recreation programs for children and adults.
- Education for parents on how to promote healthy lifestyles for children.
- Land use decisions making healthy choices the easy choice.

Short Term Treatment

Where prevention is not possible, the goal for health and wellness in the Rutland Region is to provide high quality short term care. Short term care includes emergency medical treatment, maternity care, non-invasive surgery and recovery, drug treatment programs, and restorative justice programs.

These programs, and the facilities that support them, form the basis of most traditional medicine: treatment of needs, injuries, or mental illness. Many programs



Source: Doug Short, http://bit.ly/1ot59dJ

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are well established and effective, though, as noted in the unmet needs section, some programs are lacking in the Rutland Region.

Long Term Treatment

The third approach to meeting current and future needs is long term and palliative (pain relieving) care. Care for individuals needing this kind of assistance is critical as many of the patients are reliant upon the services provided. Hopefully, the number of individuals needing this type of service can be minimized through effective prevention and short term care. This is not possible in all cases, however. In order to meet the needs for these types of services, municipalities and local organizations will need to consider how to ensure that sufficient facilities are built to care for individuals with long term needs.

Changing Land Use Patterns

Over the last several decades, land use patterns have shifted from compact, walkable neighborhoods to automobile oriented suburbs where it is difficult to perform daily tasks without a vehicle. This lack has contributed to obesity and related diseases, as automobile oriented neighborhoods do not encourage active lifestyles. In order to change this and increase public health and wellness, future community planning should focus on three key areas:

- **Design for Active Lifestyles:** Future planning should focus on smart growth and supporting bike and pedestrian friendly infrastructure, including human scale design, compact, mixed use development, appealing streetscapes, sufficient sidewalks, parks and other recreational facilities, and safe ways to cross roads. All of these factors enable residents to build exercise into daily life without thought, rather than having to drive somewhere to walk, bike, and play safely.
- **Transportation:** Focus on promoting methods of transportation other than the personal automobile. This includes mass transit, walking, and biking. Reducing the use of personal vehicles leads to cleaner air and water (through reduced vehicle emissions) and increased exercise, all of which contribute to community health and wellness (Vermont Department of Health).
- **Environmental Impacts:** Everything that humans do has some type of impact on the environment, which in turn influences human health and wellness. Future design should work with the natural environment rather than against it by encouraging density, preserving open space, and reducing vehicle greenhouse gas emissions whenever possible. Access to nature, clean air and water, and a healthy physical environment are all essential to human health and wellness (Vermont Department of Health).

Health Impact Assessments (HIA)

According to the CDC, Health Impact Assessment (HIA) is "…a process that helps evaluate the potential health effects of a plan, project or policy before it is built or implemented. A HIA can provide recommendations to increase positive health outcomes and minimize adverse health outcomes." Conducting a HIA consists of several steps, including:

- Screening (identifying where a HIA would be useful)
- Scoping (identifying health effects to consider)
- Assessing risks and benefits
- Developing recommendations
- Reporting
- Monitoring and evaluating

A health impact assessment is recommended for all projects going forward in order to help identify any possible effects on health and wellness within the community (CDC Health Impact Assessment).

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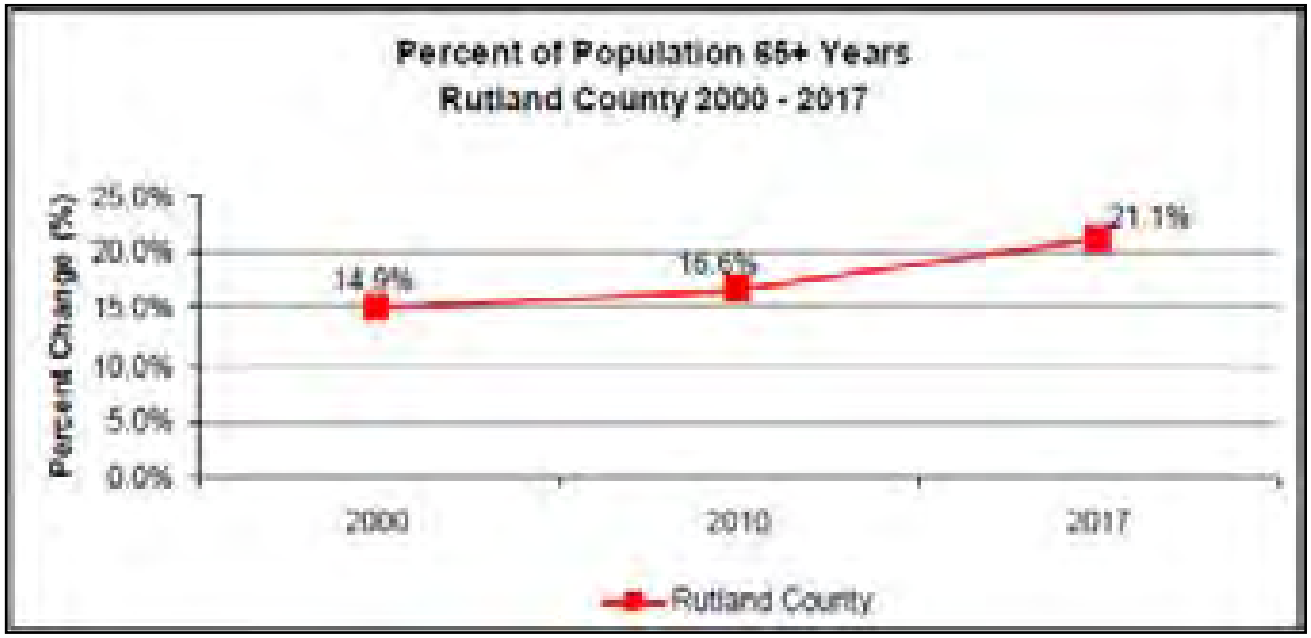
RUTLAND RPC GOALS

In addition to supporting activities and developments that contribute to health and other needs of individual communities and the Region, the Rutland Regional Planning Commission will strive to accomplish the following goals in the coming years:

- Work with local planning commissions to address community health issues in local plans and bylaws
- Provide technical assistance to communities to apply for bicycle, pedestrian, and transportation alternatives grants promoting walking and bicycling
- Provide input for Act 250 reviews regarding ways in which proposed development can promote physically active lifestyles
- Participate in the work of the Rutland Area Physical Activity Coalition
- Work with the Rutland Area Farm and Food Link to promote local agricultural products
- Conduct Health Impact Assessments on projects proposed in the Region

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.



Sources: US Census Bureau, Profile of the General Population, 2000 and 2010 & Shaping the Future of Longer Term Care and Independent Living, Vermont Agency of Human Services, 2008

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Case Study: Project VISION

Project VISION believes in Rutland—something that can be difficult to do in the face of the poverty and substance abuse issues that challenge many residents of the Rutland Region. Project VISION (Viable Initiatives & Solutions through Involvement of Neighborhoods) is approximately one year old and ambitious, aiming to combat drug use in Rutland not through incarceration, but instead through neighborhood revitalization and by digging out the root causes of social injustice and poverty that may lead to substance abuse. Although Project VISION is young, it represents a remarkable cooperative effort between over 100 local agencies focused on community empowerment and development. Some local participants include: Rutland Redevelopment Authority, Neighborworks, The Dream Center, Green Mountain Power, Community College of Vermont, the Vermont Farmers Food Center, the Rutland Herald, Rutland Regional Medical Center, the Rutland City Police Department, and many more.

Project VISION has two core values: collaboration for the greater good and a renewed focus on the positive. These values encourage community cooperation and an appreciation for the diverse and wonderful resources that Rutland already possesses. In support of these values, Project Vision is organized into three teams, each of which focuses on a different area of concern: treating addiction and substance abuse, reducing crime, and building great neighborhoods.

Some of the projects that Project VISION is pursuing are as follows:

- Neighborhood beautification
- Sidewalk improvements
- Community gardens
- Increasing youth activities
- Repurposing a vacant building into a neighborhood community center
- Facilitating legal help for foreclosed property owners
- Organizing volunteers to help with repair work as part of housing revitalization

Project VISION has also collaborated on many local events and announces ongoing events including:

- Learn to play Bocce
- Empowering communication workshops
- Substance abuse prevention skills trainings
- The Mike O'Malley Memorial 5k Run/Walk
- Umatter for Community Professionals Suicide Prevention & Postvention
- Green Up Day

Project VISION
We believe in Rutland

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Chapter 8: Community Involvement

INTRODUCTION

Rutland Region residents have a long history of direct involvement in local organizations and town governance, as well as a tradition of knowing and helping neighbors. Healthy communities are ones in which residents are engaged in the community and play an active role. In the Rutland Region there is great need for civic engagement; most towns rely on volunteers to maintain basic operations.

This chapter of the Regional Plan examines the relationship between civic engagement and planning vibrant communities. Civic engagement, for the purposes of this chapter, means actions taken by individuals for the betterment of a larger community.

CURRENT CONDITIONS

Public involvement takes multiple forms in the Region. Three in particular are addressed below:

- Voting
- Participation in local and Regional activities
- Volunteerism

Each of these represents important forms of participation and reflects a level of commitment to the community.

Voting

Town Meeting

Local public decision-making takes place annually at the town meeting, held between the first Saturday and Tuesday in March, and at warned special town meetings called by the local legislative body or by petition. Local voting takes two basic forms: from the floor and by Australian ballot.

Generally, ballot items voted on include election of local officials, municipal budgets, district or union district school budgets, special funding requests, and local decisions.

Voter turnout in local elections varies by community and the issues at hand. Turnout can be affected by anything from work schedules to how easily accessed a voting area is, for abled and disabled residents and also for those with and without cars. There is research that correlates more walkable communities with higher rates of voting and participation.

For ballot items voted upon by Australian ballot, the Region-wide turnout average between 2001 and 2006 was 29.2%, with figures ranging from a low of 23.9% in 2001 to a high of 33.5% in 2004. Looking at the data on a town-by-town basis, average turnout has ranged from 50.8% in Danby to 13.8% in Killington.

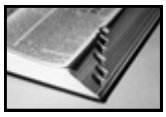
State Elections

Voter turnout remains low in Rutland County. In the 2014 mid-term primary elections, of 41,088 registered voters, only 3,618 voted, or about 9% of all voters (VT Secretary of State). In the 2014 general elections of 41,289 registered voters, 19,295 turned out to vote, or approximately 47% (VT Secretary of State). This is a normal voter turnout for Vermont, which averaged about 45% of registered voters coming out for the state. However, less than half is still not a desirable result, as without voter participation, the political system does not work as well as it could.

Community Participation

One indicator of community health is the depth of residents' civic engagement. The more active community members are in positive projects such as blood drives, festival planning, and school events, the more vibrant a place it is in which to live, work, play, and learn.

Participation in local and Region-wide events varies greatly by the subject,



DEFINITIONS

"Voting From the Floor" is what we generally picture a Vermont town meeting to be like – it is when people gather together at a public meeting place like the town hall or local school to discuss and vote on issues. Floor meetings can last a few hours – or they can go all day. The length of the meeting depends on how many articles are on the warning and how much discussion there is over the issues raised by the articles.

"Australian Ballot" voting takes only a few minutes. It takes place at a polling place where voters mark a secret ballot which is counted when the polls close. This is how we cast our ballots at the general election in November. Town Boards of Civil Authority determine when the polls open in the morning (between 7:00 a.m. and 10:00 a.m. and all polls must close at 7:00 p.m.

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CONNECTING THE PLAN

Community participation is most obviously essential when it comes to the provision of emergency services. The vast majority of towns in the Rutland Region rely upon volunteers to fill the various roles from the fire department to Constable to Emergency Management Coordinator to Health Officer. See the Emergency Management section for a broader discussion of trends in volunteerism.

intended audience, cost, marketing, quality, and perceived need. The Region's residents have shown a great commitment to donating time and money to worthy causes. Annual events such as the game suppers in Tinmouth and Pawlet supporting fire departments, and food drives such as Stuff-a-Bus, are always successful and have, in recent years, broken attendance and donation records. This is particularly true of the Rutland Gift of Life Marathon, which broke national records for blood donations in 2013, collecting 2,350 pints in one day. In 2014, this event also became the longest blood drive in American history, spread out over twelve days in December.

High rates of participation also occur in community events that constitute longstanding traditions and are generally entertaining to families. These include music in the park, spaghetti dinners, holiday festivals, etc. This is particularly true when the community is well designed, consisting of dense, walkable, connected streets which residents can traverse easily to reach engagement opportunities. This type of development fosters more active community engagement. When development is low density and auto-centric, it is more difficult for people to participate when it is not necessary. Beyond attendance is the fact that each of these events is organized and run by volunteers from the community, most often without any professional or significant financial backing. This has the effect of not only providing a place for the community to gather and have fun together, but also builds relationships between volunteers and serves as an outlet for residents to get involved in making the community a better place.

Volunteerism

The backbone of the Rutland Region is volunteerism. From elected positions, to volunteer first responders, to faith-based services and non-profit organizations, communities in Vermont lean heavily on an ongoing tradition of service by members of the community. The 2010 Pulse of Vermont Survey contradicts the belief that volunteerism in Vermont is on the decline, with 65% of surveyed adults stating that they had participated in some form of unpaid volunteer work. This is comparable to the 2005 Pulse of Vermont Survey, which stated that 55% of adults responding indicated that they had done unpaid volunteer work in the prior 12 months. This type of volunteerism can range from basic participation to substantial commitments of time and energy to non-profit organizations, churches and other places of worship, and municipal boards and offices. It is the willingness of these volunteers to donate their time and energy that helps to shape the future of communities.

UNMET NEEDS

There is fear that volunteerism and "sense of place" is on the decline among communities in the Rutland Region. Whether or not this is true is unclear, as the Pulse of Vermont survey indicates that volunteerism is increasing. However, even the perception of decreasing volunteerism can influence the community. The potential implications of declines in community participation are widespread, some of which are detailed below.

Voting

As participation in communal activities—such as granges, schools, and others—has declined, it has become more difficult for voters to receive information about candidates and issues at the local level. There is concern that voters are forced to make choices based on limited or no information. Those who use the Internet for research are able to recoup some of this, but in a less interactive, community centered format. The challenge is for elected officials and potential candidates to find ways to reach

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voters in this new reality to ensure that choices made concerning the future of the community are based on well-reasoned votes and not bits and pieces of the picture, especially around complex issues.

Community Participation

Public input and local decision-making have long been centerpieces of Vermont's democracy. Ideas initiated and acted upon by residents form many of the policies and actions that are taken at the town and statewide level. This type of involvement extends into all forms of public policy, including the planning realm. Input for town plans, land use regulations, and other policies is required under state law.

On the surface, the implications of less active community involvement are small. Infrastructure will continue to be built and maintained, schools will continue to operate, existing employment opportunities will be relatively unaffected—at least for a period of time—held up by their own inertia.

However, when a place begins to lack direction and community spirit it loses its attractiveness to potential new businesses and residents. In a global marketplace, people and certain types of commerce can be located almost anywhere. In a rural area such as the Rutland Region, when a community is not energized and focused it becomes difficult to recruit new employees, new entrepreneurs, and new businesses. It then becomes difficult to compete for these essential human and capital resources, and a community can stagnate. There are numerous examples of this disinvestment in both urban and rural settings across the country. Community involvement and participation is vital to maintaining vibrant communities.

Volunteerism

Declines in volunteerism would have a large impact on the Rutland Region. The majority of towns in the Region rely on volunteers for governance, public safety, culture, history, and recreation. Innovative ideas and projects at the local or Regional level typically cannot be successful without volunteers driving the effort.

Below are a series of impacts resulting from a declining volunteer base that have clear and tangible consequences for Rutland Region communities:

- Volunteer fire departments and rescue squads provide essential local services. If the number of volunteers drops below a certain level, whether from disinterest or the aging out of current service members, towns will be forced to have paid staff, which will directly affect town budgets. Currently, all but one (Rutland City) of the 24 fire departments in the Region are staffed entirely by volunteers.
- Local elected officials are relied upon to set important policies concerning the future of the town. If positions become filled because only one candidate is running, voters have little choice to exert their power. In some cases, candidates may only run for office because they feel nobody else



FAST FACT

Volunteerism in Planning

Volunteer groups most often involved in planning work:

- Regional Planning Commission members
- Town planning commissions, selectboards, zoning boards of adjustment, conservation commissions, and development review boards
- Fire departments, rescue squads, town emergency planning teams, the American Red Cross, and several other groups involved in emergency preparedness and response
- Regional organizations, addressing housing, natural resources, business development, and education



The Poultney Fire Department collectively received the 2014 Citizen of the Year award from the Poultney Chamber of Commerce. Photo courtesy of: http://poultneyfire.org/

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CASE STUDY:
POULTNEY THANKS & GIVING

Civic engagement does not have to be limited to individual members of communities. Organizations such as local colleges can participate in the community in partnership with permanent residents, which is exactly what Green Mountain College is doing through its annual day of Poultney Thanks & Giving. This all day event, usually taking place in November, is in its second year and came about from a collaboration between GMC students, staff, and residents of the Poultney community. The purpose of Thanks & Giving is to foster a feeling of community togetherness between GMC students and residents of Poultney and to encourage a spirit of community engagement. The event includes numerous service opportunities within the town, including leaf raking and trash pick-up, trail maintenance, assisting local businesses and residents with cleaning and winterization, and cooking community meals. There are three free community meals—breakfast, lunch, and dinner—cooked from donated food and served in donated spaces by volunteers. There are also numerous workshops, educational opportunities, fun activities, music, and dancing throughout the course of Thanks & Giving.

The first year (2013) was a huge success, with over 300 people attending the community meals, 130 college and community volunteers, and approximately 900 volunteer hours resulting from the 24 different service opportunities throughout the day. As a result of this, the Thanks & Giving team also received the Green Mountain College Community Service award.

Year two (2014) was even better, with approximately 150 volunteers serving at 18 different locations. Year two also expanded on activities offered, including a winter clothes drive and workshops on dance, hula-hooping, tea making, indigenous wisdom, and crowdfunding, all free and open to the community. Year two also firmly cemented Thanks & Giving as a Green Mountain College tradition, and the academic calendar now includes Thanks & Giving on the third Tuesday of each November.

Because this event was such a success and brought the community and the college closer together, Green Mountain College has dedicated itself to ensuring that this very special event becomes a longstanding tradition in Poultney, along with the many other community events they collaborate on with the community such as East Poultney Day and the Poultney Earth Fair.

Some community feedback on the event included:

"I know it was a great deal of work for you [Jensen, and the Thanks & Giving crew] but everyone we've talked to felt it was a job very well done. Everyone at the YAH really appreciated the work done topped of by the wonderful dinner at GMC."

"It went well… Thank you guys again for coming in to do something fun with the 4th graders…. Definitely stop in whenever…. Any opportunity for the students to become involved with the Green Mtn. students is a great experience. Just wanted to let you know."

"I think the day was a success. I heard dinner was great too!"

A YouTube video documenting the first day of Thanks & Giving can be found here: https://www.youtube.com/watch?v=nO9t2YpHiTU

Re-Adopted June 19, 2018





Photos courtesy of The Rope Swing blog and Thanks & Giving participants

Re-Adopted June 19, 2018



FOOD FOR THOUGHT

Volunteering in Rutland Region communities has become more difficult in recent decades. Reasons include:

- More people work and live in separate places.
- Time is more limited as many families are working multiple jobs to keep their incomes at a level needed to meet rising expenses.
- Culture is more individually-oriented with in-home technology.
- More people move from place to place, without establishing roots
- As the population ages, volunteerism among physically demanding organizations (such as fire departments) is declining.

will do the job.

- Pressure on a small pool of volunteers in a town to drive multiple programs can lead to burnout and limited time to do effective policymaking, programming, or physical work to advance the community.
- Small numbers of volunteers faced with large tasks (updating a town plan, establishing a regional district, administering regulations, providing disaster relief, etc.) are typically unable to complete the job effectively from a lack of time and multi-disciplinary approaches to a subject.

FUTURE NEEDS

The most prevalent trends affecting community involvement are the aging of the Region's population and mobility. Both of these trends are potentially challenging will likely have severe impacts on volunteerism and participation in the future.

Aging

As the population ages, the number of volunteers available to do work that requires intensive labor (such as firefighting) is reduced. This will become an increasingly important issue. On the other hand, an increased number of retirees will present an opportunity to tap experienced individuals who may have more free time to perform many other volunteer tasks.

Mobility

Mobility takes two forms in this Plan. On a day-to-day level, it refers to the increased commuting times households face between homes and place of work or entertainment. In a broader sense, it refers to the movement of individuals and families between places to live. Both of these have increased in recent years, according to the U.S. Census Bureau. It is expected that in the short term, at least, these trends will continue.

Greater distance between home and locations such as work, school, and other services means that residents have fewer connections to the community and fewer opportunities for local interaction. More frequent relocation from place to place means that residents may not develop relationships within the community, and in many cases, never reach a point where they are comfortable serving or speaking for the community. This trend, which is likely to continue with today's more transient younger population, will place greater pressure on historic institutions. Mobility is also affected by the aging of residents, as many people drive less the older they become. This can limit civic engagement opportunities for the older residents of the Region, as they may have difficulty getting to and from places of service.

RUTLAND RPC GOALS

The challenges faced by the changing nature of Rutland Region communities present a number of opportunities to engage the public in new ways. These include:

- Making use of social media such as Facebook, Twitter, Front Porch Forum, and other websites to provide public information about upcoming events and promote interaction.
- Providing new residents to a town with clear and concise information about the events, traditions, and organizations of the community, and inviting them to participate.
- Providing voters with clear instructions, easy access to pertinent information, and a sufficient background on the issues being discussed that impact the community.
- Developing recreational activities designed to teach the public about their community.
- Providing forums for people with common interests to connect (such as Rutland Young Professionals, the

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Rutland Area Farm and Food Link, or entrepreneur networks).

In addition to supporting activities and developments that contribute to individual communities and the Region, and which help meet the needs identified in this chapter, the Rutland Regional Planning Commission will strive to accomplish the following actions in the coming years:

- Maintain a website that provides essential and informative resources about the Rutland Region.
- Engage in widespread public outreach and involvement for all planning projects.
- Work with planning commissions to make safe, walkable, communities with public spaces that promote interaction between neighbors through effective town plans and land use regulations.
- Provide ongoing training about planning and development review to local officials, recognizing the frequent turnover in local volunteers.
- Locating polling places in accessible buildings for handicapped residents, bike users, and pedestrian as well as automobile drivers.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

ADDITIONAL RESOURCES

- Vermont Secretary of State — (www.sec.state.vt.us). The Secretary of State's website has information about local, State, and Federal elections, the roles and responsibilities of elected officials, and much more.

- Vermont Planning Information Center — (www.vpic.info). This site contains a wide array of resources intended to be used by volunteer planning commission members, or those interested in community planning.

- Rutland Regional Planning Commission — (www.rutlandrpc.org).

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Chapter 9: Public Libraries

INTRODUCTION

Public libraries have been defining elements of American communities since Colonial times.

How and what libraries do in the Rutland Region and across the country has been rapidly changing as community informational needs change: digital databases available 24/7, downloadable audio and E-books, and DVDs all are now as much a part of library collections as bound, printed books. People visit the library from home or office over the Internet as well as by walking through the doors. But while these forms change, the substance of library service has remained constant from one century to another.

This chapter of the *Regional Plan* is focused on how those roles interact with the needs of the communities and residents they serve.



Libraries throughout the Region are critical educational resources for residents of all ages

CURRENT CONDITIONS

Eighteen of the twenty-one public libraries in Rutland Region reported data to the Vermont Department of Libraries for fiscal year 2012-13. Those libraries provided no-fee service to each of the 26 cities and towns in Rutland County, representing 100% of its total population.

Each is an independent institution, with its own facilities, hiring and firing, procurement, fund-raising, fiscal and program management. Services typically include internet access (both Wi-Fi and at computers), book collections in print and digital formats, recorded books and music, movies, reference assistance, interlibrary loans, free meeting room space, homebound delivery and programs for adults, teens and children. A number of libraries also serve as a base for child and family literacy. Several provide E-readers and other devices as well as offering high-speed fiber optic cable.

Some libraries serve several towns and a number serve as a touchstone for the tourist economy, providing information to visitors and internet access to temporary residents. The general level of service and available access is primarily determined by local support which varies widely. Some of the Region's libraries receive tax support from their communities while others are dependent entirely on small trust funds and volunteer workers. Nearly every library has turned to fund raising and grants for projects to augment stretched budgets.

There is no direct state or federal aid, although some pass-through grants are available to libraries which meet minimum standards set by the State Library.

UNMET NEEDS

All libraries in the Region, regardless of size, are faced with the challenge of the rapidly changing (and expensive) technology their users require for life in the 21st century. Nearly every library has a free internet connection, but there is a growing demand for more computers, more computer programs and faster



FAST FACT

Public libraries in the Rutland Region get no direct State or Federal aid. Instead libraries rely on a variety of funding sources, including local support, trust funds, volunteers, fund raising, and grants.

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FAST FACT

The Vermont Department of Libraries collects, organizes and disseminates information and library materials in a variety of formats to the three branches of State government, to public, school and college libraries statewide, to the general public, and Vermonters with special needs. Their mission is to support and strengthen local libraries, to foster new means for statewide cooperation and resource sharing and to increase public awareness of libraries and their services, and to act as an advocate on their behalf.



Browsing the Internet at the Rutland Free Library

internet access from those who either have no working equipment or who do not have Internet service. This group encompasses traditional students, adults returning to school and a number of residents seeking minimum wage jobs that require online applications and e-mail addresses. The Region's libraries also face a critical need for technical support at each of their facilities, to handle computer problems, system upgrades, crashes, fiber and cable issues, and an ever growing number of electronic devices carried in by library users who need help with new technologies. All of this means that staff requires training as well.

Resource sharing, a common practice in the library world, is facilitated by the State Department of Libraries, but beyond interlibrary loan, coordination of services, planning, or administration is limited. This is the direct result of staffing and funding levels and a historic desire in many towns to be self-contained.

Cooperation among the libraries is informal, consisting of information sharing and encouragement. There is no regional or county library system and no local consortium. Because a tiny town cannot possibly provide the resources that a larger place can, considerable inequities exist in library service across the Region.

Six of the Region's 21 public libraries do not meet state standards for operations; two of these, furthermore, do not meet the federal definition of a public library but serve more as a local public reading room. Another library meets state standards but not the federal definition. This reflects less on the efforts of staff and boards but more on the level of local support. Additionally, many library staff do not receive a livable wage, and many more have no benefits.

Inequities Across the Region

Despite the consistent efforts of library staff and trustees, people in the Rutland Region do not all receive the same level of public library service, due primarily to funding resources. Indicators of this include:

- Operating expenditures per capita range from a low of $5.40 to a high of $295.
- Staff available to serve the public range from 1.5 per 1,000 people to 0.13 per 1,000.
- Levels of per capita support range from $1.72 to $283.
- Use rates reflect this same disparity. Some libraries receive more than 41 visits per capita per year; some less than one.

Performance in Comparison with National Norms

Communities in the Rutland Region receive library services that are generally comparable to national statistics. Indicators of this include:

- Local tax support for libraries in the Rutland Region was $26.13 per capita in FY 13, just over 80% of the National per capita rate of $32.21 in FY 10.
- Total revenue per capita for the region is $34.02.
- Operating expenditures were $35.33 per capita in FY 13, compared with a National per capita figure of $37.97 in FY 10.
- While collection sizes are nearly twice national per capita figures, the circulation of those materials is below the National per capita, an indication of both rural access issues and changing collection relevancy.

Lack of Support for Planning, Coordination and Resource Sharing

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The Rutland Region's public libraries have few places to turn to for support in sharing of resources and knowledge. The Vermont Department of Libraries provides solid continuing education programs, statewide data collection, and resource sharing. However, Vermont is one of a handful of states with no state funding for public libraries, and little funding for public library systems or cooperative efforts.

In states with more robust public funding at regional or state levels, one finds services such as statewide library cards (in almost half the states), books by mail and courier service, shared technology, regional continuing education programs, roving program consultants and specialists, public awareness campaigns, and the like.

Funds are not available to support regional library cooperatives or consortia, or even to conduct experimental or pilot programs in such equalizing services as a courier, region-wide library card, a regional children's program specialist, a technology troubleshooter, regional marketing and public awareness campaign, or a region-wide shared library technology.

FUTURE TRENDS

Books and libraries have provided a gateway to the promise of a better life. The rapid rise of the Internet led many to predict that the era of libraries was over. Counter to these predictions, however, library use across the nation has increased dramatically, with more visitors, more books circulated, more programs attended and, not surprising, more people connected to the Internet.

Community libraries have become community living rooms; in even the smallest of libraries, staff and volunteer workers are assisting hopeful job seekers with Internet applications and resume writing and connecting individuals to helpful websites and to local services.

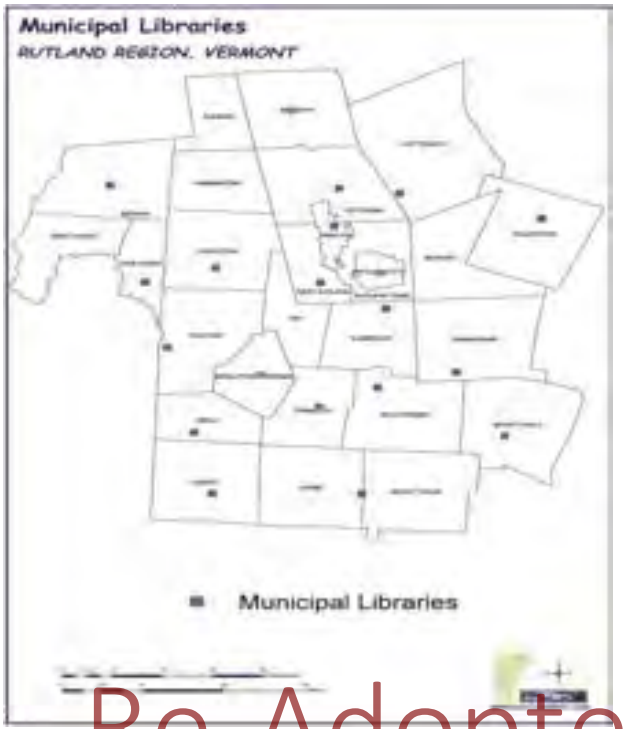
These libraries offer internet access where local connections are non-existent or out of financial reach for many. They work with children and youth, single parents, adults returning to school while



FAST FACT

The Vermont Department of Libraries, sets minimum standards that public libraries must meet annually in order to qualify for certain services such as cataloging and federal pass-through grants. The standards are based upon a series of eight principles of good community service and include requirements such as regular and open board meetings, expenditure percentages spent on materials, work with the local school system, a willingness to share resources and a minimum number of hours the library must be open, to name a few.

Location of Libraries in the Rutland Region





Reading Time at the Rutland Free Library

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FAST FACT

FEDERAL DEFINITION OF A PUBLIC LIBRARY: An entity that is established under state enabling laws or regulations to serve a community, district, or region, and that provides at least the following:

- Organized collection of printed or other library materials, or a combination thereof;
- Paid staff;
- An established schedule in which services of the staff are available to the public;
- The facilities necessary to support such a collection, staff, and schedule; and
- Is supported in whole or in part with public funds.

juggling jobs and family obligations. Home schooling families, incubator businesses and a growing population of elders are all supported by their local libraries through a wide variety of services and collection formats. And not the least important, libraries open their doors to serve as a community gathering space for local and regional meetings.

Libraries will continue to offer traditional services but in new ways as collaborative networks through state and regional libraries emerge. E-books, rotating collections of films and recorded books, shared personnel, delivery services, books mailed to homes and websites with blogging capabilities will connect readers to each other and to the larger world. Growing interest in local history and family genealogy will continue to require access to local collections of rich resources.

Libraries perform a wide variety of functions that are quietly important to the community and the region at large. But in order to keep hardware current, to pay for network costs of shared resources and to attract and keep qualified staff essential to the effective management of increasingly sophisticated institutions, libraries will need the combined support of local and state government and recognition of their importance to the economic vitality of a community.

Without such an understanding, libraries will likely enter a downward spiral that is difficult to reverse. Cuts in budgets or flat-funding result in reduced staff, fewer open hours and fewer materials purchased which, in turn, affect families, students, businesses, and a community's sense of well-being and pride.

Libraries are not the only underpinning of a democratic society, they are a part of a community's infrastructure, like roads and schools, and as often, their existence and their stability are taken for granted.

Most of the libraries in the Rutland Region regardless of size are struggling to remain afloat. The disconnect between actual use by the community and governmental units focused primarily on keeping taxes flat is a serious problem with long-term consequences.

MEETING CURRENT AND FUTURE NEEDS

Several structural factors have influenced the current situation, each of which can be addressed at the regional or state level.



A LOT OF FOOD FOR THOUGHT

ROLES OF THE LOCAL LIBRARY

Public libraries in the region work to help people create the lives they want for themselves, their families and their community. They do this by:

Supporting lifelong learning for all ages through access to a wide variety of information formats, for the pursuit of individual interests, common or esoteric, professional or amateur.

Providing equal access to technology through equipment and tools, assisting with digital literacy, and offering individual or group trainings to encourage a level playing field when applying for jobs or creating new ones.

Making public space community space where ideas can be shared, where community spirit can flourish and where civic participation can grow.

Serving as free early childhood literacy resource working with young families to help their children get ready for and succeed in school.

Offering (literally) a world of information through free Internet and wifi options, and making it accessible 24/7 in most locations.

Statewide, in FY 2013 public libraries increased the total number hours they are open by 66 hours per week, an increase of 2.38%; offered 651 more program, a 3.10% increase; added 49 computers for public use, a 4.84% increase; and saw local tax appropriations increase $567,977, an increase of 3.45%.
Source: Vermont Public Library Statistics, 2013 Annual Report

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Formal Library Cooperation

Each of the more than 40% of Vermont's public libraries is governed by a private nonprofit corporation. Nationally, only 14% of public libraries are governed by private corporations. Governmental bodies are often held to national or statewide standards in a way that nonprofit institutions cannot be.

One way of addressing the issue of libraries with independent boards and varied governance is by forming regional library systems, wherein each library maintains its total identity and autonomy, but shares such resources as online catalogs, courier service, and reciprocal borrowing. New York State and Massachusetts provide nearby examples. Currently there are two consortia systems in Vermont. The Region's largest library is a member of one and three others are members of a generally northern consortium. Benefits for each include shared catalogs which improve access for the library user and faster/cheaper cataloging of the bibliographic record. One of the consortiums is also serving as a potential statewide model for delivery of interlibrary loans.

Coordinated Planning for the Future

For public libraries to be the most vital and effective agencies they can be, thoughtful planning is absolutely necessary. Some libraries in Rutland Region have had the time and resources to invest in systematic long-range planning, but those efforts have been made alone. Libraries should plan together – not only with each other but also with allied agencies in their communities and regions. Effective program and capital planning requires a broader view.

RUTLAND RPC GOALS

- Educate and inform constituents of public policy issues surrounding public libraries—funding, governance, program design, and capital needs—at the regional, state, and national levels.
- Assess current library services and plan for the future; facilitate coordinated planning between and among towns.
- Explore constructive ways to develop experimental or pilot small-scale region wide programs as demonstration projects for possible statewide coordination.
- Increase knowledge and understanding of public policy issues related to library matters.
- Study the possibility of formalizing and supporting extended library cooperation.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

CONNECTING THE PLAN

Libraries are important to the economic activity in the Region. See Chapter 5: Economic Activity for more information.

Libraries are also a part of the Region's cultural resources. See Chapter 6: Historical and Cultural Resources for additional information.

ADDITIONAL RESOURCES

- American Library Association, www.ala.org *The State of America's Libraries*, 2013
- Institute of Museum and Library Services, www.imls.gov *Building Digitally Inclusive Communities*, 2012
- Pew Research Center, www.pewresearch.org *Library Services in the Digital Age*, 2013
- Public Library Association, www.pla.org *Public Library Data Service Statistical Report*, 2012
- Vermont Department of Libraries, www.libraries.vermont.gov *Public Library Statistics*, 2012-13

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CASE STUDY: THE MACLURE LIBRARY



The Maclure Library in Pittsford [population 2,991] is a vital resource in the community. It partners with town, school, civic, private and State government organizations to offer programs to diverse groups and fill a crucial niche.

The Pittsford Recreation Department and the library collaborate on numerous children's programs, giving parents an opportunity to interact with their children in a fun, low-cost atmosphere with an educational component. The library offers Story Hours for pre-school children every two weeks; Summer Reading Program is available for K-12 students; and after school reading programs are offered to middle and high school students. Maclure also has developed "It's a Crime Not to Read" for children in grades 1-3. A state trooper reads to the students and free books are distributed.

In addition, services offered at the library take to the road. The Maclure created a "Traveling Library" which visits three Pittsford daycare centers twice a month, reading to children who are unable to visit the library, and frequents the local swimming area during the summer giving children and adults easy access to books all summer.

The library also makes home deliveries to residents. In FY2014, 35 homes deliveries were made. In order to reach many children who are unable to visit the library, we offer deliveries to local daycare centers twice a month. A volunteer delivers a bag of picture books, easy readers, chapter books, movies, and crafts to participating daycares.

To better serve the area's senior population, again with the Town's Recreation Department, the library initiated the Pittsford Senior Group which now offers yoga activities once a month for lunch at the Pittsford Police Academy.

Up to 20 local community groups use the library monthly for meetings and programs. For instance, the Pittsford Business Association uses the library for meeting space and held its first mixer here. State partners include the Department of Employment and Training, Adult Basic Education and the Student Diversion Program.

Library personnel have worked hard to become a meaningful part of the community, and it appears they have succeeded. In FY2014, the percentage of the population registered as borrowers was 36.92% (or 1,112 people). The library offered 124 programs for residents of all ages that year (a 6% increase from the year before). Maclure's total program attendance was 5,037; 4,215 of that being children. Students and adults are using its computers for everything from instant messaging, to PowerPoint presentations, to filling out online job applications and college courses.

As the times have changed, so has the library. But despite their success, demands outstrip the library's limited resources, forcing difficult decisions and labor-intensive fundraising efforts.

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Chapter 10: Education

INTRODUCTION

Sound planning for educational programs and facilities is necessary to support the Rutland Region's social and economic welfare. The challenge of education within the Rutland Region is to meet the needs of elementary and high-school aged students, young adults entering the workforce or continuing education, adults who have varying backgrounds and educations, and businesses which are seeking to hire and promote individuals with specific skills.

Schools are the largest employer and social focal point in many of the towns in the Region. At the same time, because many serve small communities, their enrollments are susceptible to changes in the population and economy.

This chapter describes the current educational system and illustrates two broad areas of concern: namely the need for greater links between the education system and the community, and between students and prospective employers. It also offers guidance in addressing some of the major areas of concern.

CURRENT CONDITIONS

Kindergarten – High School (K-12)

Elementary and secondary educational facilities have long served as backbones of the Region's communities. Historically, most communities had several primary schools; over the last century, though, the numbers of schools have declined (from a statewide high of 1700 in the late 19th century to approximately 300 today (Source: The Governance of Education in Vermont 1777-2006). Twenty-two of the Rutland Region's 27 cities and towns still have at least one public school, and education remains a key social, economic, and political issue throughout the Region.

Elementary and High Schools

The Rutland Region is home to 30 public schools: 23 elementary and middle schools, seven high schools, and one K-12 school. Together they served a total of 7,802 students during the 2013-14 school year. An additional 13 independent schools operate within the Region.

Enrollment at public schools is varied; the smallest primary schools have as few as 30 students while others near 350. High schools range from under 200 to nearly 900 students. The opportunities and challenges faced by these schools vary equally. The schools provide instruction and extra-curricular activities for their students and are often centers for community events outside school hours.

Condition of Schools

In general, schools throughout the Region are in good physical shape. Several have undergone major renovations in the past decade, a reflection of the fact that most of the buildings are older or were built during Vermont's population boom of the 1970s.



FAST FACT

SCHOOLS IN VERMONT:

In the late 19th Century, Vermont was home to 1,700 schools! That number has declined to 311 today, an average of a little over one per town and city in the state.

(Source: The Governance of Education in Vermont 1777-2006).



Middletown Springs Elementary School

Re-Adopted June 19, 2018



FOOD FOR THOUGHT

CHANGES IN SCHOOL ENROLLMENT in the Region have not been uniform. The 10-year compound annual growth rate for 2003-2013 shows that 20 schools had declines in enrollment; four saw steady figures (less than 0.5% change), and six saw increases. Those schools seeing increases varied by geography and size.

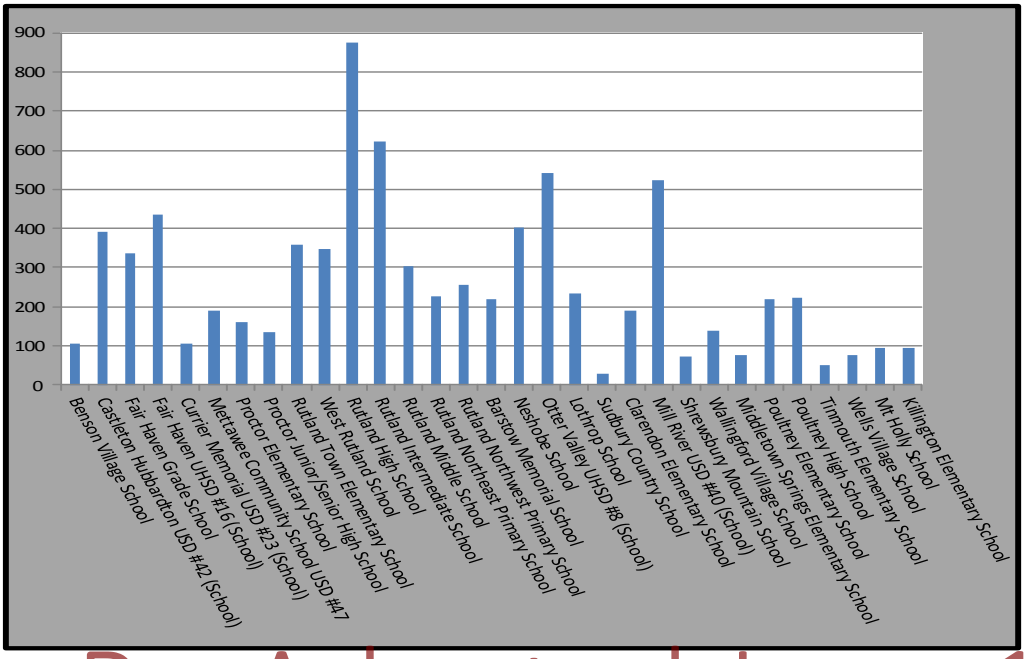
School Enrollment

A general trend across the Region has been a slow but steady decline in school enrollment over the past 15 years. Total enrollment has dropped from 10,646 Rutland County students in 1997-98 to 8,024 in 2013-14. This decline has mirrored statewide trends as our population continues to age.

In the next 15 years, demographic trends should lead to a reversal of the steady decline in school enrollments. For the average Vermont community, the number of school-aged children (aged 5-17) is expected to change very little between 2010 and 2020, then rise slightly by 2030 while many members of the "echo generation" (children of baby boomers) are raising children. This projected increase in school enrollments will be modest - an average of less than one percent per year – and will mirror a statewide population increase through 2030. (*Housing and Vermont's School Enrollment*, Vermont Housing Finance Agency, January 2007)

For those schools facing declining enrollment, facilities are operating at below capacity and some are contemplating closure. For those schools witnessing increasing enrollment, though, communities are addressing potential expansion needs.

RUTLAND COUNTY PUBLIC SCHOOL ENROLLMENT, 2013-2014



Source: Vermont Dept of Education

Technical and Specialized Schools

The Region's eight high schools are complemented by a handful of institutions providing complementary services, the largest of which is Stafford Technical Center. Stafford Tech offers those seeking to acquire hands-on trade skills the opportunity to take a portion of their junior and senior years' classes at their facility in Rutland. Stafford Tech is designed to open doorways for students wishing to explore an alternative to college.

Smokey House Center, a Danby-based outdoor educational facility serving at-risk and other youth, offers schools the opportunity to partner by providing intensive courses and facilities for small groups of middle and high school students throughout the year. Killington Mountain School is a five-month specialty school offering students the opportunity to both attend school and focus on competitive skiing and snowboarding.

Home Schooling

As an alternative to traditional, in school education, parents have the option to provide home schooling. Vermont law stipulates that home school students be affiliated with a school and may receive assistance where appropriate.

School Curriculum

Teachers in the Region's public schools have limited flexibility in their coursework. The focus in the Region – and, in fact, across the state and country – is in meeting state and federally established goals in key subject areas. Vermont, with the Rutland Region serving as no exception, is among the country's leaders in meeting standardized

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testing standards.

Rutland County schools perform at or above the state average on the statewide assessments of reading, math and writing. Rutland County schools average score was the same as the state's in reading and writing, and higher than the state average in math. Vermont is in the top tier of schools (always in the top five and usually in the top three) for scores in the nation on the National Assessment of Educational Progress.

Dropout Rates

Statewide, the middle and high school dropout rates have seen dramatic declines in the past ten years. The chart to the right illustrates data from 2003 and 2012. At local high schools, cumulative dropout rates for grades 9-12 ranged from 1.59% to 3.31%. Six of the Region's schools had rates below the state average of 2.40%, while four others had slightly higher rates.

School Funding & Spending

The Vermont Legislature has enacted a number of educational funding programs seeking to provide all students with a equal opportunity for education regardless of the tax base of their local community while at the same time containing costs.

This equalization system was first introduced in 1997 under Act 60. The current program, Act 68, sets statewide residential and non-residential tax rates that provides a base level of funding per pupil in each of the state's 284 school districts. Each district then may (and generally does) request additional funding from local taxpayers. Budgets that exceed a certain level are then assessed a punitive additional amount to discourage cost increases.

Specifics of the programs are not addressed in this Plan as they are remain under considerable debate among the state's legislature. The overall philosophy set forth by Act 60 appears to be broadly supported, however.

In the FY 2014 school year, school spending per pupil ranged from approximately $9,000 to $18,000 depending on the community and school district arrangement. (Source: VT Agency of Education Interactive District Reports)

School Management and Membership

Eight supervisory unions and one supervisory district serve residents within the Region. They are generally divided along municipal borders, geography, and social and economic ties. Each has a superintendent responsible for overall administration. Among the supervisory unions, the superintendent is responsible to multiple locally-elected school boards; the supervisory district is made up of just one board, from Rutland City.

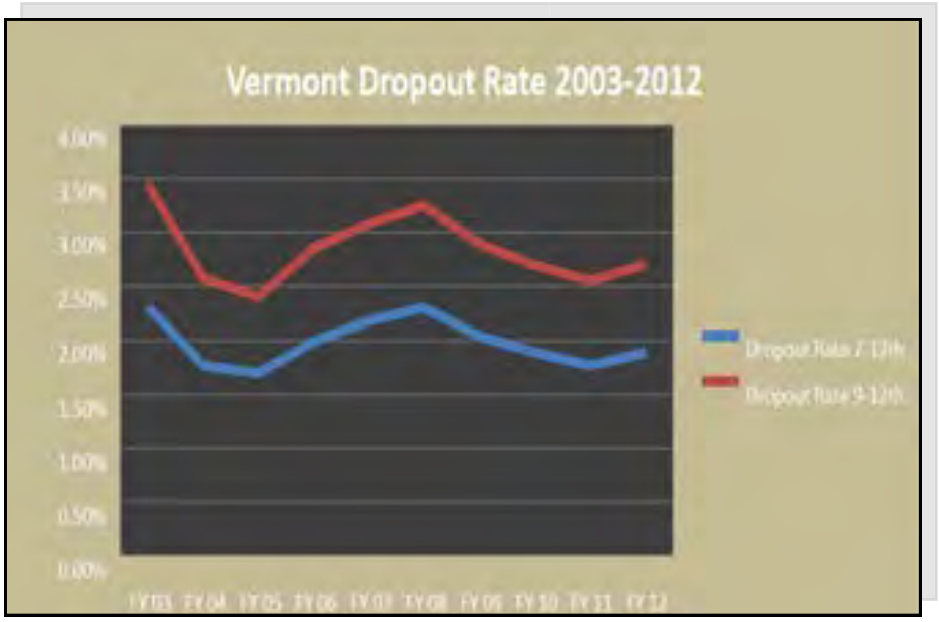
Each individual school has a principal responsible for management, overseeing curriculum, day-to-day operations, and in some cases, teaching classes within the school.

The majority of the Region's communities are members of a specific school or union district and their children attend the elementary and high schools associated with those districts. In a handful



FOOD FOR THOUGHT

It is difficult to isolate the reasons for the increase or decline in school enrollment figures. The most critical determining factor, of course, is the increase or decline in the population of the community. Factors that likely impact both include: perceived quality of educational facilities and programs; local tax rates; local land values; services available within the communities. In some communities, the rise in population and enrollment may be a factor of the rising cost of housing in nearby communities.



Source: VT Department of Education, Vermont Public School Dropout and High School Completion Report, 2012

Re-Adopted June 19, 2018



FAST FACT

The amount needed in the education fund to pay for categorical grants and education spending is about **$1.464 billion** in FY 2014. Revenues estimates for the education fund:

- Homestead Education Tax $567.4 million
- Non-Homestead Education Tax $545.8 million
- Sales & Use Tax $125.4 million
- Purchase & Use Tax $29.4 million
- General Fund Transfer $288.9 million
- Supplemental Property Tax Relief Fund Transfer $1 .3 million
- Lottery Transfer $22.9 million
- Medicaid Transfer $6.9 million
- Other Sources $0.1 million

Source: VT Dept. of Education

of the Region's communities, parents have multiple choices of where to send their students.

Relationship to the Community

Elementary and high schools are the predominant binding force in most communities in the Rutland Region. They offer the primary facilities and programs that draw residents from across town together and, in some cases, are the only mechanism by which disparate citizens feel an attachment to their community.

These programs and facilities, from school board meetings and budget votes to community activities and fundraisers, serve an important function. It is important to keep this in mind when considering unmet needs within the Region.

In many schools, teachers have tapped local resources to enhance local education. This has included working with planning commissions, historical societies, business professionals, local and state officials to enhance the classroom experience.

In many schools, teachers have tapped local resources to enhance local education. This has included working with planning commissions, historical societies, business professionals, as well as local and state officials to enhance the classroom experience.

Post-Secondary Education

Post secondary education takes a number of forms for the Region's youth. These include trade schools, colleges and junior colleges (in-state and out-of-state) and, to a limited extent, apprenticeships. See *A Lot of Food for Thought* for details regarding the Region's post-secondary institutions.

Funding for Post-Secondary Education

Post secondary education is funded by a combination of tuition, research grants, state, and federal support. Cost per student for undergraduate education ranges based on each school's curriculum, facilities, and educational offerings. Tuition at local schools in 2013 varied widely, from approximately $8000 to $30,000 per year for tuition and fees to local residents. Individual schools offer a range of scholarships and other financial support. In addition, the Vermont Student Assistance Corporation (VSAC) offers low-interest loans to students.

Lifelong Learning

Education is not something that can or should be completed at any given point. Lifelong education is a critical element of vibrant and creative communities and workforces.

A number of educational opportunities exist – some through courses offered by schools such as Stafford Technical Center, Community College of Vermont, local libraries, non-profit organizations, and places of worship. Greater detail on these programs and their roles can be found in the Historic and Cultural Resources chapter.

UNMET NEEDS

Education is an ever-evolving facet of our society and, as such, must be able to adapt as circumstances, knowledge, and challenges change.

K-12 Education

Because K-12 costs and spending account for such a large proportion of all tax monies received and spent in the State of Vermont, education costs are of concern to all Vermonters. The quality of education provided to students in the State, however, is of equal importance, and to a large degree, that is reliant upon consistent substantial financial support.

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Educational Needs

- Students in many schools do not have adequate access to computers and the internet. The limited budgets of small schools present many challenges in the area of technology.
- Students continue to graduate without clear plans for the next steps – trade school, apprenticeships, or colleges. These are the students most likely to be forced to work at minimum wage positions with little possibility for advancement.
- The classroom educational model has not worked effectively for all students. More opportunities for alternative methods of education are needed, particularly in more rural school districts.
- The Rutland Region Workforce Investment Board reports that employers are concerned that students graduating from high school are lacking in the "soft skills" needed for future employment – the ability to communicate effectively, work in groups, work in a professional workplace environment, cope with superiors and manage others.
- There is a need for more curriculums that establish connections with the community. As the population becomes increasingly transient, it is critical that students understand the history of their towns and their role as citizens.
- Though drop-out rates for high school students show substantial decline, a small proportion of the student population left school before completing high school.
- Declining school enrollments have meant that some schools have had to drop elective non-core classes such as second languages, music, art, and others. Students are missing opportunities to learn some of the skills proving most essential in the development of creative and engaged communities and workforces.
- As has long been the case, state and federal objectives for standardized score results create a tight realm for teachers to work within, making community engagement programs difficult.

Funding and Taxation

- Education costs are outpacing growth in incomes, despite steady or declining enrollments.
- Though the current equalized property tax rate system for education funding provides for an "income sensitivity" reduction in property taxes for property owners' homesteads, there is some concern that lower income households with larger land holdings in communities with high property values are facing difficult choices about retaining the land.
- Roughly seventy percent of households in Rutland County have no school-aged children. Garnering support for school budgets that provide high quality education is a substantial challenge.
- Unanticipated costs for special education can dramatically affect local taxes. Fifty-seven percent of the costs of special education are financed by the state and federal governments, with the remainder falling to the local community. Random fluctuations in the number of special needs students in a small school can dramatically alter local taxation and may create an air of animosity among voters.

Educators and Administration

- School districts—which often include just one or two schools—hire teachers individually. As a result, teachers employed in part-time positions must negotiate with multiple school districts to put together full-time jobs.
- Supervisory unions and their respective superintendents are responsible to



FAST FACT

Of the Region's 27 cities and towns, only five, West Haven, Hubbardton, Ira, Mendon and Mt Tabor, have no public schools located within their boundaries.

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multiple elected boards, creating challenges for administration.

- The structure of school funding for specialty schools, such as the technical centers, create financial challenges for high schools. Currently, there is a loss in funding at the local school for students who choose to attend courses at the technical schools.
- Wages for Vermont educators averaged roughly $50,000 in 2013, which is lower than the National average of $56,383. Administrators have difficulties attracting teachers to the Region.

Post High School Population

From the Graduate's Perspective

The unmet needs for young adults after finishing high school are broad. They include challenges in finding well-paying employment, good educational experiences, and places to live.

- The cost of post-secondary education for many families remains prohibitive.
- The Rutland Region does not offer all of the opportunities that many young people desire. To some extent, this is the fault of schools, businesses, and services within the Region. To an equal extent, however, it is simply a cultural fact. Many young people across the country have a strong urge to leave their homes to explore other options. The Rutland Region, as a small, rural area, has faced this issue for over a century.
- Because of the geographic displacement of each of the Region's colleges, there is no sense of a vibrant "young" community. In part due to this, the Region is not attractive to younger people to stay and work.
- For those who are not in a position to pursue a traditional two or four year program, options are limited. The state's technical centers have stepped in to provide evening courses and accreditations. There is, however, no state funding for any of the technical centers' evening programs. They must essentially be self-funded, which leads to affordability problems and limited availability of courses.
- Limited opportunities within the Region's businesses have created, in many cases, a stagnant workforce. People are not able to find new and exciting opportunities and as a result stay in their current positions with little drive.



A LOT OF FOOD FOR THOUGHT

POST-SECONDARY SCHOOLS IN THE RUTLAND REGION

Five post-secondary schools offer formal programs in the Rutland Region. Each has its own specialty and target audience.

- **Green Mountain College,** located in Poultney, was founded in 1834. Its 700 students are spread among 26 major and 28 minor undergraduate programs. The College's focus is on environmental liberal arts and pre-professional studies.
- **Castleton State College** was recognized as a Vermont State College in 1962. Currently there are 1,900 full-time and 200 part-time students enrolled in 30 academic programs, ranging from liberal arts to forensic psychology. The College offers six Masters degree programs.
- **Stafford Technical Center,** located in Rutland City, offers programs for high school juniors and seniors and adults interested in applied trade skills. The school partners with local businesses to provide training for certifications in several fields which vary from year to year.
- **The College of St. Joseph,** located in Rutland City, has 320 students in its 30 undergraduate and graduate programs. Programs range from arts and sciences to psychology and human services, and include a Masters in Business Administration.
- **The Community College of Vermont**'s Rutland branch has an enrollment of more than 700 students and is CCV's second largest academic center in the state. CCV offers 20 associate degree programs and 6 certificate programs to students of all ages.

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- There is a lack of opportunities for student internships. There are only a few employers in the Region that are large enough to take on many interns. Most small and mid-sized employers struggle to offer internships that attract young people to the area. It is apparent that hiring interns can be beneficial to a company, but still many employers are hesitant to take them on. A consequence of having few available internships is a graduating student body with few connections to the Region and little to entice them to stay here in the future.

From the Community Perspective

The programs that post-secondary schools are offering are not always meeting the needs of the major employers in the Region. Employers looking to hire have reported that local accredited programs do not support the kinds of skilled individuals they are looking for.

- The programs that post-secondary schools are offering are not always meeting the needs of the major employers in the Region. Employers have said that local accredited programs do not support the kinds of skilled individuals they are looking for.
- There are limited non-traditional educational opportunities (i.e. adult education, etc.) in the Region. Employers have expressed an interest in having employees with more background in intra-personal skills, workplace education and math.
- The Region shares the national crisis of a nursing shortage.
- The Region, in general, is "exporting" its young people to other areas that offer higher wages and a more apparent range of opportunities. Many have cited the cost of education as a factor. Vermont ranks very low in affordability of higher education and when combined with wages that may not support such debt, the cost of living may be difficult for many in their 20's and 30's.
- There is a shortage of people skilled in manufacturing, construction, information technology.
- There is a lack of training available (and time to dedicate) for employers to send staff to acquire skills for managerial positions.

As with K-12 education, there is a need for more curriculums that establish connections with the community. As the population becomes increasingly transient, it is critical that students understand the history of their towns and their role as citizens in their communities.



FAST FACT

Section 6086 of Title 10 of Vermont State Statute (the enabling law of Act 250) stipulates that proposed development and subdivisions "Will not cause an unreasonable burden on the ability of a municipality to provide educational services."



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CONNECTING THE PLAN

Education is closely linked to many of the other chapters of this *Plan*. These connections include:

- Chapter 5: Economic Activity – the opportunity for residents to find suitable employment, and for businesses to find the workforce it needs, is inextricably linked to the local education system.
- Chapter 9: Regional Libraries provide the opportunity for lifelong education.
- Chapter 2: Regional Profile presents a picture of the current and future population trends in the Region.
- Chapter 6: Historical and Cultural Resources are, in some ways, the continuation of an education system that fosters creativity and community.

FUTURE TRENDS

Two key sets of economic and demographic trends are likely to affect education in the Rutland Region in the coming years. In brief, they are:

- A level or continued decline in school aged population Region-wide because of the aging of the Region's population, low birth rates, and limited in-migration of young families. However, from 2020 - 2030, there is projected to be a slight increase in school enrollments due to demographic trends. (*Housing and Vermont's School Enrollment*, Vermont Housing Finance Agency, January 2007)
- A need for professional workers who are "ready-to-work" with skills for the new economy because of the retirement of baby boomers in the next five to ten years.

These two trends will create opportunities for current students who acquire the needed skills and education, but also will leave those without skills with few opportunities outside of low-paying service jobs. Balancing quality education with spending will continue to play an important role in local and statewide debates.

MEETING CURRENT AND FUTURE NEEDS

- Equip students with the education and skills they need to thrive.
- Foster greater links between education and the local community. These links will give the public a greater sense of belonging to the community, encourage civic engagement, and assist in the retention of the Region's youth.

RUTLAND RPC GOALS

- Promote additional post-secondary education options for students in the Region.
- Educate the Region's residents to meet the needs of current and future employers.
- Pursue regional initiatives, such as an economic summit on post-secondary education and school financing, and include and engage all interested stakeholders.
- Forge stronger links between schools and communities.
- Monitor legislative changes to the state school organization.
- Explore connections between education, health and compact development.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

Additional Resources

- Vermont Public School Dropout and High School Completion Report For the 2011-2012 School Year, Vermont Department of Education _School_Completion.pdf
- Public School Report, Vermont Department of Education, 2003-2013
- The 2003 Brown Center Report on American Education: How Well Are American Students Learning? with Special Sections on Homework, Charter Schools and Rural School Achievement, Brown Center on Education Policy and the Brookings Institution, October 2003.

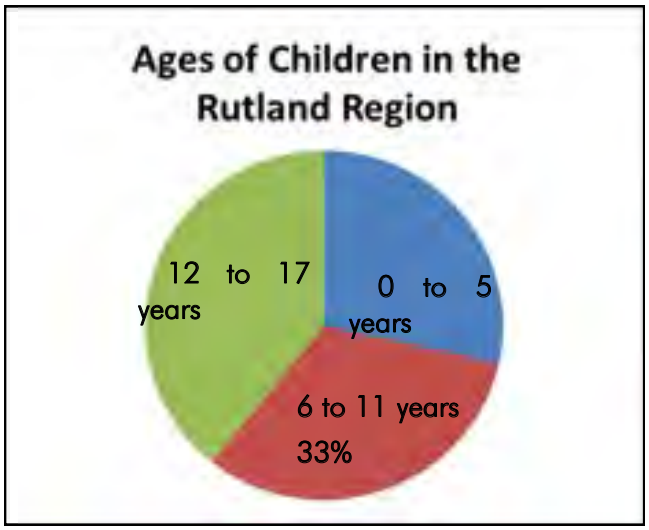
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Chapter 11: Child Care

INTRODUCTION

Ensuring accessible, affordable, quality child care is integral to sound regional planning. Many families lead lives that require some type of child care outside the home. High-quality childhood programs develop children's social skills, prepare them for school, and reduce future societal costs especially by reaching at-risk kids early. Lastly, the child care industry provides jobs and economic benefits that spread throughout the community and region. Thus, child care should be considered a critical community need. Investments in the child care infrastructure, like investments in the infrastructures of transportation, public works, affordable housing, and education, can have direct positive effects on the growth and vitality of the Region.

According to Vermont statute, child care is defined as "developmentally appropriate care and supervision by a child care provider for fewer than 24 hours a day for children under age 13 or age 19 for a child with special needs." In the Rutland Region there are various child care options to choose from, including home-based child care providers and licensed centers. These facilities provide care for young children as well as school-aged children through afterschool programs.



Source: 2008-2012 American Community Survey



Courtesy: United Way of Rutland County and Rutland County Head Start

CURRENT CONDITIONS

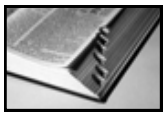
Demographics

There are thousands of children living in the Rutland Region, which necessitates a variety of child care services. The 2008-2012 American Community Survey shows that there are 11,813 children under 18 years of age in Rutland County; 7,324 are under the age of 12. According to the 2010-2012 American Community Survey, there are roughly 969 children in Rutland County enrolled in preschool, 430 in kindergarten, 5,387 in elementary school, and 3,012 in high school.

Providers Throughout the Region

State law stipulates that anyone caring for children from more than two families (other than their own children) must be Registered or Licensed by the Vermont Department for Children and Families. The main difference between the two is that registered home providers operate

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DEFINITIONS

Types of Vermont Child Care Facilities

Licensed Program: A child care program providing care to children in any approved location.

Registered Family Child Care Home: A child care program approved only in the provider's residence, which is limited to a small number of children based on specific criteria.

Legally Exempt Child Care: A child care provider caring for no more than two families.

Source: Vermont Department for Children and Families, Bright Futures Child Care Information System

out of their residences, and there are different rules on the number of children and employees, as well as inspection requirements.

Currently in the Rutland Region there are 85 registered home care providers and 69 licensed child care centers, which include early childhood and school-age care programs. The table on the next page provides an estimate, based on the best available data, of the number of children that these providers can currently serve. The figures show that for the 7,324 children under the age of 12 in the region, providers have the capacity to serve only 3,284 children, or 45% of the population of children. This calculation assumes the majority of children in need of care are under age 12, however some children over age 12 participate in afterschool programs and other services. Rutland City accounts for nearly half of the capacity of the region's providers, with 30 registered homes and 27 licensed centers. In terms of current openings at child care facilities throughout Rutland County, as of January 2014, there were the following number of openings for children: 36 openings for infants, 53 openings for toddlers, and 90 openings for preschool (Vermont Achievement Center).

Quality of Services

Vermont established the STep Ahead Recognition System (STARs) program to recognize regulated child care, preschool, and afterschool programs that take measures to exceed state standards in providing services to children and families. STARs ratings range from 1 to 5 stars, based upon their success in five areas of performance (e.g. staff qualifications). As of January 2014, 72 child care providers in the region were participating in STARs. Sixteen of those providers achieved the highest rating of 5 stars, and 18 had a rating of 4 stars (http://dcf.vermont.gov/cdd/stars/list_of_providers). These ratings show that providers are striving to improve the quality of their services.

Affordability

The availability of affordable child care is a priority throughout the region. Weekly child care rates for both registered homes and licensed centers in the Rutland Region tend to run less than Vermont average rates (see table below). However these rates must also be compared with the county's median household income for a family of four, which according to the U.S. Department of Housing and Urban Development was $62,500 in 2013 (lower than the statewide median household income of $66,500). Based on this median household income, a Rutland Region family with an infant enrolled in a licensed center would spend about 14% of their monthly income on child care. This already high percentage of family income rises when additional children in the family require care.

Rutland Region 75th Percentile Child Care Provider Weekly Rates

Provider Type	Infant	Toddler	Preschool	School Age (Part Time)	School Age (Full Time)
Rutland Region Licensed Center	$180.00	$170.00	$155.00	$99.79	$150.00
Rutland Region Registered Home	$150.00	$145.00	$145.00	$87.50	$140.00

Data from the 2012 Vermont Child Care Market Rate Survey, prepared by the Vermont Department for Children and Families, Child Development Division.

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Regulated Child Care Providers in Rutland Region

Town	Registered Home Care Providers	Home Care Capacity (# of kids)	% of Total Regional Capacity	Licensed Providers	Licensed Provider Capacity (# of kids)	% of Total Regional Capacity
Benson	2	20	0.6%	1	15	0.5%
Brandon	11	109	3.3%	5	164	4.9%
Castleton	11	112	3.4%	3	88	2.6%
Chittenden	1	10	0.3%	1	12	0.4%
Clarendon	2	28	0.8%	2	36	1.1%
Danby	1	10	0.3%	1	75	2.3%
Fair Haven	9	94	2.8%	3	59	1.8%
Hubbardton	0	0	0.0%	0	0	0.0%
Ira	0	0	0.0%	0	0	0.0%
Killington	0	0	0.0%	3	141	4.2%
Mendon	0	0	0.0%	0	0	0.0%
Middletown Springs	1	10	0.3%	2	48	1.4%
Mount Holly	1	6	0.2%	2	65	2.0%
Mount Tabor	0	0	0.0%	1	15	0.5%
Pawlet	2	20	0.6%	2	90	2.7%
Pittsford	5	50	1.5%	2	40	1.2%
Poultney	2	20	0.6%	2	35	1.1%
Proctor	2	24	0.7%	3	105	3.2%
Rutland City	30	301	9.1%	27	1210	36.4%
Rutland Town	2	16	0.5%	1	40	1.2%
Shrewsbury	0	0	0.0%	1	40	1.2%
Sudbury	0	0	0.0%	0	0	0.0%
Tinmouth	0	0	0.0%	1	12	0.4%
Wallingford	0	0	0.0%	3	115	3.5%
Wells	0	0	0.0%	1	11	0.3%
West Haven	1	3	0.1%	0	0	0.0%
West Rutland	2	20	0.6%	2	55	1.7%
Totals:	**85**	**853**	**25.7%**	**69**	**2471**	**74.3%**

Data from the Bright Futures Child Care Information System, maintained by the Vermont Department for Children and Families, Child Development Division.

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Courtesy: Rutland County Head Start

For low income families, the challenges are even greater. Large numbers of children in the Region come from families that are struggling which poses a challenge to accessing child care services. The percentage of families in Rutland County with children living below the poverty level is 15.6% (2008-2012 American Community Survey). Turning to free and reduced school lunches as a measure of income levels, 47% (4,038) of the Region's children enrolled in the school lunch program are considered low income, compared to a statewide average of 41%. (Vermont Agency of Education Child Nutrition Programs Annual Statistical Report School Year 2012-2013).

UNMET NEEDS

Accessibility for Low Income Families

Child care professionals highlighted the challenges that low income children face in accessing afterschool programs, including lack of transportation to afterschool program sites, program costs (particularly for children 13 years or older who are not eligible for financial assistance), and lack of information on available programs. According to those in the child care field, there is also a deficiency in afterschool programs for children in grades 7 to 12, due to the fact that child care financial assistance is generally only available for children up to age 12 and there is less incentive for programs to be offered without that monetary benefit.

Another issue identified by child care professionals is that businesses in general do not often account for the child care needs of working parents: there is often no assistance with child care, little flexibility built in to care for sick children, and short maternity leaves. Working parents, especially those who are lower income, struggle to find adequate child care and still meet work requirements. For instance, parents working evening or weekend shifts have difficulty accessing care for their children since most home providers and licensed centers do not offer such hours.

Services for Infants and Special Needs Children

According to those working in the child care field, affordable care for infants and toddlers (children under 2 years) is difficult to find throughout the region. This is due to the additional expenses required for infant care, since there is a lower provider to child ratio specified under child care licensing regulations. This lack of services seems to affect the entire Region rather than in any specific locations, although in general the more rural areas have fewer providers.

Child care professionals also spoke of the increasing number of children in the Region who struggle with mental health issues, behavioral issues, and/or disabilities. Children with these needs require specialized services that are not available at many child care facilities, especially in small towns with few providers to begin with.

Inadequate Funding

Insufficient state and federal funding for child care agencies in the Region is felt by most providers, resulting in reduced services and/or increased costs for families. This is coupled with rising demands such as the specialized services noted above. Financial assistance for Vermont families is also based on outdated data, with current child care financial assistance rates determined by the 2009 Federal Poverty Level.



FOOD FOR THOUGHT

The Vermont Child Care Financial Assistance Program is available to help eligible families afford child care. The program is offered for families at a certain income level with children under age 13, and the parents must be seeking work, employed, or enrolled in school or training. As of July 2013, 1,096 children in the County received child care financial assistance; roughly half of those children were located in Rutland City (Rutland County Head Start 2013-2014 Community Assessment).

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Low Wages

Child care workers earn relatively low wages, despite the critical role they play in the lives of young children. According to the U.S. Bureau of Labor Statistics, the median annual income for Vermont child care workers is $22,410. Child care providers discussed high employee turnover rates due to low wages as a challenge for the industry.

FUTURE TRENDS

Rising Costs

Child care costs have been increasing in recent years and will likely continue to rise, placing greater burdens on families. While this is challenging for low income families, it is also difficult for families with incomes too high to qualify for financial assistance yet not high enough for them to reasonably pay for child care.

- Statewide from 2003 to 2012, market rates for a preschool age child in a licensed child care center increased $140 per week to $200 (43.9% increase), and rates for a preschool age child in registered home care increased from $106.25 to $150 per year (41.2% increase) (2012 Vermont Child Care Market Rate Survey).
- According to a 2013 report from Child Care Aware of America, Vermont ranked fourth in the nation for *least affordable* center-based care for 4-year-old children.

Improved Quality of Services

Growing numbers of child care providers are participating in Vermont's STARs program, which indicates improvement in the quality of services in the region. The number of participating programs will likely continue to grow since greater funding is tied to higher STARs ratings, and this will result in an improved quality in the child care options families have to choose from.

MEETING CURRENT AND FUTURE NEEDS

Flexibility for Working Parents

To improve access to quality child care services, especially for low income parents working unusual hours or with limited means of transportation, employers should try to accommodate the child care needs of their employees. Employers should offer benefits such as flexibility in the work schedule, child care leave, flexible spending accounts, and on-site centers.

Improve Transportation Services

To allow more low income children to access services and reduce the transportation costs of providers, improved working partnerships should be fostered between transportation services and child care providers (including afterschool programs). There should also be greater flexibility in financial assistance for transit, such as offering bus vouchers to families as a transportation option.

Fund Work Force Development

Access to trainings and other educational programs for child care professionals is critical to continued improvement of services, which results in better outcomes for children. While a number of organizations provide work force development services, such groups spoke of insufficient funding which forces them to cut back on offerings and charge higher fees. Improvements in funding can be achieved through the work of colleges and other educational centers, contributions from foundations and businesses, and government funding programs.

- Scholarships for child care education programs should be offered, in



Child care is integral to the quality of education in the Region, as it prepares and socializes young children for schooling. See the Education chapter for more information.

Child care also is an important component of economic activity in the Region. Working parents rely on child care services, which contributes to the local economy by providing jobs for child care professionals. For more information, see the Economic Activity chapter.



FAST FACT

Parents can research child care options in the region in two main ways:

Going online to the Vermont Child Development Division's Bright Futures Child Care Information System: www.brightfutures.dcf.state.vt.us.

Or by contacting the Vermont Achievement Center at 802-775-2395 for available providers and child care financial assistance information.

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FAST FACT

The availability of quality early childhood care is critical, because this care can affect a child's behavior, learning, and health later in life. The earlier a child in need can be reached, the better the outcomes for the child, family, and society. Consider these numbers from Harvard University's Center on the Developing Child:

- In the first few years of life, **700 new neural connections** are formed every second.
- At age **18 months, disparities in vocabulary** begin to appear.
- When children experience **6-7 risk factors**, there is a **90-100% chance of developmental delays**.
- There is a **3:1 odds of adult heart disease** if someone has **7-8 adverse childhood experiences**.
- Every dollar invested in early childhood programs has a **return of $4-$9**.

combination with opportunities for reduced tuition.

- Trainings for child care work force development should be better funded.

Regional Child Care Needs Assessment

A Regional Child Care Needs Assessment should be conducted every two years to determine what child care services are offered in the Region, including their capacity and costs, where parents work, future trends in population and employment, and where there are child care gaps that need to be met. In particular, data on the capacity of providers, the number of children served, and the number of families seeking child care who have trouble accessing it should be further researched, since the figures in this chapter are only estimates. This assessment could also serve to strengthen collaboration between child care providers to increase accessibility for children.



Courtesy: Tapestry Program

RUTLAND RPC GOALS

- Ensure affordable and accessible child care for all families, especially low and medium income families, working parents, and those with limited transportation.
- Promote high quality child care services, including care for children with special needs.
- Ensure that training and education for child care professionals are available and well-funded, and that child care workers earn a living wage.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

ADDITIONAL RESOURCES

- Vermont Achievement Center, www.vactv.org
- Rutland County Parent Child Center, www.rcpcc.org
- Building Bright Futures Regional Council of Rutland, buildingbrightfutures.org/rutland
- Bright Futures Child Care Information System, www.brightfutures.dcf.state.vt.us
- Step Ahead Recognition System (STARS), dcf.vermont.gov/cdd/stars/
- Rutland County Head Start, www.rchsccn.org
- Vermont Afterschool, www.vermontafterschool.org
- Vermont Birth to Three, www.vermontbirthtothree.org

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Chapter 12: Recreation

INTRODUCTION

Recreation is an important component of the lifestyle and livelihoods of many of the Region's residents. Much of the recreation that is available in the Region results from the geographic landscape—hiking, skiing, hunting, and snowmobiling in the Green Mountains, as well as fishing, boating, and swimming in the many lakes and rivers. The recreational opportunities in the Region are important to the health and welfare of both residents and visitors.

This chapter of the *Plan* examines the links between recreation, land use, economic development, transportation, and natural resources. The Recreation chapter also analyzes the provision and use of the Region's recreational resources for town officials, nonprofits, developers, and individuals.

CURRENT CONDITIONS

The provision of recreation throughout the Rutland Region varies depending on the size of the town and the role it plays in the Region.

The Vermont Statewide Comprehensive Outdoor Recreation Plan (SCORP) 2013-2017 noted that Vermonters participate in a wide range of outdoor recreational activities. In 2011, picnicking, swimming in lakes, and walking had the highest participation rates of all the activities included in the survey. The activities that were engaged in the most number of days of the year were walking, jogging/running, and riding ATVs. Some of the biggest changes in the outdoor resources and facilities available to Vermonters in recent years include:

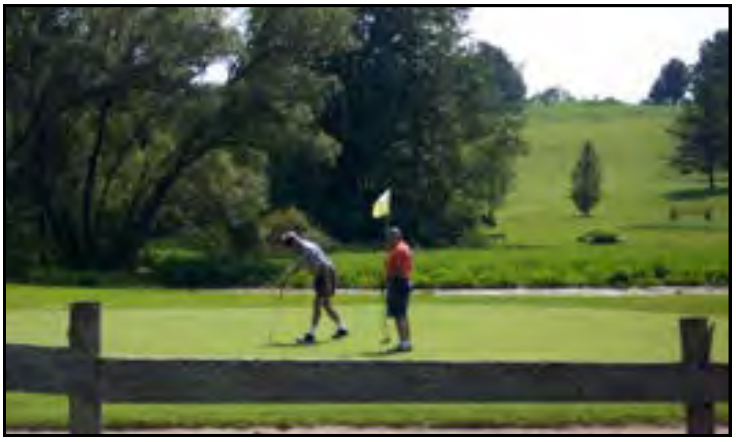
- An increase in mountain bike trails, particularly trails managed by the Vermont Mountain Bike Association and Green Mountain National Forest



FAST FACT

Vermont is less than a day's drive from tens of millions of people and tourism in Vermont continues to grow. Many of these visitors come to Vermont specifically for recreational purposes.





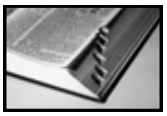




RRPC Staff, Lucas Somers, RRPC Staff, www.killington.com (clockwise from top right)

The Rutland Region is home to a wide range of recreational opportunities: active, passive, individual, and family.

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DEFINITIONS

Undeveloped Recreation: Undeveloped recreation occurs in areas lacking infrastructure or programs. This type of recreation often occurs on privately owned land. Examples include the use of land for hiking, wildlife viewing, hunting, picnicking, and the use of water bodies for swimming, boating, and fishing.

Developed Recreation: Recreation programs and facilities specifically created for a recreational purpose. Examples include: swimming pools, parks, picnic areas, playgrounds, ball fields, fitness centers, golf courses, riding and hiking trails and ice skating facilities, as well as programs such as sports leagues, summer camps, concerts, art classes, swimming, and fitness classes.

- The construction of cabins in state parks, which have become very popular for state park visitors
- An increase in established ATV trails on private lands

Visitors in the state seeking outdoor activities increase the demand for outdoor recreation in Vermont. According to the Vermont Department of Tourism and Marketing in its "The Vermont Travel and Tourism Industry" fact sheets, Vermont has attracted between 9 and 11 million visits by out-of-staters per year over the past decade. According to a 2000 profile of visitors to Vermont, 22% of visitors participate in outdoor recreation activities. Visitors who come for outdoor recreation purposes stay an average of 8 nights per visit, and 37% of outdoor recreation visitors participated in two or more outdoor recreation activities.

Statewide the demand for hunting, fishing, and snowmobiling has been declining while mountain biking, ATV riding, and trail–based recreation are on the rise.

Vermonters gave their highest evaluations to hiking trails, skiing and snowboarding areas, the Green Mountain National Forest, and Vermont's rivers and streams. They also gave favorable ratings to cross country ski and snowshoe trails, state parks, wilderness areas, and Vermont lakes and ponds. Satisfaction with recreation facilities for people with disabilities was the lowest of all the resources and facilities surveyed in the 2011 Outdoor Recreation Demand Survey. Off-leash dog parks also scored particularly low in user satisfaction, with 70 percent of users reporting that off-leash dog parks did not meet their needs "much" or "at all.

Recreation has important direct and indirect impacts on the Region's economy. Some of the largest employers and supporting businesses are recreation focused. The VT Statewide Outdoor Recreation Plan reported that in 2006 the outdoor recreation economy supported 35,000 jobs in Vermont, generated $187 million in annual state tax revenue, produced $2.5 billion annually in retail sales and services across Vermont, and accounted for 12% of the gross state product. The Vermont Department of Tourism and Marketing found that visitors to Vermont in 2009 spent $1.424 billion, $117.2 million of which was spent directly on recreation. The 2012 report on the Economic Impact of Bicycling and Walking in Vermont found that in 2009, impacts—including infrastructure, programs, events, and businesses—resulted in: 1,418 jobs, $41 million in labor earnings, $83 million in output, and $1.6 million fiscal impact on Vermont's budget.



Lucas Somers

A portion of the Appalachian Trail winds its way through Rutland County. Route 4 and other local roads provide easy access for both day hikes and long treks.

Rutland City

Rutland City hosts a concentration of developed recreation opportunities. Multiple city parks provide playing fields, tennis and basketball courts, hiking and mountain biking trails, the Rutland Creek Path, swimming facilities, and areas for skateboarding and ice-skating. Rutland City's Recreation Department is able to pursue many recreational opportunities that require initial monetary input for

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construction or acquisition of property. The highest number of private recreation providers and facilities in the Region also occur in Rutland.

Sub-Regional Centers

Larger towns in the Region depend on a combination of town owned and private recreation facilities. These towns often have populations concentrated in their village centers, but serve nearby rural residents as well.

Partnerships between these village hubs and surrounding rural towns help make facilities and programs available to more of the Region's residents and visitors. An example of this is participation of Middletown Springs' residents on Poultney sports leagues. Trail systems are made possible through partnerships with private landowners. Opportunities such as guide services, equestrian stables, golf courses, and other activities dependent on more rural environments are also found in these areas.

An important recreation oriented sub-regional center serves Killington and Pico ski mountains, which also host snowmobile and mountain biking trails.

Rural Communities

Much of the recreation available in rural towns in the Region occurs on privately owned lands. Open space preservation and continued public access to these land and water resources can help counter the lack of town owned recreational activities and facilities. In rural communities that are unable to provide developed recreational options, private landowners as well as state and federal agencies are critical for recreational opportunities. State laws that protect private property owners who open up their land to the public and relieve them of potential liability help to ensure that this remains viable.

National Forest

The Green Mountain National Forest (GMNF), managed by the USDA, covers much of the eastern border of Rutland County. The GMNF is managed for a variety of uses, including recreation. Recreational opportunities in the forest range widely, from highly developed facilities with amenities and services, to primitive camping and hiking experiences in Wilderness Areas. In the Region, the GMNF is in the best position to provide dispersed recreation (recreation not occurring on a developed recreation site) due to its large, contiguous land base.

The United States Department of Agriculture, through the Forest Service, manages the Green Mountain National Forest. Large areas of the forest have been preserved for primitive and semi-primitive uses.

State Forests and Parks

The Vermont Department of Forests, Parks, and Recreation is responsible for overall management of state lands, and administers the state park and forest

CONNECTING THE PLAN

Access to recreational facilities is a transportation issue for residents dependent on public transportation to reach recreational opportunities. The condition of highways and trails to reach recreation areas affects their accessibility as well.

Recreation is also connected to economic development, with tourist recreation dollars contributing a large amount of money to Vermont's economy.



Lucas Somers

The Spartan Arena offers a playing surface for hockey, indoor soccer, and other events years round.

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CASE STUDY:
RUTLAND CREEK PATH

Born from community-based activism, the Rutland Creek Path was first described when the Rutland Creative Economy Initiative held a forum in 2005 to solicit thoughts on how to strengthen Rutland's economy. Projects that build on Rutland's creativity and cultural uniqueness were identified, but the project that continually rose to the top was the concept of a pedestrian/bicycle path across the city. Consistently garnering the highest number of votes by Rutland citizens, the path moved forward.

The path itself is a 10-foot-wide, paved, multi-use path, intended for both commuting and recreational purposes. It will provide a connection between major assets of the city including three major parks, an elementary and a secondary school, a college, and several major businesses, giving access to the western edge of the downtown. It is designated in five segments, each of which having a distinct character, and each can stand alone as a transportation corridor. Segment one is complete, two is under construction, four is in the engineering phase and five is undergoing a scoping study.

At the onset, the Rutland Regional Planning Commission funded a feasibility study conducted by the Louis Berger Group, which found the project to be viable. Since then, volunteers have successfully raised $1,267,146 in grant awarded funds, $1,155,146 of which required a match of 20% - 10% cash and 10% as in-kind services or materials. A private grant from Jane's Trust and local donations from General Electric, Casella Construction, Vermont Country Store, Rotary North and Rotary South, and individuals funded the path's design, engineering and permitting. Presidents of the College of Saint Joseph, Casella Corporation, Belden Company, Giancola Construction, Rutland Chamber of Commerce and Rutland Economic Development Corporation have all given their support to the project. Coordination efforts included the Vermont Buildings and General Services, Marble Valley Correctional Facility, Rutland School Superintendent, and Central Vermont Public Service.

Individual meetings and periodic presentations with members of the Board of Aldermen and Rutland City's Recreation Committee have kept local officials involved and engaged in the Path's development. Rutland Mayor Christopher Louras, the Local Project Manager for Segment 1, has been a strong and outspoken proponent of the project from the start; his involvement, and the passion of several on-the-ground volunteers who spoke to the importance of this project, played a significant role in ensuring the unprecedented support and momentum in the community that the Rutland Creek Path has since received.

Further, there have been many district neighborhood and Rutland United Neighborhoods meetings, a monthly Rutland Creek Path meeting, articles in the Rutland Herald, and widely distributed maps and information available at Friday Night Live events during the summer months, all of which have involved and engaged the public throughout the process.

Walking and biking safely in Rutland is no longer a pie-in-the-sky notion – it is a demand. The community's support has been and continues to be paramount to this project's success.

A vision of safe walking and biking has steered the Rutland Creative Economy and engaged countless citizens in the pursuit of this project, providing a uniquely scenic passage through Rutland City for users of all ages and abilities. As a singular feature, the Creek Path links the otherwise inaccessible City of Rutland together, connecting and unifying parks, schools, businesses, and, perhaps most importantly, its people.



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system.

Coolidge, Aitken, West Rutland, and the Lower Clarendon Gorge State Forests represent over 20,000 acres of land in the county open to undeveloped recreation. The Lower Clarendon Gorge State Forest provides day use access to natural water features and scenic areas. These forests also host hiking trails and some link other important conserved lands together. Coolidge Forest connects the north and south sections of the Green Mountain National Forest.

Rutland County has four state parks. On the western side of the county, three parks provide camping and water access to Lake Bomoseen and Lake Saint Catherine as well as Half Moon Pond. In the Green Mountains, Gifford Woods State Park provides camping and picnicking opportunities adjacent to one of Vermont's best known old growth hardwood stands. The Appalachian Trail runs through the park and joins the Long Trail in the vicinity. Many state parks have large acreage open to undeveloped recreation as well.

Municipal Forests

Most municipal forests were created in the early 1900's through legislation authorizing the establishment of "endowment forests." Seventeen towns in the Region have at least one, ranging in size from 15 to over 1,000 acres. Municipal forests account for close to 10,000 total acres in Rutland County.

In a 1931 report from the Vermont Commission on Country Life, these resources were described as, "a source of public education. Schools as well as the general public can here secure first hand information that often is obtainable in no other way. Such a forest area may well be the recreational center for the community, and when properly managed and administered, should become a source for revenue."

In Rutland, municipal forests were historically managed for timber revenue. While this is still the case in many instances, there has also been a shift to management of these forests for recreational and educational uses as well. Many towns maintain signed hiking trails and wildlife viewing areas as well as other recreation opportunities in an effort to encourage residents to use the forests.

Currently, many towns are recognizing the public benefit municipal forests can provide, and work with the Rutland County Forester to create management plans that identify the variety of values and uses for the forests.

Wildlife Management Areas

Plymsbury, Shrewsbury, Plymouth, Otter Creek, Whipple Hollow, and Buzkeck Wildlife Management Areas are also open to the public for nature watching and hunting and represent additional acreage appropriate for recreational use in the county.

Trail Networks

The Department of the Interior works in partnership with the Appalachian Trail Conservancy, a volunteer-based, private nonprofit organization dedicated to the conservation of the trail, to manage the



FOOD FOR THOUGHT

Recreation opportunities best provided and planned for at a Regional level include inter municipal sports leagues, hiking, biking and ATV/ Snowmobile trail networks, state and county wide bike routes, rail trail projects and water resources such as rivers and lakes.



Lucas Somers

Providing a range of recreation opportunities, like those in Wallingford, is important for people of all ages and abilities.

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CONNECTING THE PLAN

The quality of many outdoor recreational experiences is dependent upon the health of the natural environment, continuance of open space, provision of aesthetically pleasing landscapes and the degree to which the environment has been altered by human activity.

Land development patterns affect recreation. The fragmentation of large open tracts of land into smaller, often residential, lots decreases hunting opportunities in the county. Stormwater runoff, clearing of riparian vegetation and other effects of development affect fish populations.

2,175-mile Appalachian National Scenic Trail. This trail is a 250,000-acre greenway extending from Maine to Georgia. The trail enters Rutland County in Mount Tabor, and makes its way north through the town of Killington. There are many access points to the trail within the Region.

The Long Trail is known as Vermont's "footpath in the wilderness." Built by the Green Mountain Club between 1910 and 1930, the Long Trail is the oldest long-distance trail in the United States. The Long Trail follows the main ridge of the Green Mountains from the Massachusetts-Vermont line to the Canadian border as it crosses Vermont's highest peaks. It was the inspiration for the Appalachian Trail, which coincides with it for one hundred miles in the southern third of the state. The Appalachian and Long Trails are one and the same from the southern border of the county until they cross Route 4 in Killington where they split off from one another.

Open to the public in the winter, the 300-mile Catamount Trail is North America's longest cross-country ski trail. Starting in Readsboro on the Massachusetts border, this winter-use only trail winds its way for 300 miles through the heart of the Green Mountains to North Troy on the Canadian border. The trail runs through Rutland County, generally following the spine of the Green Mountains. Other cross country ski trails are also maintained by private businesses, and can be found in the Green Mountain National Forest and the Coolidge State Forest.

The Vermont Association of Snow Travelers (VAST) is responsible for the maintenance and grooming of an extensive snowmobile network across the state. One of the oldest snowmobiling organizations in the U.S. VAST is a private non-profit that includes over 140 clubs statewide, with over 45,000 members combined. Eighty percent of VAST's trail system is on private land and permitted by agreement with each landowner. Nearly every town in Rutland County has VAST maintained snowmobile trails.

Many local hiking trail networks are used extensively for day hikes and wildlife viewing, and can be found in many municipal forests and some state forests and parks. The D&H Rail Trail is approximately 20 miles long and connects West Pawlet and Granville, NY to Castleton through Poultney. This trail is used by pedestrians and bicyclists in the warmer months and by snowmobilers during the winter. Trail networks specifically designed for mountain biking exist in Pine Hill Park in Rutland City as well as at Killington Peak.

UNMET NEEDS

In the 2011 Outdoor Recreation Demand Survey, Vermonters thought that the following recreation facilities needed the most improvement:

- Facilities for people with disabilities
- Off-leash dog parks
- OHV/ATV trails and roads
- Marinas
- Fishing piers

The top five municipal priorities identified in the 2011 Outdoor Recreation Inventory were:

- Parks and open space
- Bike and pedestrian trails
- Baseball and softball fields
- Hiking trails
- Soccer fields

According to the 2013 Healthy Community Design survey conducted by the Rutland Area Prevention Coalition, many of the following resources are not available in rural communities:

- Off road bike and pedestrian paths
- Sidewalks adjacent to roads
- Skate parks
- Indoor and outdoor tracks
- Off-leash dog parks

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Adding even one of the above listed opportunities could have major impacts on recreation related health and wellness in the Region.

Recreational Planning Capacity and Resources

Low or non-existent recreation budgets in most towns limit the ability of municipalities to adequately plan and provide recreation options. Only half the towns in the Region have a recreation commission, recreation department, or recreation director, mainly because recreation is often viewed as a non-essential service for towns.

The capacity of most towns and groups is often insufficient to identify recreational needs, organize sports leagues, conduct feasibility studies for proposed recreation facilities, and plan for facility maintenance and enhancement, on top of seeking out new recreational opportunities. Towns with no recreation director or commission are at an even greater disadvantage and often depend on neighboring towns for recreation facilities and programs.

Facility Needs

Many municipalities have cited vandalism, high maintenance costs of historic and public facilities, over use of recreational facilities, and loss of scenic views and open areas to development as potential threats to the Region's recreational resources. Often, needs for increased staff training, better informational signs, and more extensive budgeting activities are necessary for current facilities to adequately meet users' needs.

Even while municipalities are having trouble maintaining current facilities, there is a recognized need for additional basic facilities, such as ball fields and trail networks, to meet recreational needs at the local level.

New Recreation Programs

While children's recreation programs and sports opportunities are available to almost every child in the Region, there are few facilities and programs meeting the needs of adult, elderly, and disabled users. There is also an identified need for greater recreational opportunities for youth not interested in traditional sports leagues.

Access to Recreation Opportunities

Undeveloped recreation areas—sledding hills, swimming holes, hunting lands, etc—serve important recreational needs in almost every town in the Region. Loss of access to private lands is increasing due to liability concerns and the reluctance of landowners to keep their land open to unknown users. Loss of these private lands threatens to eliminate many of the recreational opportunities available across the Region, especially in smaller towns that do not have the resources to provide municipal recreational facilities. Part of the issue is the lack of homeowner knowledge on the various forms of liability protection available.

Loss of access to water resources is also a concern, and towns with important water resources recognize the need to maintain



FAST FACT

The Rutland Area Physical Activity Coalition (RAPAC) is a group of businesses, organizations, and individuals that promote walking, cycling and other fun activities as a way to promote physical and mental well-being. This organization works to make Rutland county more pedestrian and bike friendly. RAPAC also develops trail systems for walking, running, and cycling.
www.walkbikerutland.org

Are these Facilities/Resources Available to the Public in your Town?

Answer Options	Yes	No
Baseball fields	16	5
Soccer fields	15	7
Tennis courts (indoor or outdoor)	8	15
Tennis courts (outdoor)	5	16
Skate parks (skate boards, roller skates, etc.)	2	20
Ice-skating rinks (indoor or outdoor)	5	16
Ice-skating rinks (outdoor)	3	18
Swimming pools (indoor or outdoor)	5	17
Tracks (indoor or outdoor)	5	17
Golf course	5	17
Other fields and rinks	5	14
Bike Path/Route	9	12
Public Parks-not including ball fields	14	8
Playgrounds	17	5
Community Gardens	5	16
Conservation Land	17	5
Hiking Trails	18	4
Beaches	4	18
Off-leash Dog Park	[illegible]	22

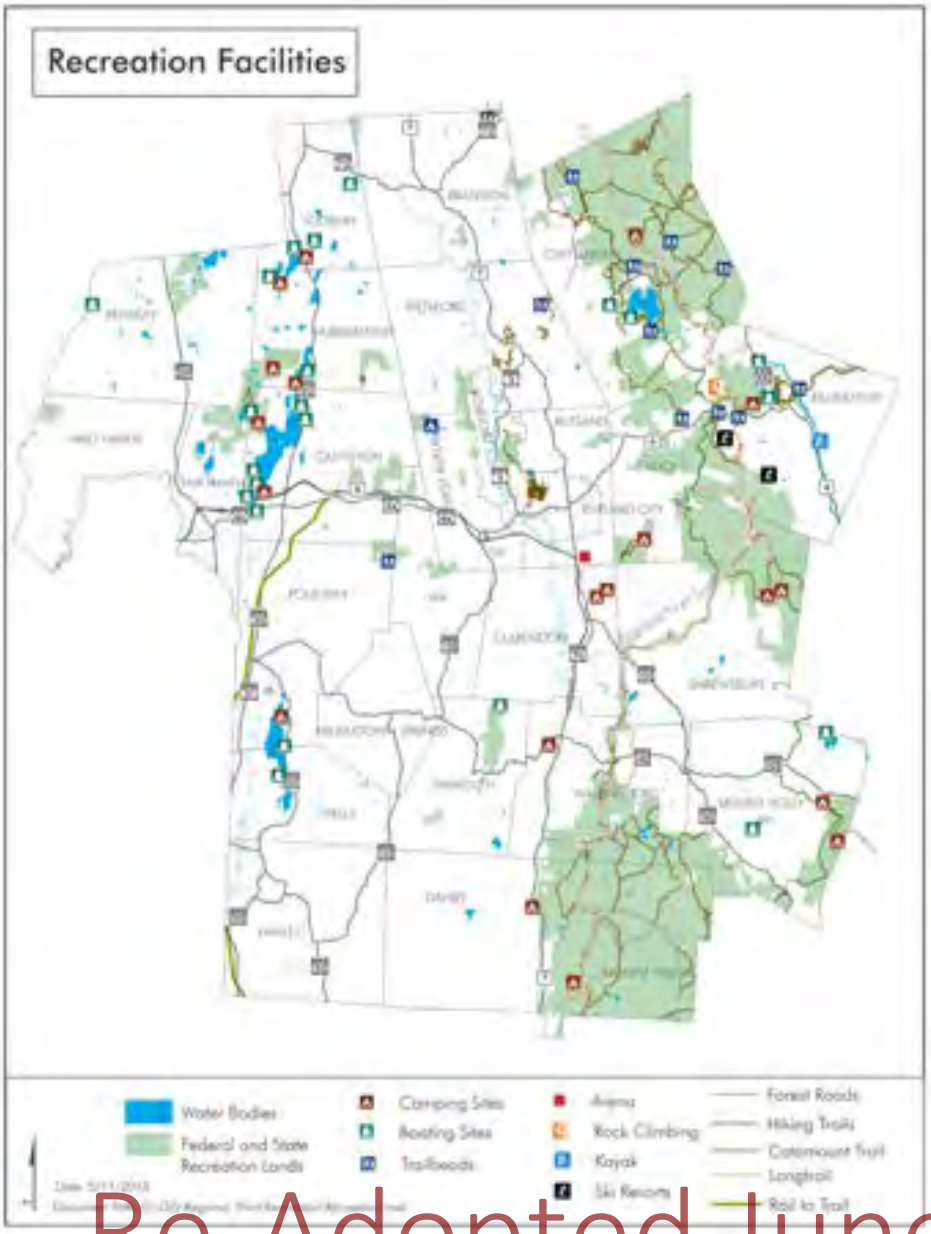
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CONNECTING THE PLAN

Recreation plays a large role in the health and wellness of the Rutland Region. Part of every day physical and mental well-being is getting enough exercise!

public access points to these resources for those not owning shoreline property.

Conflicts between types of recreation and the desired characteristics of the experience, such as a desire to ski but only having snowmobile paths available, can also affect the enjoyment of recreation in the Region. However, recreation takes many forms in the Region, ranging from motorized ATV and snowmobile touring to activities requiring greater solitude, such as wildlife viewing, backcountry hiking, and camping. Therefore, some variety of options are generally available to residents within a short distance of home.



Limited Transportation to Recreation Facilities

The distribution of recreation areas and facilities is concentrated in larger population centers, making access difficult to residents of the Region without transportation. Because of the nature of recreation, trailheads, lake access points, and other opportunities are often outside of the Region's public transportation system and generally inaccessible to residents who do not have their own transportation.

Automobile dependence could be decreased by better access to facilities by bike or foot travel. Currently there is very limited bike and pedestrian infrastructure connecting frequently used recreation facilities to users.

FUTURE TRENDS

In the future, recreation will become ever more important to combat rising trends of obesity. Currently, compared to the rest of Vermont, Rutland County adults are less likely to exercise at recommended levels (80% vs. 84% of adults engage in some form of physical activity during leisure time). In 2011, 14% of Rutland County youth in grades 9-12 reported being overweight and 11% reported being obese. Rutland County has slightly more overweight and obese youth compared to Vermont (2011 rates are 13% and 10%, respectively, Source: Health Status of Vermonters). However, despite rising need there are several problems affecting recreation in the Rutland Region, as identified by Vermont Department of Health Staff from the Agency of Natural Resources, user groups, and recreation providers.

Climate Change

The projected rise in annual temperatures, the shortening of the winter

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season, and an increased unpredictability of precipitation events pose challenges to the health of Vermont's environment and residents, as well as to its economy. At the same time, these changes and challenges may provide opportunities for the expansion of warmer weather activities as colder weather activities become less viable.

Outdoor recreation activities associated with the winter season, which generate over $1 billion of revenue in the state annually, are likely to experience the most significant changes, with much less reliable snowpack and snowfall conditions anticipated, along with a substantial decrease in the length of the skiing, snowboarding, and snowmobiling seasons. By the end of the century, the number of snow-covered days in the Northeast is expected to decrease to as few as 27-40 days. Snowmobiling, cross-country skiing, snowshoeing, and sledding, which rely on natural snow cover, are the most vulnerable to these changes.

In addition, rising temperatures threaten to increase the frequency of severe heat waves, which pose challenges to summer recreation in a state widely appreciated for its mild summer temperatures. Improved preparedness, education, and warning systems will be essential to control the impact of extreme heat and unpredictable storm events on outdoor recreationists. Increasing temperatures will also encourage the expansion of pest species such as ticks and mosquitoes, which pose new and increasing human health threats such as West Nile Virus and Lyme disease

Aging Population

As the population of the Rutland Region ages, there will be a need for more recreational opportunities appropriate to the elderly. Some outdoor recreation resources of particular utility to older populations identified by Vermont's Area Councils on Aging include paved, smooth-surfaced walkways and bike paths, benches along paths and in parks, hand rails along paths and facilities where necessary, plowed paths for winter use, picnic shelters and park areas with vehicular access for individuals with mobility issues, opportunities for low impact activities such as bocce and croquet, adequate bathroom facilities and increased handicapped access at the state's fishing access sites. As the population ages, more of these facilities will become necessary to encourage physical health and activity in the elderly.

Open Space Development and Fragmentation

The development of the Region's open space poses a threat to many recreational opportunities as it fragments the natural landscape. Fragmentation can decrease access to recreational opportunities such

Vermont 2006 and 2011 Comparison
(Numbers in thousands. Expenditures in 2011 dollars)

	2006	2011	Percent change
Fishing			
Anglers in state	114	207	82
Days in state	1,665	2,215	33
In-state expenditures by U.S. anglers	$71,129	$131,317	85
State resident anglers	71	105	48
Total expenditures by state residents	$65,978	$68,612	4
Hunting			
Hunters in state	73	90	23
Days in state	1,111	1,584	43
In-state expenditures by U.S. hunters	$211,669	$292,328	38
State resident hunters	57	71	25
Total expenditures by state residents	$77,054	$323,047	319
Away-From-Home Wildlife Watching			
Participants in state	265	177	-33
Days in state	2,459	2,602	6
State resident participants	82	85	4
Around-The-Home Wildlife Watching			
Total participants	274	270	-1
Observers	193	204	6
Feeders	215	199	-7
Wildlife-Watching Expenditures			
In-state expenditures by U.S. wildlife watchers	$137,062	$288,507	110
Total expenditures by state residents	$102,287	$181,034	77

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as hiking, walking, and biking, and also makes it more difficult to reach these activities as there may be more roads and suburban developments in the way.

Private Land Access

Decreasing access to private land is also a threat to recreation, as many walking, hiking, and snowmobile trails cross over private land at some point. This is also a concern for hunting and fishing opportunities, as these sports sometimes necessitate crossing private land. However, many landowners are frightened of being held liable if someone is injured on their property, or do not want any of their property damaged, and therefore have a preference for not allowing people across.

Hunting and Fishing Participation

Hunting and fishing participation has varied slightly over the past several years in the Region, showing slight increases in participation from 2006 to 2011. This could be because of the popularity of the local foods movement, a desire to have control over a food source, or simply because more residents are enjoying the outdoors, particularly if they have children who hunt with them on youth weekends. However, with increasing fragmentation of land and decreasing private land access, it is unclear how this trend will continue.

Water Quality

Recreational enjoyment can be impaired by invasive species such as Eurasian watermilfoil in certain lakes. Many lake associations in the Rutland Region are actively involved in invasive species spread prevention or control projects. Visitors may encounter friendly "greeters" at public boat accesses, offering to inspect and remove any aquatic species from boats and trailers before launching, although their primary function is educating boaters about how they can prevent the spread of aquatic invasive species. Other pollutants, such as phosphorus, are causing frequent and severe algae blooms and impairing recreational opportunities across the state.

Public Trails Information

Although the locations and lengths of many of the public trails in the Rutland Region are generally available, there are some that are left off of lists or forgotten about. A current, updated, comprehensive listing and map of all of the Rutland Region's trails would be very beneficial to all of its residents, as many are unaware that hiking and walking trails exist near their homes.

Public Health and Quality of Life

The popularity of outdoor recreation, along with the land and waters that enable activities, has important implications for public health and quality of life in Vermont. From playgrounds, to fields for sports, to trails and walking paths, parks play an important role for recreation throughout the lives of Rutland residents, and public investment in these resources can contribute to stronger and healthier communities.

RUTLAND RPC GOALS

Given that financial resources for recreation are limited throughout the county, communities and organizations should sustain and expand recreation resources. Sharing of resources at the local, state, and federal level, and with the private sector, is equally important.

Local, regional, state and federal agencies in Vermont should coordinate growth management planning and policies to determine the best places for growth to occur. Public agencies should work with private businesses to ensure that recreational services complement and do not compete with each other.

Agencies, businesses and organizations providing recreation should work to share feedback from users with each other, so that services can be adjusted and coordinated to most effectively meet user

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needs.

Additional continued funding for public facilities upgrades and maintenance will be necessary. Smaller, more rural towns, should group resources when applying for recreation related grants and when forming recreation commissions. Community endowments and other private support is also an important component to municipal recreation programs.

Changes to the tax code at the state level that provide tax relief to landowners who allow recreational use of their property could also help keep access to privately owned recreation opportunities open.

Specific steps that can be taken to implement the solutions above:

- Create a Regional Open Space Plan.
- Create a Regional Bicycling Plan.
- Assist communities to conserve outdoor space and natural areas for outdoor recreation in or near areas of population concentrations. Help town officials to understand the tax and economic benefits and consequences of conserving land in their town.
- Ensure coordinated efforts between the Commission, other agencies, and area towns in planning for and managing outdoor recreation facilities and opportunities.
- Work with public transportation organizations to identify and serve recreation sites.
- Work with interested towns to modify subdivision regulations to require recreation facilities and easements as part of large subdivision applications.
- Support recreation infrastructure projects that are designed for multiple types of users.
- Work with municipalities to identify the location of future recreation areas on official maps.
- Assist towns in the creation of recreation commissions.
- Identify opportunities for resource sharing between towns for recreation provision.
- Support connectivity between trails throughout the Region.
- Work with town Conservation Commissions and Vermont Department of Forests, Parks and Recreation to increase local awareness of Municipal Forests and facilitate public usage.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

ADDITIONAL RESOURCES

- "Trails and Landowner Liability in Vermont" Handout, Vermont Trails and Greenways Council, June 2003.
- "2003 Rutland Region Recreation Report," Prepared by the Rutland Regional Planning Commission for the Vermont Department of Forests, Parks and Recreation, September 2003
- Vt. Stat. Ann. tit. 12, § 5791-5795 (1997)
- "Small Town Recreation Checklist," Vermont Recreation and Park Association
- Info on insurance extensions, municipal liability and their insurance policies etc.

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Chapter 13: Agriculture and Forestry

INTRODUCTION

The natural and working landscape in Vermont and in the Rutland Region, is prized by people who live, spend their vacations here or travel through. As "natural" as they seem, the beauty and charm of these places are largely linked to the ways the land has been used by farmers.

In the 1850's farming, particularly the raising of grazing animals, was so widespread in Vermont trees were cleared and only 20% of the land was covered by forests. Today, that trend has reversed as large tracts of land previously used as pasture have grown up into forests. In 2002, 75% of Rutland County's land was classified as forest land. Both farmland and forests remain important elements of the Region's economy, ecosystem, and character.

This section is focused on the link between land use, transportation, economic development, and the "working landscape".

CURRENT CONDITIONS

Agricultural Resources

Outside of the Rutland City core, the Rutland Region remains a rural area with a wide variety of active farms and farm-related businesses. While dairy is the most visible and the most widespread farm type, there is a wide variety of foods and other farm goods produced in this Region including beef, lamb, eggs, fruits, vegetables, berries, honey, maple syrup, Christmas trees, ornamental plants, fibers, and specialty "value-added" foods such as jams, salsa, artisan cheese and herbs.

Forest Resources

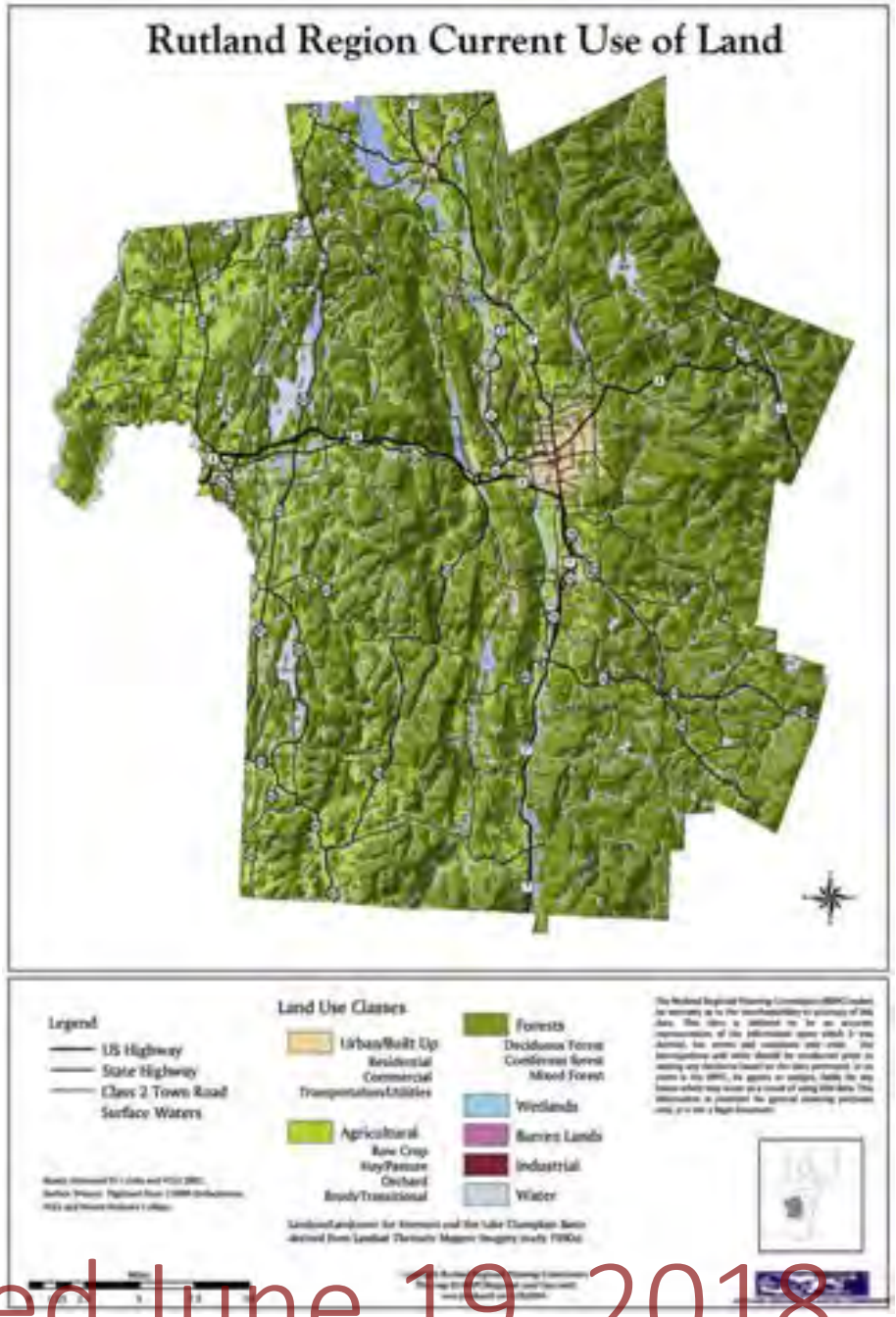
The Region's highly productive forest soils have made timber harvesting a sustainable activity that contributes to the economy and supports a number of related industries. In 2000 and 2001, Rutland County was 1st in the state in the share of hardwood being produced.

The forests contribute to the Region's economy by attracting outdoor recreation enthusiasts, hunters, and people who come to view the foliage. Additionally, sugar maples are an important part of our forest resources as maple syrup (and associated products such as maple cream, maple sugar candy, etc.) are a regional

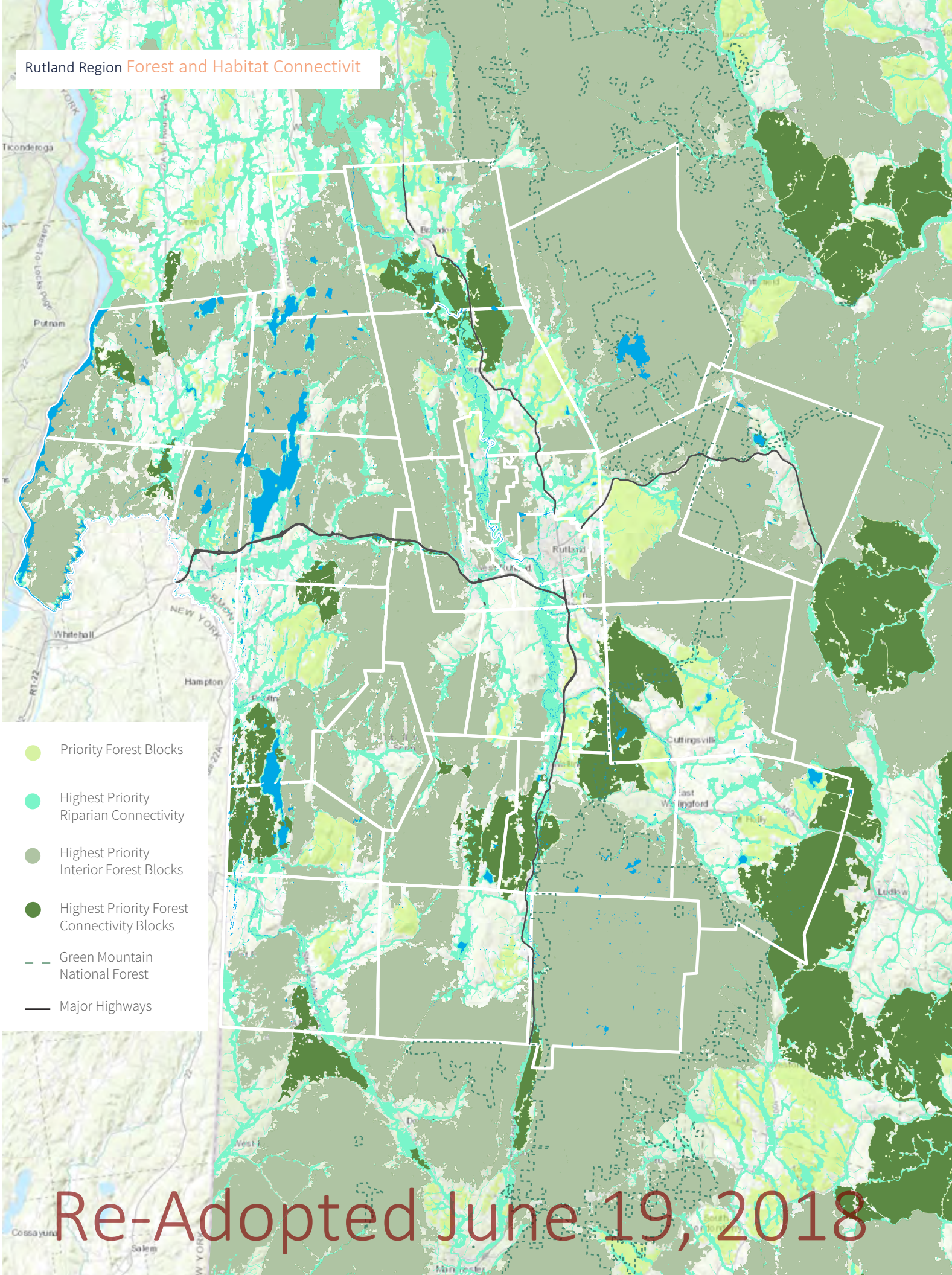


FAST FACT

Right-to-Farm Law
Vermont has a statewide Right-to-Farm law that essentially protects existing farm operations from lawsuits by new residents and others that claim farm operations are a nuisance. This law was recently strengthened.



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Rutland Region Forest and Habitat Connectivit
Priority Forest Blocks
Highest Priority Riparian Connectivity
Highest Priority Interior Forest Blocks
Highest Priority Forest Connectivity Blocks
Green Mountain National Forest
Major Highways
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FAST FACT

According to the Census of Agriculture, in 2002, there were 623 farms in Rutland County, a 26% increase since 1992.

The average size of Rutland County farms decreased 28% in the past ten years, from 269 acres in 1992 to 195 acres in 2002.

tourist attraction and worldwide export – often providing additional income for farmers and loggers.

NOTE: For further details on agricultural and forestry resources, refer to the Rutland Region Natural Environment Technical Report.

Land Base

Road building and residential/business development consumes agricultural lands. Once the land has been graded and built upon, prime agricultural soils are permanently lost.

Three quarters of the 9,700 acres of land in Rutland County converted to development in recent years were agricultural lands. This phenomenon exists in large part because land that is well-drained, flat or gently rolling is almost always as desirable for buildings, roads, landfills and septic systems as it is for farming and forestry activities. In addition, agricultural land without improvements is often valued lower than land in more built-up areas – making it attractive to people seeking to build new homes in areas removed from other homes.

The loss of forest land to development is the most likely threat to the sustainability of forest products in Vermont. In addition, there has been a trend toward purchase and development of high-end homes on large tracts of lands in this county. Often, these homes are used only part of the year. Attention to management of the forest lands is sometimes neglected under this scenario.



Source:: "The Forests of the Green Mountain State", USDA Forest Service, Nov 2003

Agriculture in Transition

Rutland County has seen a shift in the size and number of farms over the past ten years. While there has been a decrease in the number of acres in active farm production, there has simultaneously been an increase in the overall number of productive farms. This can be explained by the loss of large dairy farms which require a high number of acres, and an increase in specialized market farms which tend to be smaller in acreage.

UNMET NEEDS

Visibility of and Attention to Agriculture

While Vermont is known as a rural state and there are a number of State programs to support the viability of the agriculture sector, in recent times there has not been a strong, coordinated and visible effort to support this sector in the Rutland Region. Some people suggest that this Region

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somehow feels less agricultural and rural than other parts of the state. This could be due to the dominance of the ski areas, the character of development along parts of Routes 7 and 4, or even the fact that most of the Region is quite mountainous and not as wide open as other parts of the state better known for agriculture, such as Addison County.

A greater collaboration between agencies and agricultural organizations working for continued agriculture in the Region and the county's organizations focused on economic development such as the Rutland Development Authority, the Rutland Region Chamber of Commerce and the Rutland Economic Development Corporation will help strengthen agricultural as an important economic sector in the Region.

Loss of Farm Lands

A number of large dairy farms are being operated by farmers close to retirement age. When younger generations decide not to take over the farm, some farms simply go out of business. For good reason, this dynamic has caused many to feel pessimistic about the future of farming in Vermont, and the Rutland Region. In the past twenty years, the number of acres in the Rutland Region that are actively farmed has decreased by 45,000 acres. Of that, 26,000 acres were lost between 1982 and 1987. The loss has slowed more recently.

Agricultural lands developed for other uses are often fragmented into parcels that are not large enough to support a viable farm operation. Although much of the agricultural soils are still undeveloped in these situations, the difficulty of managing these separately owned properties for a single agricultural enterprise could exclude their use for agriculture now and in the future.

Employment Shortages on Farms

One challenge identified by farmers is the changing workforce in this Region. Many of the farms with large seasonal production needs (for example, orchards or poultry producers with a high volume around Thanksgiving) are finding it difficult to find highly productive local workers when they need them. For some, importing workers from other countries has provided the seasonal workforce required to meet their needs.

Balancing Values of Forest Use

Wood harvesting contributes to the region's economic equation, and it raises concerns about preservation of wilderness and wildlife habitats. Responsible timber harvesting maintains the habitats of animals that rely on woodland habitats (grouse, rabbits, small game, turkey, deer), reduces the potential for forest fires close to houses and other structures, and retains the ability for human recreation. As farm fields "grow up to trees" they convert to this "early successional habitat".

This type of habitat is now disappearing while species reliant upon more dense forests are reappearing. With forethought and planning, forests can be managed for a variety of habitats. Regulations severely restricting local timber harvesting would



FAST FACT

According to the 2002 Census of Agriculture, farms in Rutland County totaled 121,203 acres. The following is a breakdown of the size of farms reporting:

Farm Size	# of Farms
1 to 9 acres	49
10 to 49 acres	161
50 to 179 acres	213
180 to 499 acres	139
500 to 999 acres	48
1,000 acres +	13



FAST FACT

Current Use Program
In Rutland County, 104,200 acres of forestlands and 27,844 acres of agricultural lands were enrolled in Vermont's Current Use tax program in 2005.



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Local products, like those in Rutland, returns more money to the local economy

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FAST FACT

According to "The Economic Importance of Vermont's Forests" (2001) the contribution of Vermont's forests to the state's economy is $1.2 billion.

According to the "Vermont Forest Resource Harvest Summary" (2003) Rutland County was 4th in the State in volume production of saw log and veneer log harvest.

not be the answer. Local production of wood is necessary if we are to continue to use wood products. Local production adds jobs to the economy and reduces the likelihood that we are pushing the environmental impact of our consumer-generated demand to other places in the country and in the world.

Environmental Considerations

The management practices of farming and forestry operations directly relate to the health of the region's soils and waters. Accepted Agricultural Practices are state restrictions that when implemented balance water quality improvements with the need to sustain a healthy, economically viable agricultural industry.

Medium and Large Farm Operations, a state designation based on the number of animals on the farms, are more stringently regulated to protect water quality. There are 5 medium and large farms in Rutland County under these designations.

There are many technical and financial resources available to farms to develop and implement comprehensive farm management plans that address environmental considerations. The purpose of these programs is to help agricultural producers address nutrient management needs with the help of on-farm consultant assistance to improve management practices that will positively affect water quality and farm sustainability. These statewide programs are designed to reduce nonpoint pollutant discharges through implementation of improved farming techniques rather than investments in structures and equipment.

FUTURE TRENDS

Transition to Organic

The transformation over the past decade of the dairy industry to consolidated, larger operations has made it difficult for smaller farms to compete in the national market. In the mountainous areas of this Region farms are removed from major transportation networks, or don't have the room to operate efficiently on smaller tracts of land (given the terrain) and have been losing ground as milk prices have dropped. Organic milk currently pays a better price than conventional milk to local farmers. This has been an incentive for some to convert their operations but, for dairy farms, this is a major investment with uncertain long-term economic gains.

As for vegetable production, there are an increasing number of farmers producing organically. Some are driven by their own commitment to practice good land stewardship, others are responding to consumer demand. Whatever their initial incentive, reducing or eliminating their use of conventional pesticides and using best practices such as integrated pest management have increased consumer



A LOT OF FOOD FOR THOUGHT

Rutland County is 4th in the State of Vermont in terms of acreage being farmed.

- Over the past ten years there has been a decrease in the size of farms and reductions in the market value of products sold tied, in large part, to declining milk prices.
- At the same time trends show a loss of revenue and land, the number of full time farms in the region rose 11% between 1992 and 2002.
- The mix in types of sales (crops versus livestock and poultry and their products) has been shifting. Between 1997 and 2002, crops rose from 11% to 17% of the sales. Combined with the reduction in farm size but the overall rise in number of full time farms, these may be indications of a transition in our region from dairy farms to crops/produce.

On the whole, one could consider these shifts to be evidence of a economic sector in transition versus decline. A positive dimension to the pessimistic view often taken about the future of agriculture in Vermont.

AGRICULTURE'S CONTRIBUTION TO THE REGION'S ECONOMY

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choice and created a higher value product.

Diversification/Creativity

Farms in the Rutland Region are adjusting to new modes of operation. Dairy farms formed their own cooperatives, giving them greater leverage in the national marketplace and a better price on milk for the individual farms. Others are transitioning to organic milk, responding to a national demand. Still others are raising beef cattle and other grazing animals. And many farms are returning to or emphasizing diversification of products and marketing methods including the production of value-added products that bring a higher return than focusing on a single commodity subject to globalized price structures.

A shift from dairy to a variety of other agricultural products is also occurring in the Region.

New Markets and the Buy Local Movement

One of the key forces supporting smaller farms is the growing interest among consumers in purchasing local food products. Statewide efforts to promote the "Vermont Seal of Quality" and purchase of locally produced goods are reportedly increasing sales by local food producers.

The VT Department of Agriculture, Foods and Markets estimates that if Vermonters were to shift just 10% of their food purchases to buying locally grown food products, an additional $130 million could be added to Vermont's economy. In part, this trend is the result of media reports about the potential dangers of mass-produced food products, and a growing attention to eating healthy.

A growing number of consumers are searching for ways to identify where their food is coming from. Consumers are taking advantage of increasing opportunities to buy products at a local farm stand or farmer's market, or from major grocery chains that are starting to purchase from local producers and advertise the availability of these products.

Equine Industry

A growing number of farms are being used for horses either simply to board and pasture, or as riding stables and arenas that tend to be viewed as more commercial ventures than agricultural uses. Between 1992 and 2002, the number of farms with horses as part of the operation more than doubled, from 75 to 180. While pasturing horses helps to keep the lands open, the more intensive riding uses are not always welcomed in a community. An issue local towns need to consider when drafting land use regulations is whether or not they want to allow or encourage these alternative uses of the land.

New Farmers

The median age of farmers in the Region is rising. As current farmers approach retirement, new farmers need to be located. There are a number of statewide efforts to link new farmers with available mentors, business planning



FOOD FOR THOUGHT

Agricultural products grown and processed in the region are diverse.

From meats and cheeses to syrup, herbs, vegetables, and even natural dog food, Rutland Region farmers are producing a variety of products. They also engage in season extension practices such as greenhouses making vegetable production more profitable.

These products are being sold where you'd expect, at the farmers market and local farmstands, but local stores such as the Rutland Natural Food Market, Castleton Village Store and Price Chopper are carrying some of these products.



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Many farms, like this one in West Rutland, are moving towards organic crops

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CASE STUDY
RUTLAND AREA FARM AND FOOD LINK: PROMOTING AGRICULTURAL VIABILITY FOR THE REGION

RAFFL Partners:

- Rutland Regional Planning Commission
- George D. Aiken Resource Conservation & Development Council
- Intervale Foundation
- Vermont Land Trust, Inc.

RAFFL Collaborators:

- Boardman Hill Farm
- UVM Extension Service
- Green Mountain College
- Vermont Fresh Network

Other Participants:

- Poultney Mettowee Natural Resources Conservation District
- Rutland Natural Resources Conservation District
- Rutland Region Chamber of Commerce
- Local Farmers

The Rutland Area Farm and Food Link (RAFFL) is a partnership of diverse individuals and organizations formed by the Rutland Regional Planning Commission to focus on the economic, environmental, and social role of agriculture in Region.

The partnership represents area farms of differing sizes and practices, land conservation interests, college and secondary education, regional and watershed planning agencies, rural economic development organizations, food distributors and others passionate about the continuing viability of local agriculture.

RAFFL has identified the need for a multi-pronged approach to supporting and strengthening agriculture to ensure its future viability. This includes:

Expanding markets agricultural products produced in the region. This entails addressing consumers needs for greater access to local products coupled with increased education on the importance of buying local foods, how to access and cook with local food year-round, and the health and community benefits associated with eating fresh local food and supporting family farms. It also involves exploring opportunities for local agricultural products in institutional settings such as large restaurants, area schools, hospitals and nursing homes.

Expanding the economic strength and production capacity of the Region's farms. As the market for the region's agricultural products expands, the capacity to fill this demand must follow suit. Some capacity may be met through the growth of current farms. The opening of new markets will also offer opportunities for new farmers looking for regional markets. Research supporting innovative and sustainable agricultural businesses will help ensure the long term viability of farms in the Region. Issues regarding access and affordability of farm land, continuation of local agriculture equipment and suppliers, and access to business planning and training resources will need to be addressed. Processing facilities, storage space and the creation of an efficient regional distribution system are also part of the capacity puzzle.

Celebrating the Region's historic connection to agriculture and its current farmers. Reconnecting the Region's communities to agriculture by bringing residents onto different types of farm

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operations, introducing school children to agriculture through school gardens and coursework, and hosting regional harvest festivals and other agricultural events are all ways of strengthening agriculture in the region.

RAFFL is addressing many of these identified regional needs through its community farm and agricultural resource center project. Similar to the Intervale in Burlington, this will be a working farm that provides a starting place for new farmers. By providing farm space and equipment for beginning farmers to rent, they will be able to concentrate on building their markets, developing a strong business plan, and determining efficient and effective growing techniques. This will help ensure that when they do make the transition to a farm of their own, they will be investing in an economically viable, pre-existing business.

Beyond a space for new farmers, this center will also serve as a place for the Region's residents to learn about, understand and participate in promoting local agricultural businesses; an agricultural research center, and as a resource to the region's existing farmers.

Other RAFFL project priorities include building and strengthening relationships between the region's farmers and other agricultural players through mentoring programs between established farmers and new farmers and the creation of a grower/ producer network for the exchange of ideas, support, and resources.



This label, designed by a local artist, will be used to identify Rutland County agricultural products starting in 2006



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Green Mountain College, a small liberal arts college located in Poultney, Vermont, plays a large role in preparing students for agricultural careers. Through an interdisciplinary effort known as the Green Mountain College Farm and Food Project, students and faculty explore issues related to food, farming and land use through academic study and hands-on experiences.

At the college, a student is able to focus learning on sustainable agriculture and food production through an interdisciplinary environmental studies degree program. Courses cover areas such as animal husbandry, organic agriculture and food preservation. Aside from coursework related to agriculture, students participate in the operation of the college's farm. Cerridwen Farm, part of the agriculture program is a two-acre market garden complete with greenhouses, livestock and hen house. The work on the farm is done by volunteer students coordinated by a farm manager. Students are involved in tracking farm finances, determining what the products are produced, identifying markets and selling what the farm produces.

The college farm includes innovative and experimental features such as a passive solar greenhouse with solar-powered electric hook up. They also use a rotational grazing system for the farm's Black Welsh Sheep, oxen, and chickens. The college is intricately tied to the Regional agricultural scene through its leadership in the Poultney-Mettowee Natural Resources Conservation District, its public lecture series exploring the future of small family farms in Vermont and the Region, and through continued involvement in RAFFL. In addition, three successful agricultural businesses now operating in the region have been established by Green Mountain College alumni within the past five years.



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FAST FACTS

Rutland County

Land in farms

- Decreased 5% from 132,674 acres in 1992 to 125,770 acres in 1997.
- Decreased an additional 4% to 121,203 acres in 2002.

Average size of farms

- Decreased 12% from 269 acres in 1992 to 237 acres in 1997.
- Decreased an additional 18% to 195 acres in 2002.

Market Value of Agricultural Products Sold

- Increased 4% to $28,357,000 from 1992 to 1997.
- Decreased 16% to $23,987,000 from 1997 to 2002.

Market value of agricultural products sold, average per farm

- Decreased 4% from $55,470 in 1992 to $53,504 in 1997.
- Decreased additional 28% to $38,503 in 2002.

assistance, and land.

Farm and Forestland Protection and Land Conservation

There are a number of organizations (e.g. Vermont Land Trust and The Nature Conservancy) as well as state programs that focus attention on preserving valued farm and forest lands through donations, purchase or "conservation easements" which pay the landowners to keep the land in agricultural use versus parceling it off and selling it for development. There has been significant action in the Region through these types of models. The conserved land establishes and maintains undeveloped land that will remain an opportunity for agriculture and forestry that would not exist if the land were developed.

Despite its obvious benefits, some potential shortcomings have been identified as this method has matured. For example, there are concerns about how the purchase of development rights will affect future generations of farmers who will not have the opportunity to parcel off some of their land when funds are tight. There is also a concern about what happens to the land if a landowner stops farming. Other concerns revolve around rising land and housing prices in close proximity to conserved lands perhaps due to the presence of these lands. These concerns have caused increased scrutiny of these programs and is spurring ongoing improvements to the ways in which conservation occurs.

MEETING CURRENT AND FUTURE NEEDS

Informed Land Use Decisions

In order to proactively protect agricultural and forest lands, towns might consider how these uses are treated in their local plans, zoning and subdivision regulations. Farm operations are exempt from local zoning laws, Towns can identify districts where agriculture is allowed, and whether or not other uses are also allowed. Providing a separation or attention to how surrounding parcels are developed can help avert some of the potential conflict between farm business operations and residential homes. Likewise, subdivision regulations can consider the impact a land division and development scheme would have on forestlands and agricultural parcels when making decisions in this regard.

For towns without zoning and subdivision regulations, town plans can contain clear language about the desire to protect farmlands from encroaching development or protect contiguous forest lands and thereby reinforce the consideration of these factors in Act 250 decisions.

Support to New Farmers

One issue faced by new farmers is the cost of land. Many new farmers lease land in the beginning while they test their business ideas and build a customer base. A popular economic development strategy is to create "incubator" space for new businesses to get started. Burlington's Intervale has successfully applied this model to farming by providing support via low-cost lease agreements and equipment sharing to new farmers. There is a group of individuals and organizations working on bringing this model to the Rutland area.

Another effort would be to ensure that retiring farmers in this Region are aware of Land Link, a program aimed at matching new farmers with lands to lease or manage, and the myriad of other resources available at the national, state and local level.

Increasing Purchase of Local Farm And Forest Products

One way to address the issue of viability is to concentrate on increasing the amount

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of product purchased at a local level. There are a number of successful models across the northeast where "buy local" campaigns have significantly raised the demand for locally produced goods and products – thereby supporting existing operations and opening up the opportunity for additional farms and forest-related businesses to be created.

Controlling Invasive Insect and Plant Species

With the continued growth of importation of plants and wood, especially from other parts of the world, there are an increasing number of insects which, left unchecked, could seriously undermine the Region's local farm and forest economies. Hemlock wooly adelgid and Asian longhorned beetles are two species currently threatening the state's forestry industry.

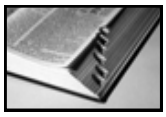
Increasing Pool of Potential Employees

Stafford Technical School, high school programs focused on agriculture and forestry, the Smokey House Center's agricultural programs working with at risk youth, and relevant degree programs of area colleges, are all preparing a new generation of farm and forest employees and owners. There may also be a need for a special training program through Department of Employment Training Board that helps to fill the gap in the near future. The Rutland County Workforce Investment Board works with employment issues across many important industries in the County, and may need to focus on agriculture as well in the coming years. Financial incentives to seasonal employees may be an enticement. Elsewhere there are programs designed to recruit a pool of workers interested in seasonal agriculture jobs.

RUTLAND RPC GOALS

In addition to supporting activities and developments that contribute to individual communities and the Region, and which help meet the needs identified in this Plan, the Rutland Regional Planning Commission shall:

- Work with interested communities to better support the retention and viability of agricultural and forest lands through their land use plans and regulations and remove language that may unintentionally inhibit farm and forestry enterprises.
- Work with area farmers and the Rutland Area Farm and Food Link to identify gaps in infrastructure needed to increase supply of agricultural products produced in the Region.
- Work with local towns and land trusts to examine the effects of land conservation techniques.
- Partner with other organizations to create a farm incubator in the Rutland Region to help new farmers get started in this Region.
- Support partnerships with Natural Resource Agencies to plan for sustainable farming and forestry.
- Where housing or other development on lands suitable for agriculture and forestry



DEFINITIONS

Prime agricultural soils (VSA Title 10, §6001):

- Have the potential for growing food and forage crops,
- Are sufficiently well drained to allow sowing and harvesting with mechanized equipment,
- Are well supplied with plant nutrients or highly responsive to the use of fertilizer,
- Have few limitations for cultivation or limitations which may be easily overcome,
- Have an average slope not exceeding 15 percent, and
- Is of a size capable of supporting or contributing to an economic agricultural operation.



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Forestland serves multiple purposes including, but not limited to logging operations. The Region has many hillsides like this one in Middletown Springs

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FOOD FOR THOUGHT

Farm and forest lands have a number of benefits:

- Production of local food products significantly reduces transportation costs and consumption of fuel;
- As a land use, agriculture has a positive fiscal impact on the community's tax base (ie. demands less services than it contributes in taxes);
- Farming of certain crops is a positive use of floodplain areas;
- Open fields, forests and meadows are an important areas for groundwater recharge ;
- Locally-owned and operated businesses such as farms and wood manufacturers circulate local money in the local economy;
- Corn fields and other farmlands provide habitat for wild animals including deer, turkey and woodcock;
- Forests provide habitat to a wide range of animals and birds, including large animals such as moose, bear and large cats;
- Active farmlands provide open space and scenic views as well as a land use tradition characteristic of rural Vermont; and
- Forests provide a variety of outdoor recreation opportunities as well as a varied and scenic backdrop throughout the year.

is proposed, help shape land use regulations and development review to encourage cluster housing to allow for the continuation of large tracts.

- Work with the Rutland Workforce Investment Board to address employment needs of farm and forestry sectors.
- Promote density-based or sliding-scale zoning in land use bylaws to allow for the retention of large parcels, while allowing for small house sites.
- Map significant agricultural and forest lands in municipal plans and identify for protection.
- Do not support Act 250 applications that permanently destroy significant amounts of farm and forest lands.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

ADDITIONAL RESOURCES

One of the objectives of this Plan is to provide communities with the tools, and the framework, for developing effective local plans and policies. This Plan should be used as a resource for communities preparing plan updates. In addition to the plan, however, a number of other resources are available:

- US Census – (www.census.gov). This site contains the most commonly used housing and demographic data across the country
- 2002 US Census on Agriculture (www.census.gov).
- Vermont Agency of Agriculture website (www.vermontagriculture.com)
- Cornell Community Food and Agriculture Program website (www.cfap.org)
- Food Routes website (www.foodroutes.org)
- Vermont Fresh Network (www.vermontfresh.net)
- Rutland Area Farm and Food Link website (www.rutlandfarmandfood.org)
- Poultney-Mettowee Natural Resource Conservation District (www.vacd.org/pmnrcd)
- Rutland Natural Resource Conservation District (www.vacd.org/rutland/)
- Vermont Forest Parks and Recreation Maple website (http://www.mapleinfo.org/)
- Vermont Division of Forestry website (http://www.vtfpr.org/htm/forestry.cfm)

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Chapter 14: Wildlife and Natural Habitats

INTRODUCTION

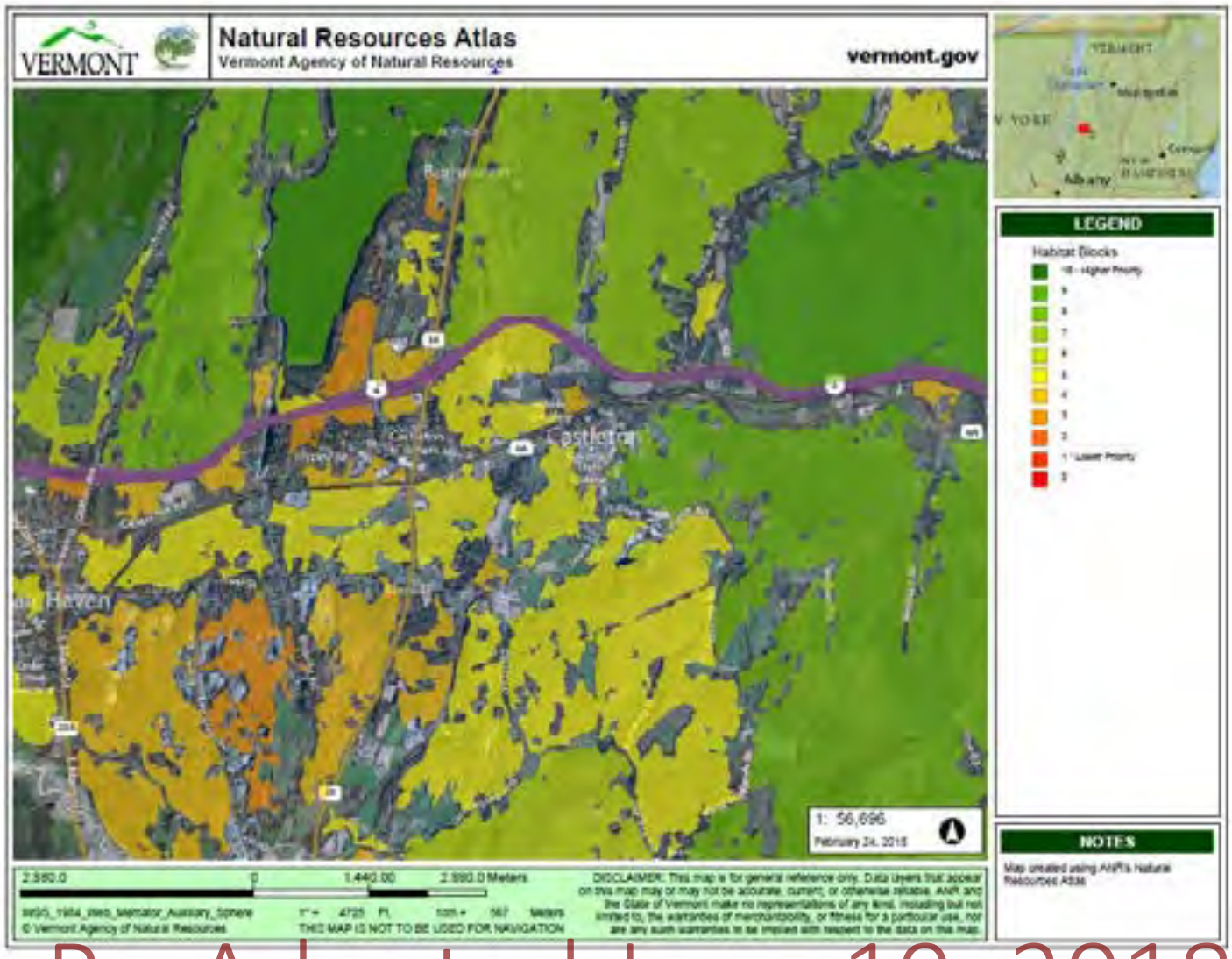
The natural resources of the Rutland Region - its forests, mountains, rolling hills, winding rivers, fertile valleys and wetlands - make our Region undeniably beautiful. Residents and visitors alike are connected to this environment for its beauty as well as its recreational opportunities. Just as important, healthy natural habitats are needed for our sustenance and, in some cases, our livelihoods.

Similarly, we are connected to the Region's wildlife because of how it enhances recreation and other aspects of our lives. In turn, the health of wildlife is dependent on the health of the Region's natural habitats which can be compromised by development and other land use decisions.

This system of natural resources is one of complex interconnectedness.

The role of this chapter of the *Plan* is to examine natural and wildlife habitats, their role in the Region's ecosystem, and the relationship between land use and natural resources.

Habitat Blocks-Western Rutland Region



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CURRENT CONDITIONS

Scenic Resources

The Rutland Region has an abundance of highly scenic resources thanks to a landscape that is dominated by rugged mountain ranges, clear streams, and fertile valleys. Two mountain ranges transect the Region, the Green Mountains and the Taconic Mountains. Killington Peak in the Green Mountains is the second highest in the state.

Much of the Region's mountainous areas are part of the Green Mountain National Forest including the unique cliffs of the White Rocks National Recreation Area.

The Rutland Region also features picturesque lakes, ponds, wetlands, pools, waterfalls, and marshes. The largest lakes are Bomoseen, St. Catherine and Halfmoon. The major river is the Otter Creek which runs south to north through the Region. There is also Class II-III whitewater in a stretch of the Clarendon River and some thrilling falls at West Rutland.

Another distinguishing feature of the Region's scenery is its agricultural lands. Many of them occupy the valleys between the two mountain ranges while others cling to the Region's many hillsides.

These scenic resources have not only attracted numerous residents over time, they also are a major draw for visitors and a vital part of the Region's economic well-being.

Natural Habitat

There are eight *bioregions* in Vermont; these are areas with characteristic flora, fauna and environmental conditions that are delineated by natural rather than political borders. Five of these bioregions are in Rutland County, including parts of the Champlain Valley, Taconic Mountains, Valley of Vermont, Northern and Southern Green Mountain regions. Rutland's diverse environment allows for dramatic variability in climate, geology, topography, soils, and natural communities.

This high diversity of natural communities is reflected in our large number of wildlife species. Fishers, bobcats, coyotes, foxes, whitetail deer and bears are just some of the furbearing carnivores and omnivores that use our forests and waterways. Wild turkeys are increasingly found amidst our agricultural landscapes, while moose, large Rodentia (buck-toothed mammals), such as the Great American Beaver and the porcupine can be found in forests and marshlands. Songbirds and bats help keep summertime insects at bay, while raptors and other birds of prey, including hawks, eagles and owls, keep other prey populations in balance.

The Region's grasslands, marshlands, farmlands and forested lands promote significant avian diversity. Birding is a popular recreational hobby since the Region is also on a migratory flight path to Canada.

Rutland County also hosts the most diverse populations of Odonata (dragonflies and damselflies) in the state. This apparent abundance can also be attributed to a diversity of habitats as well as the extensive volunteer efforts to survey Odonata populations.

The diversity of natural communities in the Region has also led to a number of land conservation projects. Audubon Vermont, the Nature Conservancy, and the Vermont Land Trust are working with land owners and municipalities to protect the Rutland Region's natural heritage.

Rare, Threatened and Endangered Species

A rare species is one that has only a few populations and thus faces threats to its continued existence. Threats include loss of habitat, harassment, and collection.

CONNECTING THE PLAN

Vermont Planning and Development Act, Ch. 117 § 4302:

"To identify, protect, and preserve important natural and historic features of the Vermont landscape.

To maintain and improve the quality of air, water, wildlife, and land resources."

Municipal Development Plan, Ch. 117 § 4382:

The Plan for a municipality shall include:

"A statement of policies on the preservation of rare and irreplaceable natural areas, scenic and historic features and resources."

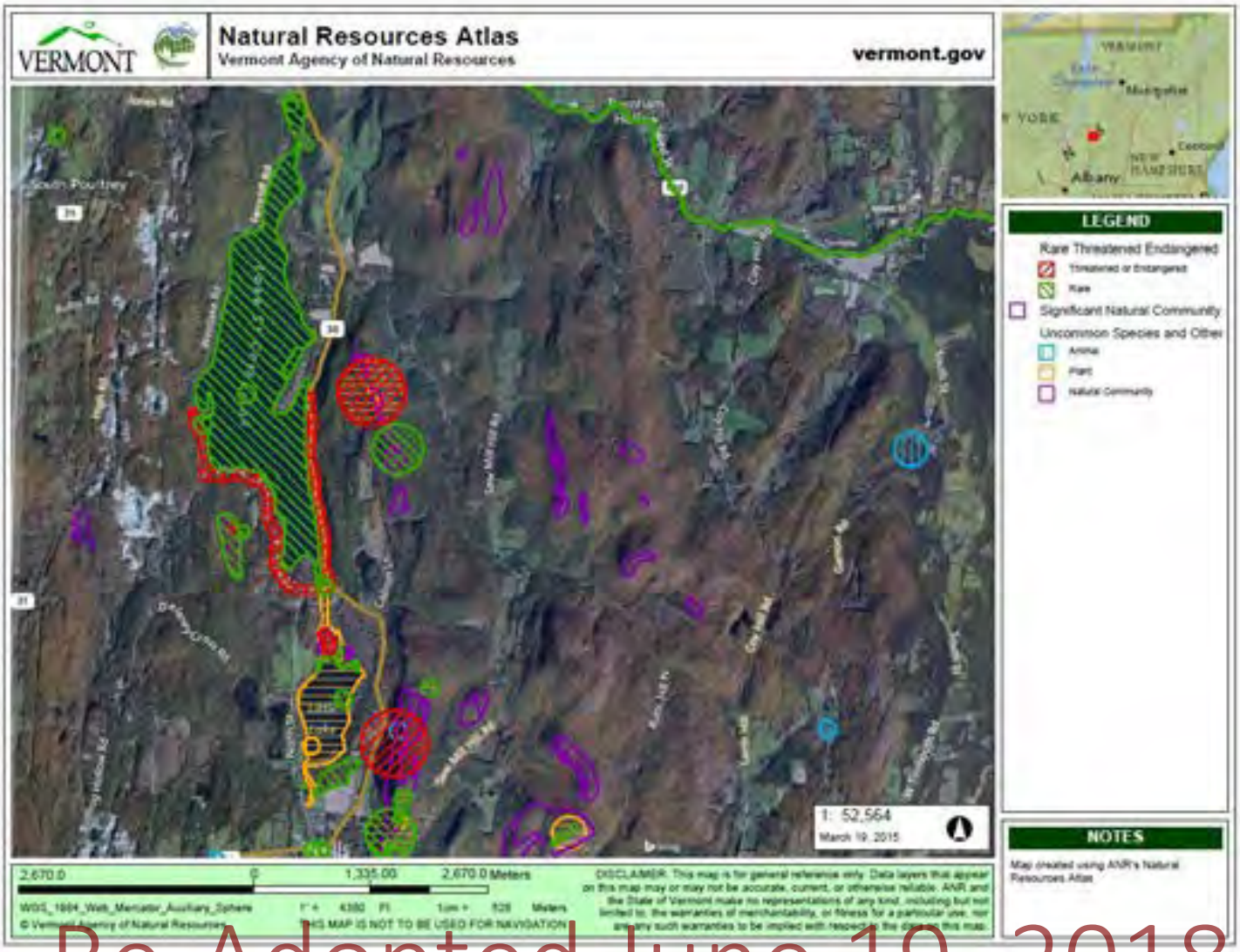
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The Vermont Fish and Wildlife Department has a ranking system of rare species which ranges from S1 (very rare) to S5 (common and widespread). Species acquire these ranks based on population sizes and the degree to which the populations are threatened.

Threatened species are defined by state law as a species whose numbers are significantly declining because of loss of habitat or human disturbance, and unless protected will become an endangered species.

Endangered species are defined as species whose continued existence as a viable component of the state's wild fauna or flora is in jeopardy. Once identified, these species are protected under the Vermont Endangered Species Law (10 V.S.A. Chap. 123).

The Rutland Region is home to a number of species listed as rare, threatened, or endangered by the state. The timber rattlesnake can be found in only twelve Vermont towns, six of which are in Rutland County: West Haven, Fair Haven, Benson, Castleton, Hubbardton, and West Rutland. The same talus slopes in West Haven that house these rare snakes also are home to the 5-Lined Skink, which is the only lizard species native to Vermont. The Agency of Natural Resources provides maps of rare, threatened and endangered species locations. The Vermont Fish and Wildlife Department is responsible for updating the list of rare, threatened and endangered species in



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Vermont.

Some species in Vermont have federal status of threatened or endangered and are also protected under the Federal Endangered Species Act (P.L. 93-205). In the Rutland Region, the federal list includes the Indiana bat which has endangered status on the federal list and the Northern Long-eared Bat which has proposed endangered status across the entire state. The Indiana bat can be found in forests and woodlots in Benson, Brandon, Sudbury, Fair Haven, Pittsford, and West Haven, and in hibernacula (caves and mines) in Brandon and Chittenden.

The loss of species is a measure of the health of our environment. Protecting these species is one of the most difficult conservation challenges and needs to be managed at the local, regional and state level in order to be successful.

There are some encouraging signs in the Region regarding species under threat. Bald Eagles have been spotted soaring over the Chittenden Reservoir, Lake Saint Catherine, and the Poultney River in West Haven. Peregrine falcons, whose populations recovered in the early 2000s, have been found nesting on Bald Mountain, Bird Mountain and Pond Mountain.

Important Bat Habitat

Among the species in need of continued conservation are bats. There are nine species of bats in Vermont: Indiana bat and small-footed bat, northern long eared bat, eastern pipistrelle, silver-haired bat, red bat, hoary bat, and little and big brown bats. Two distinct habitats are recognized as critical for the persistence of a bat population - a winter hibernaculum (such as a cave) and a summer roosting colony.

Courtesy: Burlington Free Press



The Indiana bat and the small-footed bat are protected by the Vermont State Endangered Species Law. The Indiana bat is also listed as endangered at the federal level.

Additionally, the Vermont Agency of Natural Resources lists the little brown bat and northern long-eared bat as endangered due to the high mortality rates caused by White Nose Syndrome.

White Nose Syndrome (WNS) is causing unprecedented mortality of many bat species in the northeastern U.S. WNS is associated with a fungus that breaks down the skin tissue in hibernating bats. Vermont populations of cave bats are continuing to decline dramatically since the disease was first observed in the state in 2006. WNS targets Vermont's two most common species - the little brown bat and the northern long-eared bat - but it is appearing among all cave bats, the species that hibernate in caves and mines in the winter months. Wildlife biologists project that the little brown bat may become extinct within the next 15 years because of WNS.

Connecting Networks of Habitat Blocks

In 2014, the State of Vermont completed what it calls its first iteration of statewide habitat block identification and ranking. Although the *Vermont Habitat Blocks and Habitat Connectivity* report may need to be revised in the future as new data become available, its results can now be directly applied for conservation planning at the biophysical region, regional and town levels.

UNMET NEEDS

Remaining Information Gaps

One of the biggest impediments to the preservation of wildlife and natural

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habitats is a general lack of data. The devastating and rapid spread of WNS in the bat population is one example of the challenges in keeping data up to date.

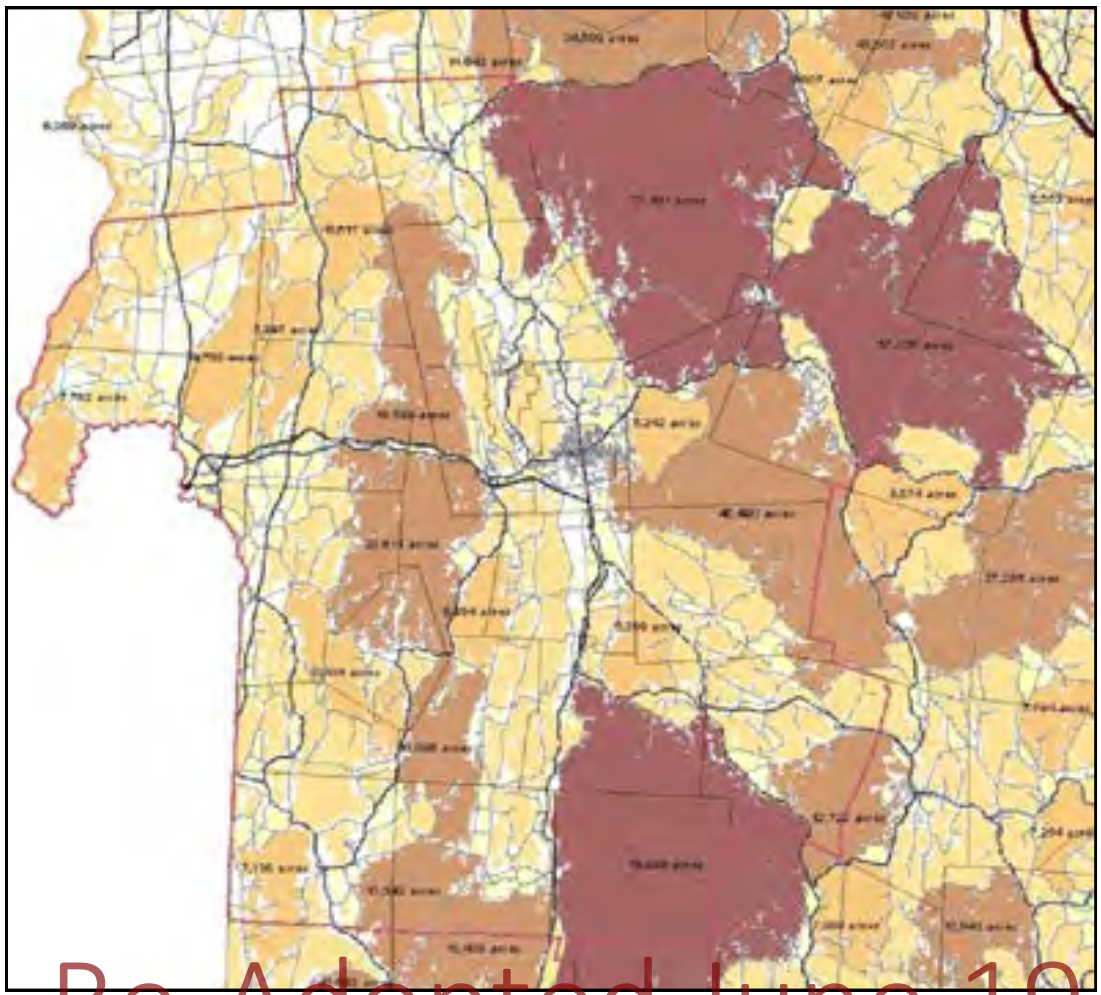
Municipalities are reluctant to adopt regulatory tools for protecting sensitive habitat because of a lack of resources and missing data. Some towns may not realize there are sensitive conditions existing within their borders. Several towns in the Rutland Region have mapped wildlife corridors including Shrewsbury and Tinmouth.

Loss of Habitat

Habitat loss is another impediment to the preservation of the Rutland Region's natural resources. Development, particularly strip development and sprawl, continues to claim forestland and farmland, replacing natural habitat with impervious surfaces such as roads and parking lots. There is a continued need for identifying priority habitat areas for conservation, planning for wildlife corridors and connectivity, and for conserving contiguous forests.

Contiguous Forest

Contiguous habitat is an area uninterrupted by roads, development or agricultural lands. It can include various types of natural communities, such as forest cover, wetlands, or old meadows that provide food and cover for a wide variety of wildlife species. Contiguous habitat does not have a defined minimum or maximum number of acreage. The size requirement of contiguous habitat is relative to a specific area and its associated species. Rutland County has 364 different blocks of wildlife habitat, the



Rutland Region's Variety of Habitat Blocks

(colored by acreage; darker colors indicate larger blocks)

CONNECTING THE PLAN

Wildlife habitat and water quality are closely linked. Plants and animals need fresh marshes, streams, and ponds for survival and in turn serve as effective filtering systems when healthy.

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largest of which is nearly 79,000 acres.

However, for some wide-ranging mammals, even the largest blocks do not provide sufficient habitat for maintaining stable populations in and of themselves. These species will use several different blocks to meet their needs, and will be forced to cross roads or perhaps go under bridges or through culverts to "connect the blocks".

Species such as the black bear, bobcat, moose, and fisher require large territories in order to find sufficient food sources, cover, and maintain genetic variability among breeding pairs. For example, black bears need tens of miles of connected

habitat, while salamanders need only 600 feet. While the concept of connecting blocks of habitat is the same, the scale of connectivity varies dramatically.

It is vital for these animals to be able to move across blocks of habitat and safely navigate roads, agricultural land, and developed areas.

Routes 140 and 133 are considered the biggest obstacles to wildlife movement in the Rutland Region, but other minor roads near heavy areas of development also act as barriers. Roads are also a challenge since they can allow the spread of invasive species and potentially compromise the natural habitat.

Grassland bird habitat is also on the decline due to agricultural activity throughout the Region. Current mowing schedules allow for haying in mid-May, a time when grassland songbirds are nesting. The second cut is usually within 35 days, which is barely enough time for these birds to re-nest before the area is mowed again. Towns in the Region can also appropriately size town-owned bridges and culverts to allow for flood resiliency, aquatic organism passage and mammal movement.

There are several places that have been identified as particularly important for connecting large blocks of habitat in the Region. The Staying Connected Initiative, a coalition of State Fish and Wildlife Departments, Agencies of Transportation and conservation groups from New York, Vermont, New Hampshire, Maine and Quebec, points to the area between the Adirondacks and the Green Mountains through the southern Lake Champlain Valley and Taconic Mountains as a linkage area of regional importance. This area has been found to allow for the exchange of genetic information between wildlife populations of the Adirondacks and Green Mountains to help these animals withstand disturbance and disease.

Wildlife corridor management is a relatively new for topic most municipalities. Mapping forest densities and core habitats can show where corridor protection may be necessary for wildlife protection. Where prime habitat and corridors can be conserved, this is the preferable method. Where this method is not feasible, it is still important that efforts be taken to mitigate the impacts of development on natural communities.

Nuisance Species

While not as impactful as unplanned or unmitigated development in sensitive areas, invasion by non-native plant, animal and insect species continually threaten the diversity of Vermont's flora and fauna.

Often introduced by humans, whether accidental or on purpose, these species have few or *no* natural predators.

Development facilitates the spread of non-native invasive species, as soil disturbance makes it easier for the establishment of new populations. Furthermore, non-native invasive species are often introduced in development through landscaping - in the grasses, shrubs and trees decorating businesses, offices, and new homes.

Though many efforts have been made to contain and eradicate invasive species in recent years, continuous treatments and diligent observation is necessary. Multiple

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tools, including biological, chemical and manual methods of eradication have been employed to address various populations. None of these are complete or perfect solutions, however, and all of them require constant monitoring, year after year, to ensure that populations don't re-establish.

The use of signage and education to promote public awareness of this growing problem is also an ongoing project.

Invasive species of particular concern in this Region are garlic mustard, glossy buckthorn, multiflora rose, Japanese barberry, Norway maple, Japanese knotweed, Japanese honeysuckle, dames' rocket, purple loosestrife, water milfoils, and water chestnut.

Popular Perception of Predators

The eradication of the timber wolf and catamount from Vermont has left a predator gap in our area's food chain. This gap has left room for the eastern coyote to take over.

Contrary to popular belief, the eastern coyote does little to the effect of managing whitetail deer populations, and will only occasionally take down a fawn or ill adult in the winter. Currently, there is a year-round open season on the eastern coyote in Vermont. However, it has been suggested by research that these pressures lead to increased breeding rates and a larger number of pups at each breeding.

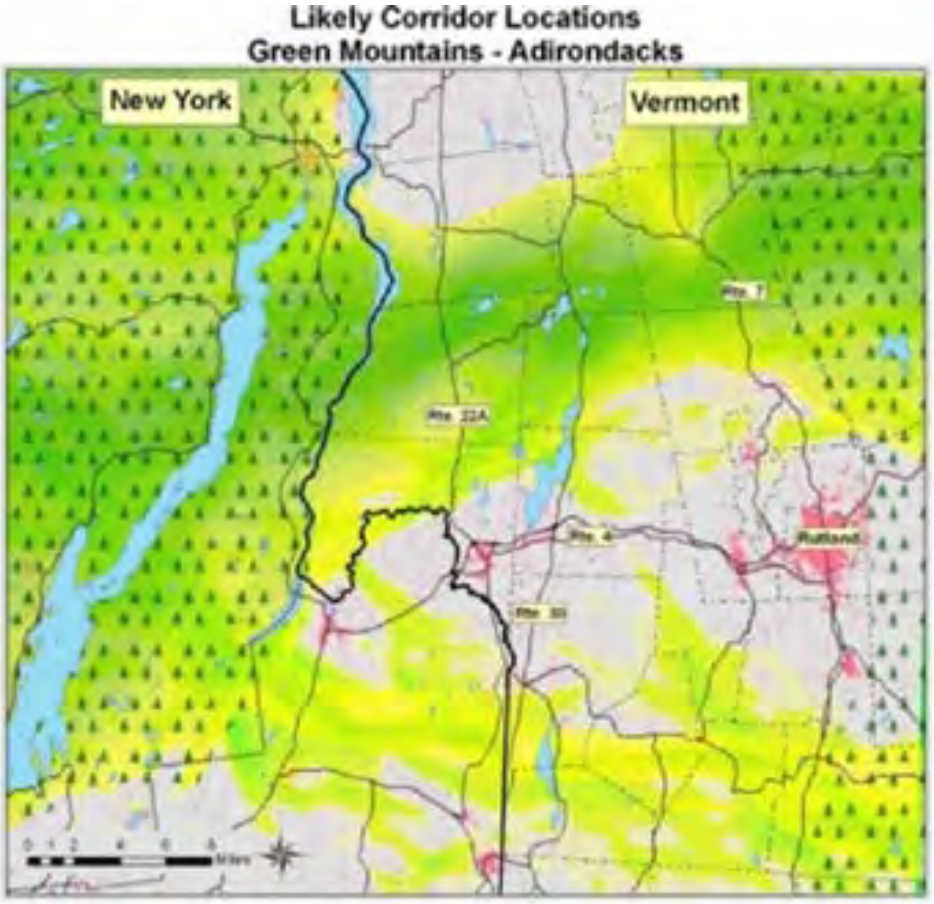
Similarly, the bobcat, has little or no effect on whitetail deer populations. Only on occasion, usually in winter months, will a bobcat stalk and kill deer, and this is only when other prey is less abundant.

Having a better understanding of predator/prey relationships in our Region will allow for better decisions when managing these important mammals.

FUTURE TRENDS

Sprawl

Like most areas of the state, the Rutland Region is increasingly moving towards a service, commercial and light industrial economy. The growing demand for residential and commercial building space appears to correspond to an increase in the amount of land being developed to accommodate these needs. In some areas of the Rutland Region, the resulting pattern is sprawl. This type of development has impacted parts of this Region's forested and open landscapes that support many plants, animals, and habitats.



Least-Cost Path computer modeling shows the areas to the north and south of Rutland City as likely to be key crossing areas for wildlife species between the Adirondacks and the Green Mountains. On this map, the darkest green areas depict the most contiguous habitat.

Other Development Pressures

The ongoing increase in the popularity of vacation and second homes is likely to continue to fragment habitat.

New construction technology will furnish ways for developers to build on steeper slopes and ridgelines. It is important for municipalities to identify these isolated habitats, and through zoning, land acquisitions or transfer of developmental rights, conserve these lands from future development.

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Case Study: Japanese Knotweed

Originally imported from Asia to North America as ornamentals and for the use in stabilizing disturbed sites, the Japanese Knotweed plagues the soils along roadsides and riverbanks. This species can grow to 10 feet tall, forms a dense hedge and blooms attractive flowers in the spring. Knotweed occurs in a wide variety of habitats, but is most commonly found in areas with full sunlight with disturbed soil (rivers, stream banks, near roads). Japanese knotweed grows in the early spring, preventing other species from establishing. This reduces the species diversity in the wildlife habitat.

A small patch can be controlled by placing black plastic over the plant topped with heavy materials like stones. Other options are to cut the plant at least three times per growing season until the rhizomes die back (can take up to five summers). Or, stems can be cut back in August and a solution of 25% glyphosate can be put into the stem (VTFW).





FAST FACT

Effective July 1, 2014, the Vermont Legislature passed the **Shoreland Protection Act** which regulates shoreland development within 250 feet of a lake's mean water level for all lakes greater than 10 acres in size.

The intent of the Act is to prevent degradation of water quality in lakes, preserve habitat and natural stability of shorelines, and maintain the economic benefits of lakes and their shorelands.

In addition, wind and solar energy generation facilities can also lead to habitat fragmentation.

Shoreland Development

Shoreline development regulations will protect important wetland, marshland, and riparian habitat, and an increase of water recreation could continue the promulgation of aquatic nuisance species.

Nuisance Species

Nuisance species will continue to spread northward as the climate shifts, causing an imbalance in local ecosystems and displacing native species of plants and animals.

All of these changes will have impacts on our natural heritage including loss of diversity, destruction of habitat, habitat fragmentation, degradation of water quality and aquatic habitat, and could lead to the loss of appreciation for the these less obvious features of our environment.

RUTLAND RPC GOALS

New Development

Development that adversely affects wildlife and natural habitats in Low Density Development Areas and Development-Constrained Areas (such as conservation areas) as shown on the Future Use of Land map shall be avoided.

No land development should be promoted where the effect of the proposed use unnecessarily impacts highly scenic landscapes, ecologically sensitive lands, or irreplaceable natural resources. To do so would be incompatible with land use policies contained in the *Regional Plan*.

Since new development has the potential to fragment natural habitat, all developments must:

- Not impinge on wetlands, other natural resources, including habitat;
- Be of a type or nature that is appropriate for location within regional growth areas;

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- Not unnecessarily fragment large tracts of forest or agricultural lands;
- Be of a design that is compatible with surrounding land uses;
- Avoid floodplains or other hazardous areas.

To minimize potential conflicts between wildlife resources and land development:

- Cluster or concentrate the density of land use within some sections of the parcel or involved lands in order to maintain or preserve significant habitats in large and undisturbed tracts;
- Design projects in such a manner as to avoid fragmentation of large forest tracts to maintain natural habitats by a grant of easement or covenant for protected areas
- Protect significant deer wintering areas (those identified and mapped by the State of Vermont) from residential development and other uses that threaten the ability of the habitat to support deer. Commercial, residential, and industrial developments are discouraged within deer wintering areas. Certain types of development may be permitted adjacent to deer wintering areas on finding by Vermont Department of Fish and Wildlife, or other wildlife experts, so that the integrity of the area will not be unduly disturbed.
- Encourage local, state and federal efforts to inventory and, where necessary, protect these resources for educational, recreational, and other purposes. Protection of threatened or endangered species are matters of public interest.
- In areas identified and mapped by the Vermont Department of Fish and Wildlife as containing necessary wildlife habitat, land development and subdivision planning shall utilize Department guidelines for protection of threatened or endangered species.

Energy Development

Assist municipalities in identifying areas for renewable energy development so as to not adversely impact wildlife and natural habitats.

Promote Smart Growth

To help reduce sprawl and the loss of diversity and habitat fragmentation, promote growth centers, downtowns and village designation in order to create concentrated, mixed-use development and in-fill of existing developed areas. Such planning will help preserve natural resources in outlying parts of a town.

- Do not support new development that unnecessarily destroys wildlife and natural habitats.

Utilize Regulatory Remedies

Assist municipalities to create bylaws, regulations and a zoning process to protect natural resources, including:

- In areas that are limited in water resources, critical wildlife habitat and other resources can be identified as districts where residential or commercial development is not appropriate.
- Create overlay districts to protect natural resources. Use overlay districts to delineate setbacks between development and wetlands, significant wildlife habitat, habitat for rare, threatened or endangered species, and unique natural environments.
- Create riparian protection zones or ridgeline districts to protect habitat and water quality.
- Use Site Plan Review and Conditional Use Review to ensure natural resource protection in districts that allow development.
- Promote Transfer of Development Rights (TDR) as a zoning tool to

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regulate development in identified areas for conservation. Once identified, a municipality can accept applications for zoning permits from areas it wants less development ("sending areas") to places the community would like to see more development ("receiving areas").

- Create the development of subdivision bylaws that include criteria for protecting natural resources.

Protect Natural Resources in the Municipal Plan

Assist municipalities to use municipal plans as the basis for regulation that protects natural resources. This can be done not only in required sections on the preservation of rare and irreplaceable natural areas and resources, transportation and land use, but elsewhere in the plan as well. Examples include using the plan's land use map to show forest or agricultural areas that contain natural resources the community wants to protect, while residential, commercial and industrial areas could be depicted in areas that would have the least detrimental effect on natural resources. Adopt a conservation plan within the municipal plan.

Create Municipal Conservation Commissions

Create a local conservation commission to inventory and study local natural resources, to recommend land parcels for town purchase, or administer conservation lands.

Acquire Land and Conservation Easements

Assist municipalities to acquire land and maintain a conservation fund to support land purchases and to utilize conservation easements to protect important lands from development while continuing to keep them part of a working landscape.

Manage Town Highways

Create major highway/road arteries away from natural resource areas, and discontinue roads in sensitive areas and turn them into recreational trails instead.

Road Design

Work with municipalities to design and re-design roads to facilitate wildlife movement with the use of wildlife overpasses, underpasses and crossings.

Create Municipal Forests

Work with municipalities to acquire land that could be used as municipal forest to maintain wildlife habitat, protect water supplies, and provide opportunities for conservation education.

Coordinate Efforts with Conservation Groups

Meet regularly with wildlife and natural community advocates, including Natural Resources Conservation Commissions and Districts and representatives of ANR, Vermont Land Trust and the Nature Conservancy, to determine actions to be taken to best address issues of local and regional significance, and to prioritize biannual initiatives.

Include New York State in Conservation Efforts

Establish a partnership with neighboring counties in New York to identify and protect shared natural assets.

Utilize Citizen Scientists for Data Collection on Habitats

Consider organizing local citizen scientists groups or coordinating with xisting ones, such as Keeping Track, the Vermont Institute of Natural Science (VINS), and Vermont Audubon to collect data and identify local areas in need of protection.

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Case Study: "Landscape Level" Conservation
Helen W. Buckner Memorial Preserve, West Haen

The Helen W. Buckner Memorial Preserve is one of the most important reserves of biological diversity in Vermont. It serves as a "landscape level project"; its presence safeguards and protects surrounding lands ecology by acting as a protected area for mobile species to flee to, and a repository of all species so that they can spread out from the location again after the disturbance.

Located in West Haven, the preserve is framed by Lake Champlain and the Poultney River on three sides while resting on and bounded by Bald Mountain to the north. Most of the more than 4,000 acres are owned by the Nature Conservancy, though it also has many acres that are under conservation easement.

The Nature Conservancy began the preserve in 1989 with the purchase of the historic Galick family farm; the family had owned the property since 1918. Interest in the area began in 1981 when Marc DesMeules found a bottle containing a pickled lizard labeled 'five-lined skink, collected in Vermont' in the basement of the Harvard University Museum of Comparative Geology. This was an important find because, up until that point, the conventional wisdom had been that there were no lizard species in Vermont. The specimen was tracked to the Galick Farm, which turned out to be the northernmost extension of the Skink's range, which DesMeules declared "One of the biggest ecological gold mines in the state of Vermont". Tony Galick gladly sold the farm to the Nature Conservancy (TNC) as he has stated he would rather "See it left as is, and let other people come and enjoy it". Since then TNC has, whenever possible, worked with those who wish to help preserve the land in order to add land to the park, quickly growing its size. Those who cannot sell their land, or when TNC cannot buy it, give conservation easements to the group that guarantees that neither they nor future owners of the property can develop on the land in ways that would interfere with the nature of the area.

The Preserve serves a very important role in the local, state, and regional environment. It is a place of refuge for 11 uncommon or rare animal species and 18 rare plant species, such as bald eagles, osprey, timber rattlesnake, shagbark hickory and trillium. It is also home to at least 15 distinct natural community types. It also serves as a living record of the geology and biology of the area. While it is a park that people can explore, its main purpose is the conservation of these resources so that they will always exists in the Rutland Region and the Northeast.



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Educate Citizens

Create ongoing programs to educate citizens about local conservation needs. These programs can take the form of public meetings and online media.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes, training and education, information dissemination, preparing funding applications, and GIS mapping.

Additional Resources

Community-Based Conservation Initiatives

The following is a list of ways for residents of the Rutland Region to become involved in protecting Vermont's natural heritage:

The Vermont Center for Ecostudies: The Vermont Center for Ecostudies launched the Atlas of Vermont Life in January of 2013 with a goal to have citizen scientists across the state submitting observations into an online clearinghouse. The Atlas partners with iNaturalist.org, a national project with similar aims, turning this state-wide project into a program with national impact.

Vermont Audubon: The State chapter of the Audubon also encourages citizen science, and has partnered with its national chapter and the Cornell Lab of Ornithology to create Vermont eBird, where residents can submit their findings online, which are then compiled into a larger database.

The Staying Connected Initiative: This organization is conducting a citizen science tracking program across the northeast United States to identify and monitor important wildlife road crossing areas and propose local regulations to help preserve lands identified as significant or contiguous to significant habitat.

The Vermont Institute of Natural Science: The Vermont Institute of Natural Science encourages local residents to observe and report species habitats, especially bird flocks and nesting sites. The progress of these projects can be viewed on the VINS Citizen Science webpage: http://www.vinsweb.org/index.php/discover/citizen-science. Currently there are 15 "VerMonitors" in Rutland County.

The Natural Heritage Information Project (NHIP): By the VT Fish and Wildlife Department, residents can complete forms for documenting and submitting information on rare plants, animals and natural communities.

Vermont's Wildlife Habitat Incentives Program (WHIP): Available to landowners who wish to create food plots for wildlife on their property.

Landowners Incentive Program (LIP): Funded by the USFWS, provides cost-share to landowners dedicated to protecting, enhancing and restoring habitat for rare, threatened and endangered species.

The Vermont Reptile and Amphibian Atlas: Collects and maintains records of reptile and amphibian sightings in Vermont.

Vermont's Use Value Appraisal (UVA): Gives tax benefits to landowners in the program who follow a management plan approved by the County Forester. This allows landowners to help in the protection of ecologically important areas.

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Chapter 15: Water Quality

INTRODUCTION

Surface water and groundwater in the Rutland Region serve a multitude of uses, including drinking water, aquatic and riparian plant and animal community habitat, recreation, and flood control.

Land uses can have a profound effect on water's movement, storage, and transmission, and ultimately its quality. The water quality in the Region is a key element of our ecosystem and protecting water quality is critical.

In recent years it has become evident that water quality can be greatly impacted by flooding— both fluvial erosion or inundation—especially during Tropical Storm Irene. It has also become clear our water bodies are increasingly being impacted by nutrient enrichment, such as phosphorus pollution.

This chapter of the *Regional Plan* examines the multiple elements of water quality and how they affect and are affected by development and human activity.

CURRENT CONDITIONS

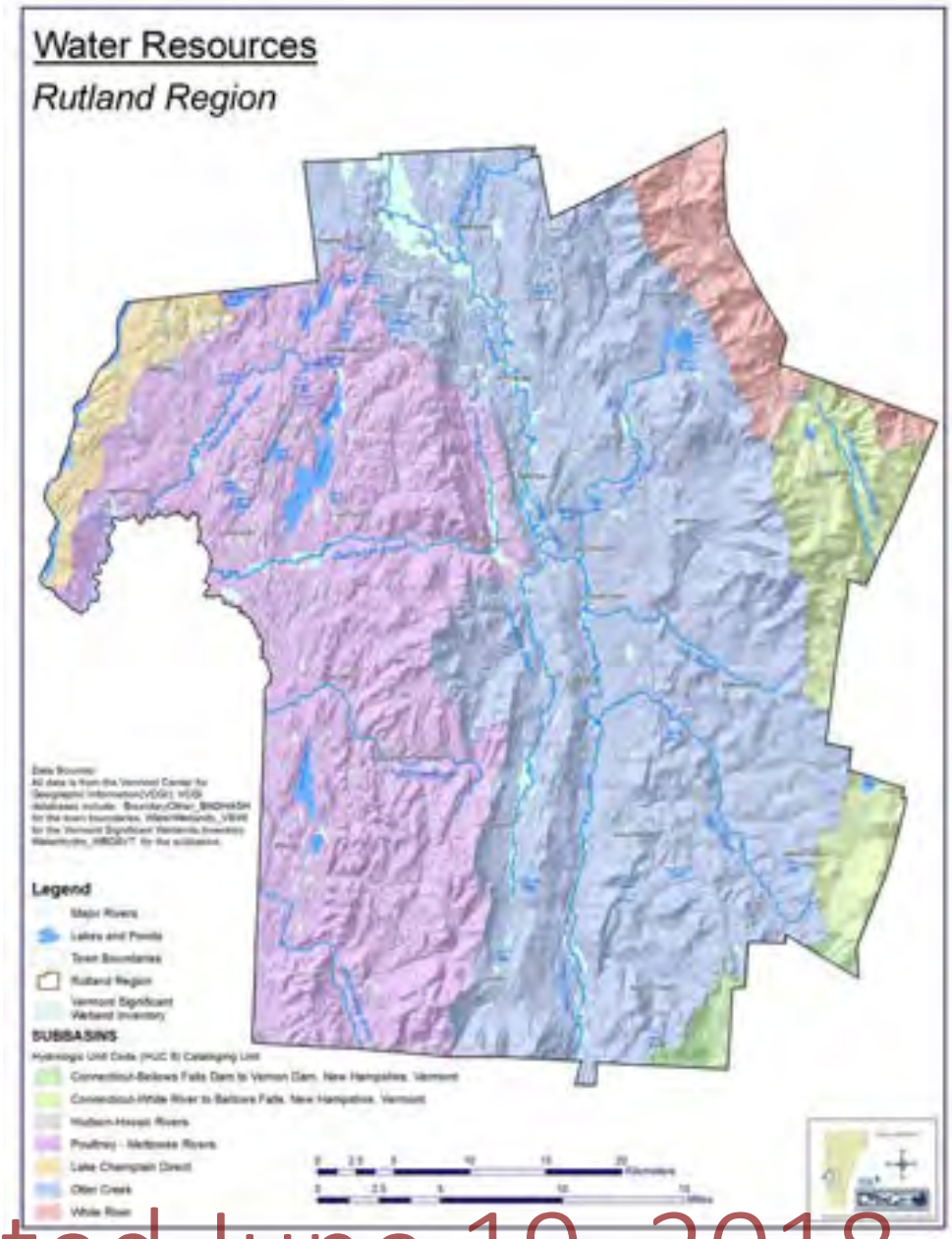
This section examines water quality at five separate levels: watersheds, surface water (including lakes, ponds, rivers, and wetlands), groundwater, point and non-point sources of pollution, and other key factors affecting water quality in the Region.

Watersheds

Nearly all of the Rutland Region drains into the Lake Champlain Basin. The Region's most extensive watersheds are the Poultney-Mettowee, the Otter Creek, and the lower Lake Champlain tributaries. Four watersheds in the eastern most areas of the Region flow into the Connecticut River.

Planning at the watershed level is done by the Vermont Agency of Natural Resources which develops and maintains tactical basin plans for all of the Vermont's major watersheds. These basin plans identify key water quality conditions, problems of local and statewide concern, management goals, and detailed implementation strategies.

The *Poultney-Mettowee Basin Plan* was among the first adopted in the state, in 2005. It was updated in 2014 as the South Lake Champlain Tactical Basin Plan. It has provided local volunteers and officials, as



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well as state agencies, a framework for tackling broad water quality issues at the local and multi-municipal level, such as encroachments, channel and land erosion, invasive species, and pathogens.

The Agency of Natural Resources is also responsible for conducting stream geomorphic assessments (SGA). The data collected from SGAs provide the basis for stream alteration regulatory decisions, stream corridor protection and restoration, flood hazard mitigation, and water quality protection.

Surface Water

The Rutland Region's surface water resources consist of over 7,100 miles of rivers and streams and 57,000 acres of lakes and major ponds, not including Lake Champlain.

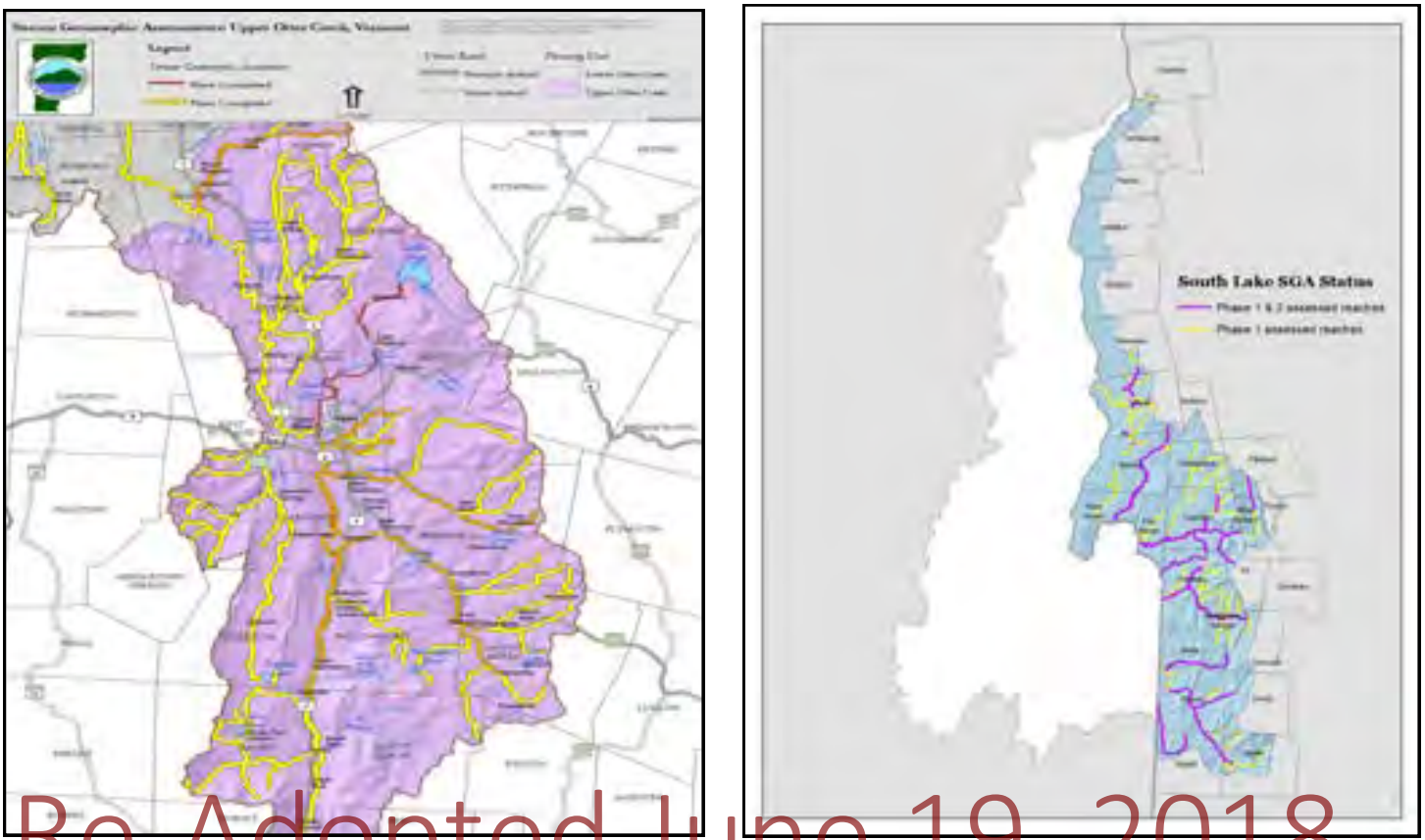
These rivers, streams, lakes, ponds, and the lands adjacent to them provide a variety of important riparian habitats for several plant and animal communities, as well as economic and human health assets.

The Poultney River has been designated an outstanding water resource because of its exceptional natural, scenic and cultural values.

The Vermont Department of Environmental Conservation's Watershed Management Division maintains a river and lake assessment database on 77 lakes and ponds in the Region. The assessment is available online, as are water quality monitoring and assessment data on the ANR Natural Resource Atlas.

The Department also maintains a listing of impaired (polluted) waters in need of restoration, management plans, and individual water quality-based effluent limitations. Currently, there are two stormwater impaired waterbodies in the Region: Moon Brook in Rutland City and Rutland Town and Roaring and East

Stream Geomorphic Assessment Mapping in Rutland Region



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Branch Roaring Brooks in Killington.

Floodplains

Floodplains play a critical role in the storage and conveyance of flood waters and in the maintenance of ecological systems. Historically, development and the associated fill placed in some of the Region's floodplains have obstructed flood flows and reduced their ability to store water. In some cases, these obstructions have subsequently caused floodwaters to rise to higher levels upstream and adjacent properties thus affecting water quality and causing property damage.

All but two of the Region's municipalities participate in the National Floodplain Insurance Program (NFIP) which makes federally-backed flood insurance available to homeowners, renters, and business owners in these communities.

A handful of towns have begun to take the next step by applying local knowledge and historical perspective to craft regulatory approaches that work best for their particular municipality.

Several communities in the Rutland Region, including Pawlet, Brandon and Shrewsbury, have adopted the Fluvial Erosion Hazard overlay—to avoid future encroachment into the river corridor. Far more flooding damage occurs via fluvial erosion than with inundation.

Wetlands

Wetlands in the Rutland Region include many ponds, vernal pools, bogs, fens, marshes, wet meadows, shrub swamps, and wooded swamps. They serve a series of important ecological functions, including flood and erosion control and providing habitat for fish and wildlife to aiding in the maintenance of water supplies and providing recreational and educational opportunities.

All of the towns in the Rutland Region contain wetlands that have been designated by the state as significant, but they are especially prevalent near the Otter Creek, the Castleton River, and the Clarendon River.

The Vermont Wetland Rules place all wetlands into one of two classes and wetlands "plus". Classes 1 and 2 are considered "significant" and protected under the Rules. Wetlands "plus" also require any potential work in a wetland to be sanctioned by the state.

The Tinmouth Channel is one of only three Class 1 wetlands in the state and received the designation following substantial local efforts. A second Class 1 wetland is located just south of the Region in East Dorset in the headwaters of the Mettowee.

Several other areas in the Region that are potential Class 1 wetlands are the South Fork of East Creek in Orwell and Wards Marsh in the Lower Poultney River floodplain forest.

Extensive wetlands between Pittsford and Middlebury most likely prevented significant damage in Middlebury during Tropical Storm Irene. This is a testament to the value of these landscape attributes.

Groundwater

Groundwater provides the primary supply of potable water for most of the Region. Statewide, groundwater accounts for approximately 70% of all drinking water.

Groundwater occurs in two general hydrogeologic settings: underground bedrock and aquifers. In these settings, organic and mineral substances are dissolved or adsorbed. These water sources often tend to be better quality than surface water because of the filtering that glacial till provides. However, toxic substances once introduced into groundwater can travel long distances and persist for long periods of time.

As part of a statewide analysis of groundwater resources, Vermont Geological Survey in the Agency of

CONNECTING THE PLAN

10 V.S.A. Chapter 151 (Act 250)

Before granting a permit, the District Environmental Commission must ensure that a development or subdivision will not result in undue water or air pollution.

Specific matters relating to water quality are: (A) Headwaters; (B) Waste disposal (including wastewater and stormwater); (C) Water Conservation; (D) Floodways; (E) Streams; (F) Shorelines; and (G) Wetlands.

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"To identify, protect, and preserve important natural and historic features of the Vermont landscape.

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Municipal Development Plan, Ch. 117 § 4382:

The Plan for a municipality shall include:

"A statement of objectives, policies, and programs of the municipality to guide the future growth and development of land, public services, and facilities, and to protect the environment."

Re-Adopted June 19, 2018



FAST FACT

Groundwater: A public trust resource

In 2008, the Vermont legislature in Title 10 §1390, designated groundwater as a public trust resource. As a result, groundwater now must be managed for the benefit of all Vermonters.

In 2011, the Vermont Environmental Court interpreted this statute for the first time when it was reviewing Omya Inc.'s solid waste facility in Florence. In its decision, the Court found that the public trust is not limited to managing groundwater quantity, but the public trust extends to managing groundwater quality as well.

Natural Resources is producing county and town maps. For more information:: www.anr.state.vt.us/dec/geo/grndwaterinx.htm

Impaired Groundwater Quality

Groundwater in Vermont can be contaminated by pollutants. The gasoline additive MTBE is believed to have caused widespread groundwater pollution. In the Rutland Region, one of the largest spills was in Killington where the chemical compound spread through an aquifer and contaminated 25 wells.

MTBE is now banned as a gasoline additive in Vermont, but the state is still remediating past MTBE-releases and continues to find contaminated wells.

Cleanup of waters contaminated with MTBE is particularly difficult because of its chemical properties. MTBE can spread rapidly over large areas and is very resistant to biodegradation.

MTBE has also caused surface water contamination in Vermont.

Impaired Surface Water Quality

Surface water quality also can be damaged by a wide range of pollutants, ranging from excessive soil contamination to industrial chemicals. In general, however, they are categorized as either *point-source* or *non-point source* pollutants.



Runoff with animal waste, pesticides and nutrients can affect water quality in streams and entire watersheds.

Point Source Pollution

Point source pollutants are so named because they typically can be traced to a single point, such as an outfall pipe or a malfunctioning wastewater treatment facility. Though these types of pollutants can be extremely dangerous, they are also easier to track. In the Rutland Region, point sources are not a major contributor to poor water quality. The primary polluters, wastewater treatment facilities, were among the first to be addressed and upgraded by the state and now have a strong track record.

Non-Point Source Pollution

Nonpoint source pollution is the major source of impairment to surface waters in the Poultney, Mettowee, and Otter Creek basins and in Lake Champlain. Among the leading sources are runoff from parking lots, back roads, fertilized lawns, and agricultural fields. By its nature, nonpoint source pollution is diffuse, difficult to quantify, and harder to control.

As water travels across the landscape, it picks up oil residues, pesticides, dirt, animal wastes, toxic chemicals, salt, and trash and deposits all of these residues in our waterways. Together, these sediments reduce water quality, silt up fish spawning habitat, and fill spaces between rocks otherwise used as habitat by macro-invertebrates and amphibians.

To a large extent, nonpoint source pollution prevention and control efforts in Vermont and the Rutland Region have been focused at the watershed level.

The state of Vermont is currently working with the Environmental Protection Agency to restore the water quality of Lake Champlain, specifically to reduce nutrient

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pollution from excess phosphorus and nitrogen. Too much nitrogen and phosphorus in the water causes algae to grow faster than ecosystems can handle and can harm water quality, food resources and habitats, and decrease the oxygen that fish and other aquatic life need to survive. Large growths of algae, called algal blooms, can severely reduce or eliminate oxygen in the water, leading to illnesses in fish and the death of large numbers of fish. Some algal blooms are harmful to humans and animals.

The state has done much to reduce runoff and erosion that carry nitrogen and phosphorus into Vermont waterways. Both the EPA and the state have identified runoff from agricultural lands, developed lands, gravel roads, logging roads, and eroding stream banks as the most significant remaining sources of phosphorus pollution.

Causes and Sources of Impaired Surface Water Quality

The Vermont Surface Water Management Strategy (VDEC 2012) addresses pollutants and so-called stressors that affect Vermont surface waters. There are **10 major stressors** that are managed to protect and improve surface waters.

Acidity

Waterbodies exhibit a range of acidity, primarily reflected by the acidity level (or pH) of the water. There are several natural factors that affect a waterbody's pH including its surrounding landscape, bedrock and soil composition. Human activities can alter the acidity of a waterbody through long distance transport and deposition of atmospheric pollutants (commonly referred to as acid rain) and/or mining activities.

Fortunately, much of the Vermont's surface waters are protected from acid rain due to calcium-rich bedrock (such as limestone). The most sensitive water bodies are often smaller, at high elevations, and located in areas with low buffering bedrock.

Vermont considers acidity to be a moderately ranked stressor. In the Rutland Region, high elevation streams and ponds in the Green Mountain National Forest have seen some impact. In other areas of the northeast, the effects of acidification are more pervasive.

Channel Erosion

Channel erosion is a natural process that usually benefits stream and riparian ecosystems. In naturally stable streams (streams that are in equilibrium condition), erosion is evenly distributed and therefore minimized along the stream channel. When streams are not in equilibrium, excessive erosion and excessive deposition occur at other locations up and down the stream.

The effects of channel erosion are a severe issue throughout the state. Where it occurs, unmitigated channel erosion causes long-term (typically more than 25 years) recovery time and is very costly to repair.

Vermont considers channel erosion to be a highly-ranked stressor. Several tributaries to the Poultney and Mettowee Rivers exhibit channel erosion, such as Flower and Wells Brooks.

Flow Alteration

Flow alteration is any change in the natural flow or water level of a waterbody lake induced by human activities. Significant flow alteration can lead to environmental degradation and negative effects on ecosystems.

The effects are usually localized (individual stream reaches, lakes, or impoundments), but in some cases, they may be evident for miles downstream.

Flow alteration is considered a moderately ranked stressor by the state. East Creek in Pittsford, Rutland Town, and Rutland City is an excellent example of a flow modified system, as there are three generating stations along the Creek.

CONNECTING THE PLAN

For more information about the stream geomorphic assessments, see the Flood Resilience and Emergency Management chapters.

Shoreland Protection Act

Effective July 1, 2014, the Shoreland Protection Act (Chapter 49A of Title 10, §1441 et seq.), regulates shoreland development within 250 feet of a lake's mean water level for all lakes greater than 10 acres in size.

The intent of the Act is to prevent degradation of water quality in lakes, preserve habitat and naturalstability of shorelines, and maintain the economic benefits of lakes and their shorelands.

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CONNECTING THE PLAN

For more information about invasive plants, see the Wildlife and Natural Habitat chapter of the Plan.

To learn more about renewable energy resources in the Region, see the Energy chapter.

Encroachment

Encroachment is the placement of structures, roads, railroads, utilities or fill, the removal of vegetation, or an alteration of such natural areas as floodplains, river corridors, wetlands, lakes and ponds, and the buffers around these areas.

Protection of these encroachments often results in the use of river channelization practices - such as bank armoring, berming, dredging, floodwalls, and channel straightening – and results in a loss of flood storage in floodplains and wetlands and higher public safety risks.

The removal of vegetation to improve viewscapes or access and even the removal of woody debris from rivers to facilitate human use can increase a property's susceptibility to flood damages.

Encroachment is a **highly ranked stressor**, with the state's greatest concern being the traditional channelization practices along rivers that are used to protect existing encroachments. In the Rutland Region, examples of encroachment include the former trolley and current rail infrastructure along the Castleton River, and existing state and local roads along any rivers and streams.

Invasive Species

Aquatic invasive species are nonindigenous plants, animals, algae, fungi or pathogens, including disease causing organisms like viruses and bacteria, that threaten the diversity and survival of native species or the ecological stability of infested ecosystems. Commercial, agricultural or recreational activities dependent on these natural resources can also be affected. Invasive species are a form of biological pollution.

Most come without the natural checks and balances – predators, pests, parasites and pathogens. Many have the advantage of thriving in a wide variety of conditions. Native species find it difficult to compete with such invaders.

At least 49 aquatic non-native species have been identified in Vermont. While many of these species have not become invasive, a significant number have, including Eurasian watermilfoil, zebra mussels, water chestnut, and purple loosestrife. Many of the state's waters, especially lakes, have a history of impacts related to these invasions.

The state considers invasive species of aquatic, wetland, and riparian habitats a **highly-ranked stressor**, the effects of which are pervasive throughout the state and severe in many waters where infestations occur. Most lakes and ponds in the Rutland Region are infested with Eurasian watermilfoil, in addition to the Castleton and Clarendon Rivers, and Otter Creek.

Land Erosion

Land erosion is the process by which material on the surface of the land is dislodged and moved. It becomes a water quality stressor when the transported materials reach surface waters and become a pollutant.

Land erosion is a natural process caused by wind, but mostly precipitation. It can be greatly increased through human activities, such as road building and maintenance, agriculture (such as tilled fields without a winter crop) and forestry.

VTrans Better Backroads grants help communities address the issues stemming from dirt roads.

Available data indicate that the effects of land erosion are widespread throughout the state. Land erosion was a significant outcome of Tropical Storm Irene although persistent land erosion occurs on the western side of the Rutland Region due to intensive land use activities.

Nutrient Loading

Non-erosion based nutrient loading results from direct application of nutrients to lands (fertilizer application on farm fields or gardens) that can get washed into surface waters, from the leaching of nutrients embedded in soil or organic matter, or from discharges (wastewater treatment facilities). Phosphorus and nitrogen are the two major nutrients of concern for Vermont's surface waters

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because of their connection to eutrophication.

Since the passage of the federal Clean Water Act in 1972, considerable efforts have been made to control nutrient discharges from wastewater treatment facilities and to impose regulations upon septic discharges.

Owing to the major success of point source controls in Vermont, non-erosion phosphorus is viewed as a lower-ranked stressor to Vermont waters. However, there is limited data on other non-erosion nutrient sources such as over-application of fertilizers or agricultural leaching.

Vermont is presently involved in two major multi-state nutrient control planning efforts: the Lake Champlain Phosphorus Total Maximum Daily Load (TMDL) and the Long Island Sound Nitrogen TMDL.

In the Rutland Region, nutrient loading exists in Moon Brook stormwater TMDL, bacteria TMDL for the Flower Brook in Pawlet, and mercury TMDL for the Lower Poultney River.

Pathogens

Waterborne pathogens, such as disease -causing bacteria, viruses, and protozoa, are of concern in Vermont surface waters. These pathogens come from fecal matter of humans and other warm-blooded animals. These pathogens may cause gastrointestinal problems and pose a more serious health risk to people who have weakened immune systems.

The primary indicator of fecal material in water used in most freshwater monitoring efforts is the bacterium *Escherichia coli* or *E. coli*. The presence of *E. coli* is used in monitoring programs to indicate that other more common fecal pathogens may also be present.

Pathogenic bacteria is considered a lower-ranked stressor by the state because affected areas are typically localized, and when addressed, impacts can be rapidly mitigated.

Toxics

Toxic substances can be defined as a broad group of chemicals capable of causing harm to plants and animals, including humans. There are several classes of toxic substances that have the potential to affect surface waters in Vermont. While many Vermonters are aware that toxic mercury contaminates fish and fish-eating wildlife, there are many other types of toxic compounds that can affect water bodies.

Toxic compounds have been grouped into five categories: atmospherically-deposited compounds; organic and inorganic contaminants that result from industrial, manufacturing or other point and non-point discharges from facilities; pesticides; contaminants of emerging concern (CECs); and biological contaminants.

The state considers toxic substances to be a moderately ranked stressor. In the Rutland Region, toxic stressors include heavy metal contamination in streams downgradient/ downstream from landfills (prior to landfills being properly closed or where they were never capped). Moon Brook (Combination Pond) and an unnamed tributary to the Mettowee River in West Pawlet are examples of toxic stress, and it's also suspected for the Castleton River downstream from the Fair Haven landfill.

Thermal Stress

Thermal stress is a water temperature change that is severe enough to cause unfavorable and even lethal conditions to

Courtesy: Burlington Free Press



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aquatic organisms or ecosystems. Certain land uses, activities, and discharges can influence water temperatures beyond natural variation to cause thermal stress. One of the anticipated impacts of climate change is an increase in ambient air temperatures that could, over time, increase water temperature to where it is lethal for some cold-water dependent species.

Thermal stress is considered an **important stressor** by the state. While excessively high temperatures impair a relatively small number of stream miles in Vermont, the impacts in those locations are significant. The Mettowee River between Pawlet and Wells is considered stressed due to thermal modification.

UNMET NEEDS

Surface Water

The following are among the key challenges to protecting surface water quality in the Rutland Region:

Lack of measures to control the state's 10 major stressors. Practices that should be addressed include:

- Construction of impervious surfaces, because in many cases, parking areas are larger than necessary because of requirements that developments plan for maximum potential usage;
- Erosion and sedimentation from the Region's backroads caused by improperly built and maintained town roads;
- Filling or draining of wetlands, especially those too small for mapping or that are considered intermittent;
- Ongoing agriculture-related erosion and runoff due to a lack of buffer zones and farming of lands to the edge of water bodies.

Lack of river corridor and fluvial erosion mapping and resiliency and restoration projects.

- Projections for increased flooding in the Region due to climate change will have a degrading effect on surface water due to the increased discharge of sediment into the Region's rivers, lakes and streams. Public and private infrastructure is also vulnerable as a result of flooding and fluvial erosion, in particular.

Lack of stormwater runoff management

- Stormwater runoff from developed lands including the Region's road network is one of the greatest threats to water quality.
- Many facilities for on-site stormwater treatment are outdated or poorly designed, and new developments tend not to treat stormwater on-site.
- New stormwater regulations will provide greater scrutiny of new development, but more effort will be needed on the local level to address development that falls outside the scope of state stormwater permitting and purview.

Groundwater

By far the most significant unmet need in the field of groundwater quality is the lack of mapping data.

- There have been few groundwater mapping projects in the Rutland Region, except in the case of Brandon. Because of the complex nature of groundwater flow, developers and community officials must make decisions concerning water and wastewater without clear knowledge of where water is coming from or going.
- Information concerning the effects of any long-term drought conditions on water systems in the Rutland Region is unknown due to the lack of groundwater mapping data.
- Potential contamination of aquifers by residential or industrial activities. Recent work in the area of brownfields has illuminated several instances of localized contamination, but large-

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scale contamination remains an unknown.

Local Capacity

The complexity of water quality – both surface and ground – makes effective planning, review, and enforcement of development standards and regulations for water quality protection a significant challenge.

- Volunteer planning commissions and part-time zoning administration staffs have only limited time to devote to planning and zoning issues. There is a need for clear, concise, community-oriented education and assistance. Municipalities can contact the Rutland Regional Planning Commission to obtain assistance.

FUTURE TRENDS

The future of water quality in Rutland County will likely include many current issues as well as new challenges. Among them:

Nutrient loading, especially phosphorus pollution, will likely become an even greater threat to surface waters.

- The most significant sources will be runoff from agricultural lands, developed lands, gravel roads, logging roads, and eroding stream banks.
- Future phosphorus reduction plans will likely involve farmers, businesses, municipalities, loggers and landowners.

Increased stormwater management will become even more of a priority.

- There will be an emphasis on stormwater issues associated with development that can be mitigated and prevented using Low Impact Development (LID) and Green Infrastructure (GI), two terms that are often used interchangeably.
- Typical practices include green roofs, rain gardens, cisterns, porous pavements, buffer zones, and sustainable site design.

Changing land uses, particularly urbanization and suburbanization, will continue to impact our water resources.

- There will be a need for sustained planning, coordination, and management to ensure the health of waterbodies and the destruction of wildlife habitat.

Invasive species will continue to affect water quality primarily due to recreational activities.

- There likely will be continued efforts to stem their introduction through transportation of weeds or contaminated soil or water, use of non-native bait, and improper disposal of pet fish or aquatic plants is halted.

Increased traffic volumes will mean more road maintenance and potential pollution.

- There will be a concerted effort to ensure best management practices are complied with, especially on dirt roads. For example, the Lake Champlain TMDL would create a new regulatory authority for municipal gravel road management.

RUTLAND RPC GOALS

Future Land Use

Development that adversely affects water quality in Low Density Development Areas and Development-Constrained Areas (such as conservation areas) as shown on the Future Use of Land map shall be avoided.

No land development should be promoted where the effect of the proposed use unnecessarily impacts irreplaceable natural resources, such as water. To do so would be incompatible with land use policies contained in the *Regional Plan*.

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Surface Water

Towns have the opportunity to become more proactive regarding water quality with development in floodplains and wetlands that falls outside of state permit jurisdiction.

Address the state's 10 water quality stressors, especially nutrient overload.

- Support efforts to establish and implement a Total Maximum Daily Load (TMDL) to allocate the amount of pollution that a water body can receive and still meet Vermont Water Quality Standards.

Prevent the spread of the 10 water quality stressors through prevention and public education.

- Aquatic nuisance species can be an example of how awareness and outreach, such as spread prevention campaigns and ongoing surveys to specific user groups is an effective means of addressing the problem.

Assist towns in implementing the Shoreland Protection Act.

Development that adversely affects water quality in low and conservation areas as shown on RRPC land use maps shall be avoided. Refer to Land Use map.

Stormwater management

- Incorporate stormwater design guidelines or requirements into municipal bylaws.
- Work with developers to incorporate design strategies such as cluster development, Green Infrastructure (GI) or Low-Impact Development (LID), such as such as porous pavement and water gardens, to increase infiltration and lessen the impact of combined impervious surfaces therefore decreasing runoff.
- Assist towns in incorporating high elevation stormwater guidelines, particularly for wind energy facilities and maple sugaring operations.
- Limit curbing on town roadways when possible.
- Assist towns in evaluating new technology for construction sites to ensure its effectiveness in controlling stormwater and sediment runoff.

Flood avoidance

- The most cost-effective way for towns to mitigate flood hazards is avoidance. No structural development shall be located within the limits of a floodway except projects involving health, safety, or transportation.
- Natural areas, non-structural outdoor recreational and agricultural uses are the preferred land uses within floodplains. Commercial, industrial, And residential uses are strongly discouraged, except as noted above.
- Structural development and placement of fill within the limits of the 100-year floodplain is discouraged. Where careful planning at the local level accepts development within the floodplain, the development shall be designed to achieve no, net loss of hydrologic or hydraulic capacity, and located so they do not impede the floodwaters and endanger the health, safety, and welfare of the public.
- Development outside of existing or planned regional growth areas, shall not be located immediately adjacent to watercourses, lakes, ponds or shorelines. Such areas shall principally be maintained in a natural vegetative state for environmental and aesthetic purposes.
- Work with towns on regulations that address setbacks, buffers, and other tools that protect shoreline and/or riparian areas from floodplain

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encroachment and fluvial erosion hazards.

- Work with the Vermont Agency of Natural Resources and individual communities to establish greater enforcement of floodplain regulations and floodway determinations.
- Promote the identification of floodplains and the importance of enrolling in National Flood Insurance Program.

River corridor planning

- Participate in river corridor planning and protection efforts that are being promoted through the Vermont River Management Program.
- Conduct stream geomorphic assessments as one of the first steps towards erosion hazard mitigation.
- Assist municipalities in implementing high priority river corridor projects to build flood resiliency and limit existing encroachments.

Encourage riparian buffers and increased wetlands protection

- Structural development or intensive land uses shall not occur in Class 1 and Class 2 wetlands unless there is an overriding public interest.
- Developments, and their associated stormwater discharges, that are adjacent to wetlands shall be planned so they do not cause undue disturbance to wetland areas. Maintenance of a naturally vegetated buffer strip between a wetland and the project site is required to prevent ground water pollution and direct discharges into a wetland.

•Assist communities to develop plans and regulations that afford greater protection of riparian areas and wetlands that do not appear on the Vermont Significant Wetlands Inventory.

Cooperate in efforts to maintain roads with better practices to protect water quality.

- Promote VT Better Backroads grants as a means to inventory and/or correct road erosion problems, on-site technical assistance, and workshops and informational meetings.

Inventory natural assets

- Assist communities to create an inventory of the natural assets in the town that warrant long-term protection and/ or planning.

Groundwater

- Begin a Well Head Protection Program and implementation and enforcement of municipal source protection plans and source water protection areas (SWPA) to avoid costly groundwater contamination.
- Encourage towns to complete groundwater mapping.
- Assist municipalities to create and depict aquifer protection areas on town plan maps.
- Assist Municipalities to create aquifer protection overlay zones in bylaws.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes, training and education, information dissemination, preparing funding applications, and GIS mapping.

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Additional Resources

- Vermont's Clean Water Initiative, 2014 http://legislature.vermont.gov/assets/Legislative-Reports/303279.pdf
- Vermont Surface Water Management Strategy (VDEC 2012) http://www.vtwaterquality.org/wqd_mgtplan/swms_ch4.htm
- Poultney-Mettawee Rivers Watersheds Updated Water Quality Report and Aquatic Habitat Assessment Report, 2013 http://www.watershedmanagement.vt.gov/mapp/docs/mapp_basin2poultney-mettjan2013.pdf
- Vermont Agency of Natural Resources, Watershed Management Division, South Lake Champlain Tactical Basin Plan, 2014
- http://www.watershedmanagement.vt.gov/mapp/docs/mapp_b02-04tbp.pdf

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Energy

The Rutland Regional Planning Commission Energy Plan conducts comprehensive energy planning at a regional level while also achieving state and local energy goals – most importantly, the goal to have renewable energy sources meet 90% of the state's total energy needs by 2050. The plan addresses three crucial issues for the people of the Rutland Region: energy security, environmental protection, and economic needs and opportunities.

Goals of this Plan

Maintaining land use development patterns supported by other chapters of the Rutland Regional Plan and 24 V.S.A. 4302.

Collaboration with Vermont Energy Investment Corporation (VEIC) to create a regional energy model that identifies targets for energy conservation and renewable energy generation.

Creation of specific strategies to help the region achieve state energy goals.

Creation of regional maps prioritizing locations for the development of future renewable
energy generation facilities in the region.

Providing energy planning guidance to Rutland Region municipalities.

24 V.S.A. § 4348a(3) requires that Regional Plans contain:
An energy element, which may include an analysis of resources, needs, scarcities, costs, and problems within the region across all energy sectors, including electric, thermal and transportation; a statement of policy on the conservation and efficient use of energy and the development and siting of renewable energy resources; a statement of policy on patterns and densities of land use likely to result in conservation of energy; and an identification of potential areas for the development and siting of renewable energy resources and areas that are unsuitable for siting those resources or particular categories or sizes of those resources.

Vermont State Energy Goals

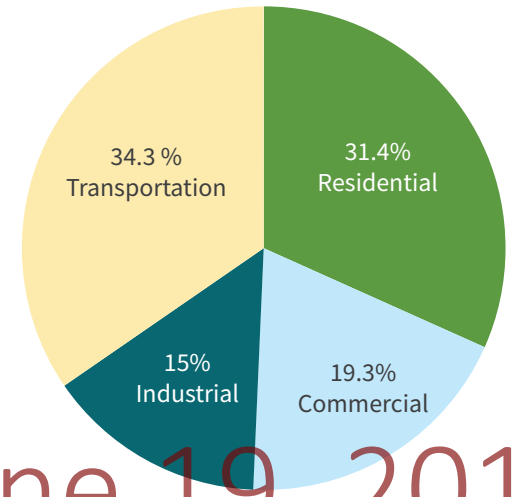
In 2011, the State of Vermont adopted a comprehensive energy plan (CEP) for Vermont to meet 90% of its total energy needs through renewable energy sources by 2050. The CEP was updated in 2016. The plan, developed by the Public Service Department (PSD), called for reducing energy consumption per capita, targets for meeting the remaining energy need from renewables, and renewable sector goals. The CEP was updated in 2016 although the goals were not altered.

Additional energy goals have also been set for Vermont's public utilitie for renewable energy generation, distributed generation, and ossil fuel use through Act 56 (the Vermont Renewable Energy Standard). The Energy Generation Siting Policy Commission (2013) and the Solar Siting Task Force (2015) each called for energy planning to be integrated with land use planning. Many of the components of municipal and regional planning are intertwined with energy issues, such as land use, economic development, transportation, housing, and natural resources.

Because of the statutory energy requirements, the RRPC has identifie regional goals and strategies for energy conservation and renewable energy generation that will support the a ainment of Vermont's energy goals.

RRPC collaborated with the Vermont Energy Investment Corporation (VEIC) to create a regional energy model to identi y targets for energy conservation and renewable energy generation. VEIC used the Long-range Energy Alternati es Planning (LEAP) modeling system to create statewide and regional models that provide possible pathways of accomplishing the state's goal of meeting 90% of its total energy demand through renewable energy resources by 2050 and analyze the potential energy demand within the region. The models also analyze regional energy generation needs

Vermont Energy Consumptio by End-use Sector



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Energy Security

Rutland Region is reliant upon other states and countries for a large portion of its energy needs. Vermont imports all of the gasoline, diesel fuels, and heating oil required for operating vehicles and heating homes and other buildings. Vermont currently obtains much of its electricity from hydroelectric facilities located out of state, primarily Quebec. Although these sources of electricity currently provide the region with low cost, renewable energy, the anticip ted construction of high-capacity transmission lines from Quebec to southern New England may create increased competitio for electricity between Vermont and other, faster growing states that also are seeking electricity from renewable sources. **To address this issue, a state statute (10 V.S.A 580(a)) has set a goal that by 2050, 25% of the energy consumed within the state also will be produced in the state by renewable generation.**

Environmental Protectio

Environmental quality in Vermont has degraded over the past few centuries due to fossil fuel use. While these impacts were imperceptible at fi st, it's clear to many Vermonters now that climate change is having a negati e impact on the environment.

The changing composition of the state's and region's forests may have an impact on the forest products and maple sugaring industries. Polluti n from coal-burning power plants in the Midwest continues to cause acid rain, which also threatens Vermont forests. In addition, higher temperatures threaten the future of the ski industry in the state as well as the industries that rely on skiing and tourism. More frequent and substanti l precipitation threatens public infrastructure – bridges, culverts, etc. – and financially burdens local governments' abilities o pay for repair or replacement.

Economic Needs and Opportunitie

In 2016, RRPC estim ted that regional residents spend approximately $68 million a year on gasoline for transportation (not including local businesses' expenses). While some of this money is retained by local distributors, much of it goes outside the state and the even the country. It's a similar situation for other fossil fuel-related expenses in the region, like home heating fuel. If the region was able to retain even a fraction of the money spent each year on fossil fuel-related expenditures, the result would be a tremendous financial gain for residents and businesses of the Rutland Region. As it is, every year hundreds of residents of the region require government assistance to pay for heating osts.

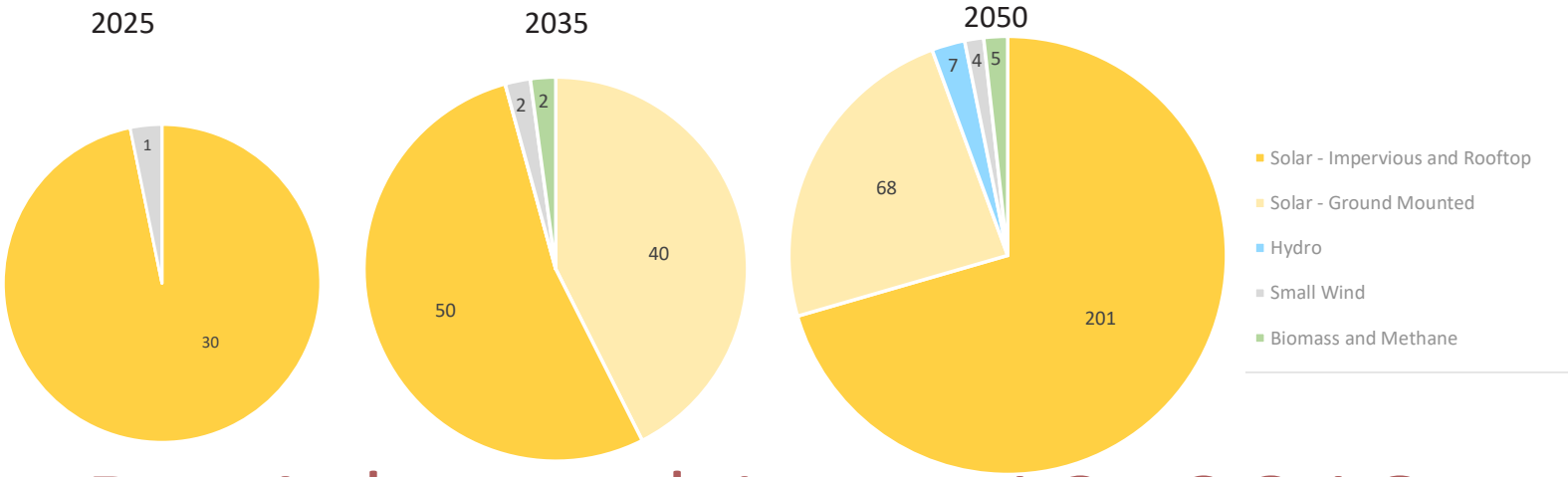
It is RRPC's goal to have the economic impacts from energy-related decisions in the region – both pro and con – spread as equally as possible across the region. This plan remains focused on accomplishing goals that will positi ely a ect the long-term environmental and economic sustainability of the Rutland Region.

Growing Importance of Electricity

Even though the growth of electric demand has slowed in recent years due to a variety of aggressive energy conservation programs, the overall demand for electricity is expected to increase steadily as the energy it carries replaces fossil fuels for transportation and space heating and cooling needs.

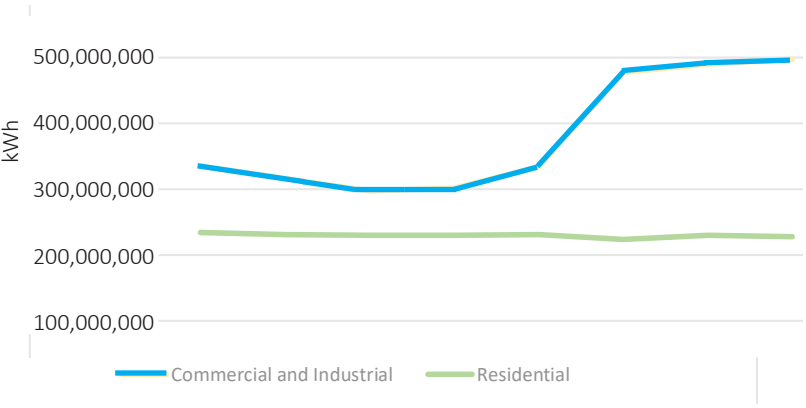
Electricity provides a viable path toward meeting the state's energy goals in several key areas. For example, electrifi ation of passenger vehicles would dramati ally reduce energy use in the transportation sector through use of more effici t drive systems, and the electrical energy that is used could be obtained from renewable sources. Similarly, the easiest transformation in space heating and cooling o en is to weatherize the structure and install highly effici t

Regional Renewable Energy Targets in MW



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Historical Energy Usage- Rutland County (2007-2014)



(electrically driven) air source heat pumps.

To accommodate the projected increase in demand for electricity for these changes, there will need to be increased imports of renewably generated electricity and signifi antly expanded in-state generatio , in appropriate areas, from renewable sources.

Regional Energy Supply and Consumptio

Historical Energy Consumption

To fully understand what strategies the Rutland Region needs to implement to reach the state's energy goals, it is important to understand the region's current energy supply and energy consumption. All energy data in this section will be expressed in British Thermal Units (BTUs) as a standard unit of measure between di erent types of energy inputs.

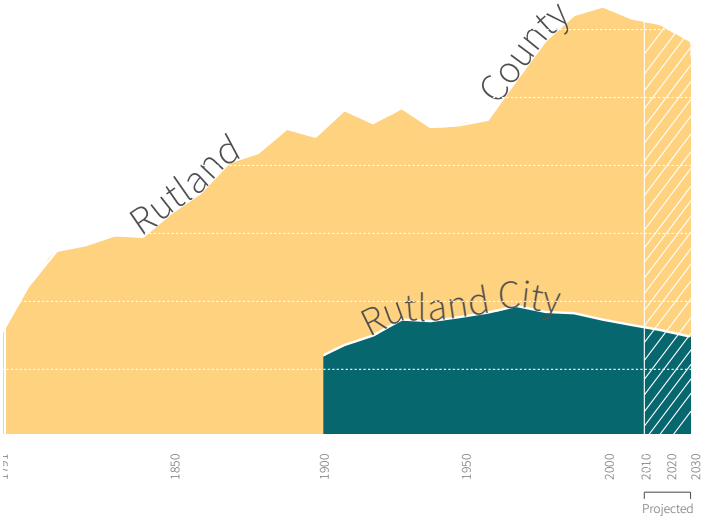
According to the Energy Information Administration (EIA), the State ranks 43rd in energy consumption per capita and 13th amongst states in energy expenditures.

Using federal, state, and regional data, RRPC has estim ted regional energy consumption for space heatin , transportation and electric uses. Energy used in Vermont, and in the Rutland Region, is used to heat and cool buildings, operate appliances, machinery and lightin , and to transport people and products. The total amount of energy consumed has increased signifi antly over the past 50 years.

Energy consumption in Vermont grew signifi antly for all sectors in the la er half of the 20th century, reaching what seems to be a peak in the early 2000s. Total energy use in the state declined in 2008 during the Great Recession, rebounded somewhat, dropped again in 2012 (most likely due to energy efficienc e orts). In 2014, consumption rose slightly (probably due to low energy prices). During that time period, energy use for transportation has overtaken residential energy use for the lead in consumption. It is reasonable to assume that if sector specific Rutland County data were available it would mirror these statewide trends. The energy consumed today for transportation purposes exceeds that for residential and equals that for industrial and commercial sectors combined. In fact, the amount of energy used for transportation is more than 153% (2 ½ times) what it was 50 years ago when data fi st became available. The amount of energy for residential heating and lighting g ew only 63% since 1960.

Demographics

The number of people living in the Rutland Region has been in decline since 2000 and the Vermont Agency of Commerce and Community Development projects that the region's population will con nue to decline through 2030. The average age of the region is also increasing reflectin that older residents are living longer and younger ones are leaving the area. According to ACCD projections, the number of Rutland Region residents age 70 and above will jump by 114% (more than double) from 2010 to 2030 or in just 20 years' time.



Thermal- Space Heating and Coolin

According to the best available data on residential thermal use, the U.S. Census Bureau's American Community Survey, current residential heating costs, also referred to as thermal or space heatin , total $58,283,448 a year in the Rutland Region. Fossil fuels dominate the home heating market in both consumption and cost. Fuel oil and kerosene are the biggest sources of home heating fuel, used by 65% of all households. A distant second and third are wood (17%) and bottled/ ank or LPG gas (12%). Those percentages hold true when comparing owner-occupied and renter-occupied housing although a signifi antly higher percentage of home owners heat with wood (19% vs. 6%).

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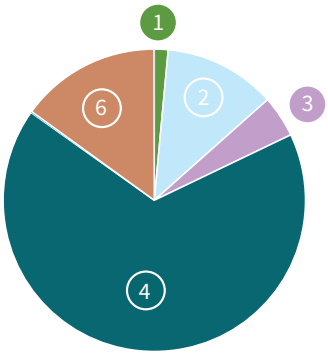
	Fuel Type: Space Heating	# of House holds	Average Use *(Annual)*	% of Use *(All HHs)*	% of Use: Owner	% of Use: Renter	% of Cost *(All HHs)*	Cost *(All HHs)*
1	Utility Gas	369	386,297 Gallons	1%	1%	3%	2%	$1,332,723
2	Bottled, Tank, or LP Gas	2994	3,205,480 Gallons	12%	11%	13%	19%	$11,058,904
3	Electricity	1112	26,157,856 kWh	4%	2%	10%	7%	$3,847,821
4	Fuel Oil, Kerosene	16752	11,863,494 Gallons	65%	64%	67%	56%	$32,624,609
5	Coal/Coke	35	0 lbs	0%	0%	0%	0%	$0
6	Wood	3747	48,103,302 lbs	17%	19%	6%	14%	$8,118,276
7	Solar Energy/Other	626	7,710,315 kWh	0%	3%	0%	2%	$1,301,116

All Households
Estimated percent of all households using each type of heating fuel in the region

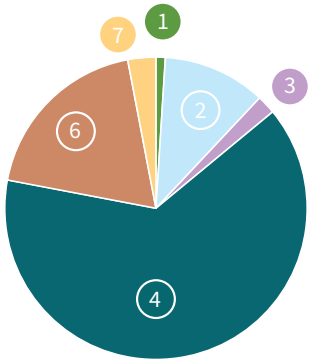
Owners
Estimated percent of all owner-occupied households using each type of heating fuel

Renters
Estimated percent of all renter-occupied households using each type of heating fuel

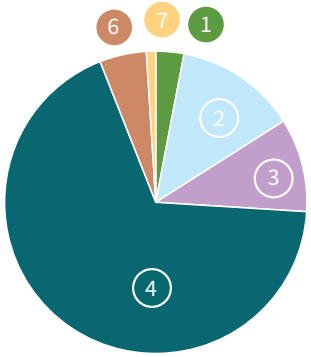
2025



2035



2050



The State of Vermont has the following goals for home and building thermal efficienc

Save Vermont families and businesses a total of $1.5 billion on their fuel bills over the lifetimes of the improvements and measures installed between 2008 and 2017.

Reduce annual fuel needs and fuel bills by an average of 25% in the housing units served.

Incease weatherization services to low-income Vermonters as revenue becomes available.

Improve energy efficienc in buildings: 20% of the state's housing stock by 2017, and 25% of the state's housing stock by 2020.

Reduce total fossil fuel consumption across all buildings by an additional 0.5% every year, up to 6% annually by 2017 and 10% annually by 2025.

The State of Vermont o ers several criti al programs to help Vermonters pay their fuel bills: the Fuel Assistance Program and the Fuel Crisis Program. During the 2015-2016 heating season in Rutland County, 3,886 out of 25,239 total households (15%) received Seasonal Fuel Assistance and 329 households received Crisis Fuel assistance through BROC Community Action in Southwestern Vermont that services both Rutland and Bennington Counties.

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In the heating seasons between 2013 and 2015, when there were more typical cold weather and higher fuel prices, the Crisis Fuel caseload was considerably higher. For instance, during the winter of 2013/2014, the households that received crisis fuel assistance from BROC totaled 1,107; more than three times th t in 2015/2016.

For the more vulnerable low-income households, the need for fuel assistance is a challenge year in, year out. Consumption of fuel oil goes through the roof in the winter for these residents because they live in older, sub-standard housing and mobile homes, o entimes as renters. Homeless residents also are placed in older housing, such as outdated motels. This stock of housing presents a unique challenge to the region in terms of cutting en gy demand.

Weatherizatio

Weatherization, or thermal efficien , of existing structures can be a criti al component of reducing the region's use and cost space heating. State statute calls for a goal of improving the energy fitness of at last 20 percent of the state's housing stock by 2017 and 25 percent of the state's housing stock by 2020.

Regional Weatherization Goals: 10 VSA 581a

5,127 Residential Units- 20% of Regional Stock- by 2017
6,409 Residential Units- 25% of Regional Stock- by 2020

Estim ting space heating sources and costs for non-residential structures is more difficul than for residential given the lack of available information about structure square footage. The region accounts for about 10% of all commercial and industrial establishments in the state which can be estim ted to account for approximately 4.8 trillion BTUs of total energy consumed with most of that likely going to space heating

The age of structures in the Rutland Region is a huge challenge to weatherization e orts. Most housing stock in the region is old. According to the U.S. Census (ACS 2010-2014), more than a third (35%) of occupied housing units in Rutland County were built before 1940. More than two-thirds (67%) were built before 1980 when energy efficienc became a more widely accepted practice. There are numerous public and private businesses that o er weatherization services, the largest providers of weatherization being

Efficiency Vermont: More than 30 programs for Rutland County ranging from commercial/industrial retrofits and farm new construction and equipment replacement to low income home retrofits/n w construction and multi family retrofits/n w construction. The total number of residential and commercial sites that have installed conservation programs has gone from 29,804 in 2010 to 34,247 in 2015 for a cumulati e total of 173,834. From 2014-2016, the increase in the amount of electricity saved in the region went from 8,864,136 KWH to 13,361,544 KWH. The cost savings increased sharply in the same time period, from $1.6M to $2.3M with more savings for both residential and commercial customers.

NeighborWorks of Western Vermont/ HEAT Squad: low cost energy audits and same day energy audit reports; energy improvements; local, certifie energy contractors; financing plans; accessing to incenti es from Efficienc Vermont - serving residents of all incomes. Since 2010, the organization has completed 2,450 residential energy audits, and completed 961 residential energy projects.

BROC/Community Action in Southwestern Vermont: home heating fuel assistance and energy conservation and weatherization - for lower income residents. BROC's weatherization services are o ered at no cost for low income residents or those who meet income eligibility

Rutland Region Annual Electric and Thermal Savings

Electric and Thermal Savings	Annual Savings by Year				
Includes the Savings for all towns within the Rutland Regional Planning Commission	Year	2014	2015	2016	Total
	Electric Savings (KWH)	8,864,136	10,696,354	13,361,544	32,922,034
	Residential	4,089,601	5,772,336	5,940,678	15,802,615
	Commercial & Industrial	4,774,536	4,924,017	7,420,866	17,119,419
	Thermal Savings (MMBTU)	15,771	8,988	24,996	49,755
	Residential	3,917	3,935	9,440	17,291
	Commercial & Industrial	11,855	5,053	15,556	32,464
	Total Customer Cost Savings	$1,662,239	$1,716,657	$2,318,792	$5,697,689
	Residential	$794,591	$1,038,887	$1,128,704	$2,962,182
	Commercial & Industrial	$867,649	$677,770	$1,190,088	$2,735,507

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guidelines – regardless of whether they own or rent their home, apartment or mobile home. In the 2015-2016 winter season, BROC assisted in weatherizing 165 housing units across the region.

Green Mountain Power eHome: GMP's eHome program is designed to save customers money, reduce their energy consumption and improve the comfort of their homes. eHome services and products include weatherization, heat pumps, heat pump water heaters, solar ba eries, electric vehicles, and smart energy and other technology to track and control electricity usage.

Other Energy Conservation in the Rutland egion

There are some institution in the region, like schools and housing complexes, which utili e biomass heating systems, typically wood pellets or woodchips. In the Rutland Region this includes O er Valley Union School, Green Mountain College, the Vermont Police Academy, as well as Benson Heights Apartments, Hickory Street and Watkins School & Carriage House in Rutland, and Stanislaus Housing in West Rutland.

Renewable Buildings

Renewable buildings (also called sustainable or green buildings) are effici t with the use of resources -energy, water and materials - and use effici t design, sitin , construction, operation, maintenance and removal. In other words, renewable buildings are "ecologically correct" and minimize adverse environmental impacts and take into consideration human health factors. The Vermont Comprehensive Energy Plan (2016) has a goal of 30% renewable buildings.

Energy Conservation Opportunities for Municipalities

- Promote compact development land use pa erns through municipal plans and bylaws.
- Audit report on town buildings (can be used as an energy road map)
- Switch to LED streetlights (where applicable)
- Changeover to electric vehicle fle ts (school buses, highway trucks, police cruisers)

Transportatio

Transportation consumes the largest share of the Rutland Region's total energy use due to: reliance upon fossil fuel-powered vehicles, land use pa erns, and fuel costs. To help reduce energy use, the VT Comprehensive Energy Plan included a 10% renewable transportation oal by 2025.

Vehicle Reliance

Vermont's comparati ely high per capita VMT is driven by the state's topography and historic linear development pa erns. The compact development pa erns that we value – villages surrounded by open space and working lands - result in longer distances between home, work, school and shopping, requiring longer trips to meet residents' needs. It's also the result of a relati ely high proportion of tourism and pass-through traffic origi ting ou -of-state.

Vermont is also heavily dependent on trucking for the movement of freight. In 2007, trucks moved 80% of the freight tonnage going into, out of, going through, and within the state for a total of more than 43M tons annually. The value of this commodity transportation by truck is $51.5M. Truck traffi is expected to increase by more than 40% on many of Vermont's highway links, including U.S. Routes 4 and 7. (VT Freight Plan 2015).

Eleven percent of the freight running through the state goes by rail. There are 97 miles of track in the Rutland Region moving commodities regionally and nationally and, in downtown Rutland, the Rutland Rail Yard is a major switching yard for freight trains. A very modest volume of freight – less than 0.03% by value – goes through the state's airports. (VT Freight Plan 2015)

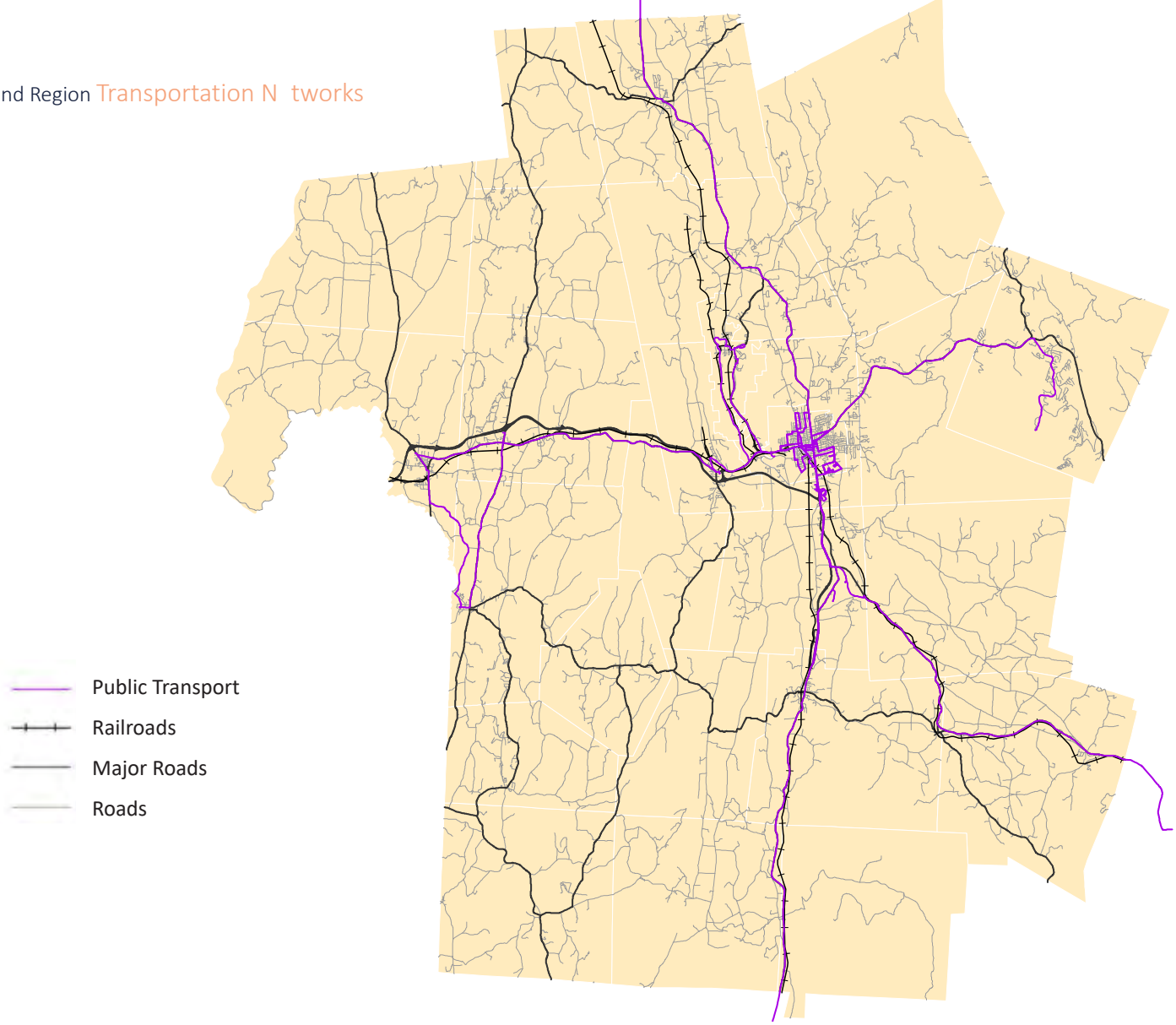
The 52M tons of freight handled in Vermont is expected to increase to 70M tons by 2035. (VT Freight Plan 2015).

Total number of vehicles in the region: 42,471
Average Gallons used per vehicle per year: 683.9
Total gallons used per year in the region: 29,045,916
Average Cost per gallon of gas: $2.30
Total Fuel costs: $67 Million
Fossil fuel burning light duty vehicles (LDV) in the region: 42,471.
Nine of every 10 residents 16 years or age or older has a vehicle.
Average Vermont vehicle fuel use per year: approximately 684 gallons.
Per capita vehicle miles traveled each year: 12,500 miles.
Total gasoline fuel costs in the region: $67.8M
Commuters driving alone to work: 79%
Commuters using public transportation: 0.7%.
Mean travel time to work: 21 minutes
Total annual energy consumptions for LDV: 3,368 thous million BTUs.

Public Transportatio

As noted above, less than 1% of the region's residents use public transportation to commute to work even though Marble Valley Transit, MVRTD, or The Bus, serves much of the Rutland Region and recently added service to Fair Haven and Poultney in the far western end of the region. It's the state's largest non-urban bus system and it provides public transportation to residents as well as the region's social service agencies, schools and businesses. While the rural nature of the region presents challenges for public transit, MVRTD system has grown to include many areas of the region and destin tions outside of the region per se. There are six fi ed bus routes in Rutland City alone, along with the Fair Haven, Ludlow, Manchester, Middlebury Connector, Proctor, and Diamond Express (to Mendon, and Pico and

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Killington Ski Resorts) routes. Diamond Express is year-round and runs on the hour.

The transfer point for these routes is the Rutland Multimodal Transit Center in downtown Rutland. All routes have li - equipped vehicles, are accessible and ADA complaint. Bike racks are available seasonally. MVRTD also operates the Medicaid Transportation Program for the region through its fi ed route service, volunteers or other transportation services.

Several new Park and Rides at Killington, Castleton and the Diamond Run Mall provide convenient locations to connect with the MVRTD bus system. MVRTD also o ers some day shift services for the Rutland Regional Medical Center and the Clarendon Industrial Park, but does not o er bus service to late evening or overnight shift workers. The bus service also connects volunteer drivers with passengers in need of a ride to a bus connection with a service that requires only one day's notice

RRPC will continue to work with Marble Valley Regional Transit to increase the number of commuters who use the public transit system and increase the number of bus routes. RRPC will also promote bus routes that accommodate nighttim shifts at employers such as the Rutland Regional Medical Center. RRPC will continue to encourage and do outreach to boost the use of park-and-ride lots in the region.

A signi cant portion of Rutland Region commuters drive alone to work. Since commuter buses stop at regular intervals along routes, these trips can take longer than if residents drove themselves to work. Even with many city routes running every half-hour, service starts early in the morning but ends in the early evening throughout its system. Public transit should broaden its outreach and promotion to appeal to more commuters. MVRTD also should continue its e orts to schedule its bus services to coordinate with the Amtrak service into Rutland and Castleton.

Amtrak's Ethan Allen connects Rutland and Castleton with Albany and New York City/Penn Station. According to Amtrak, in FY15, there were 16,539 arrivals and departures at Rutland and another 4,587 at Castleton for the current

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one arrival and one departure per day service provided. The State of Vermont is currently rehabilitating the rail lines between Rutland and Burlington. Phase two of that project is restoring passenger service along the Western Corridor, hopefully by late 2021. As a result, heavier gauge rail will be installed to allow for increased speeds for passenger lines and higher weight limits for freight trains along that route.

There are now 11 Park and Ride lots in the Rutland Region in Killington, Mendon, Chi enden, Brandon, Rutland Town, West Rutland, Fair Haven, West Haven, Ira, Clarendon, and Wallingford. However, there are no Park and Ride lots in the region south of Ira or Wallingford.

As of January 2017, 7 electric vehicles and 71 plug-in hybrids were registered in the region for a total of 78 Plug-in Electric Vehicles (PEVs). Compared to other Vermont counties, Rutland ranks the fourth lowest in Vermont counties; 9 out of 14. Hybrid and electric vehicles can decrease reliance on fossil fuels. There are six PEV charging stations, running east to west across the middle of the region: Fair Haven (South Park Place), Poultney (Green Mountain College), Castleton (Castleton University), Rutland (Unitarian Universalist Church), Rutland Town (Garvey Nissan) Killington (Grand Hotel).

Land Use Pa erns

The transportation choices made by Rutland Region residents are influenced signifi antly by regional land use pa erns. Land use in the region has historically been characterized by compact development (downtowns and village centers) surrounded by working lands (agriculture and forestry). This model of development is supported by the Rutland Regional Planning Commission because it promotes economic and social benefits.

Even though the region is currently experiencing population decline, a build out pa ern of residential development has been occurring for decades. More and more towns in the region have become bedroom communities for the City of Rutland, Middlebury, Bennington, and into New York State. This has resulted in increased vehicle miles traveled (VMT) and greenhouse gas emissions. The region could reduce miles traveled by encouraging telecommuting and taking advantage of the region's high speed fiber optic connections

Even though the current land use pa erns have led to increased transportation costs for residents and a continued reliance on fossil fuels, that has not deterred residents from continui g to build their homes in outlying towns and driving (o en by themselves) to work.

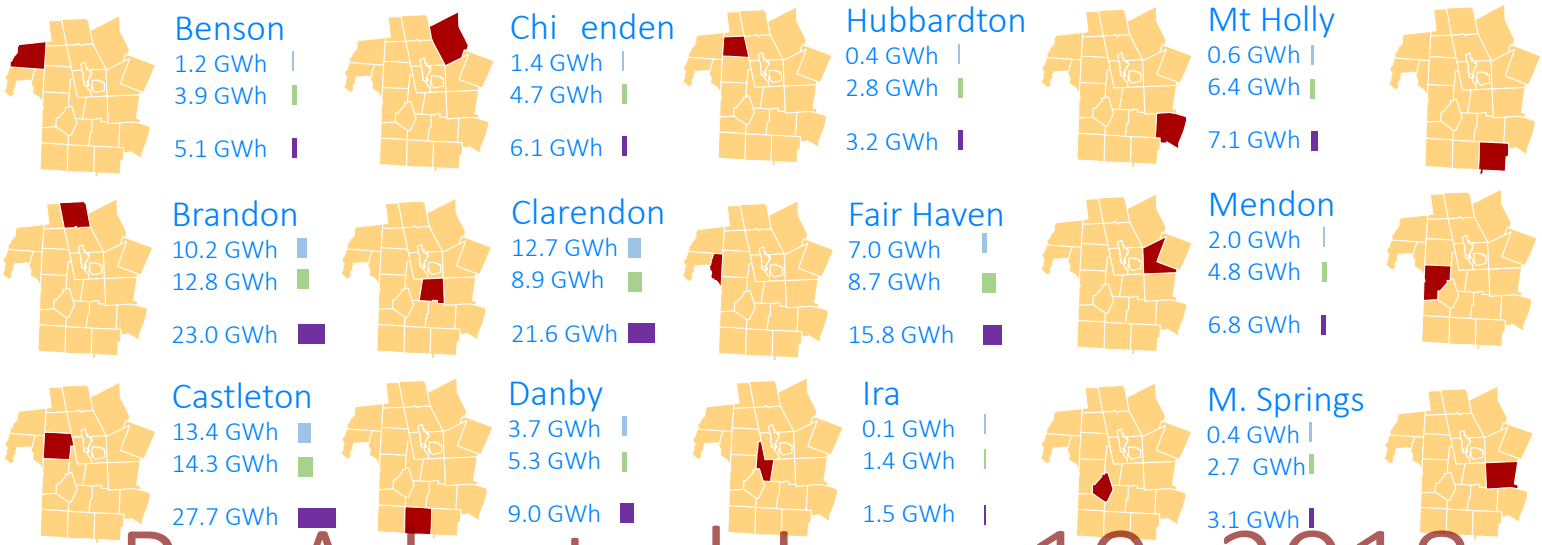
Future compe ng land uses tensions: "the power density" – or amount of energy per given unit of volume, area or mass – of renewables is orders of magnitude less than it is for fossil fuels. That translates into renewable electric sources requiring much more space on the landscape than traditional, centralized generators. (2016 VT Comprehensive Energy Plan)

Electricity

Electricity Use

Although the amount of electricity used by both households and businesses plateaued in the early 2000s due to the availability of more energy effici t appliances, machinery and lightin , demand for electric power is expected to climb again to meet the state's goals for renewable power. See Figure 3.12: Historical Energy Usage - Rutland County.

Rutland Region Electricity Use by Municipality, 2016.



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Currently, most of Vermont's electricity is derived from hydroelectric dams in Quebec, Canada.

When viewed at the municipal level, the highest rates of electricity use by households are found in Rutland City, Rutland Town, Killington, Brandon, and Castleton where there are more residents (in some cases, many part-time ones). Correspondingly, the lowest rates of household electric use are in towns with smaller populations, such as Mt. Tabor, Ira, and West Haven.

Some of the same municipalities that lead the region in residential electric use, such as Rutland City, Rutland Town, and Killington, also use the most electric power for the commercial, industrial and business sectors. That is because both the region's businesses and population are concentrated in these areas.

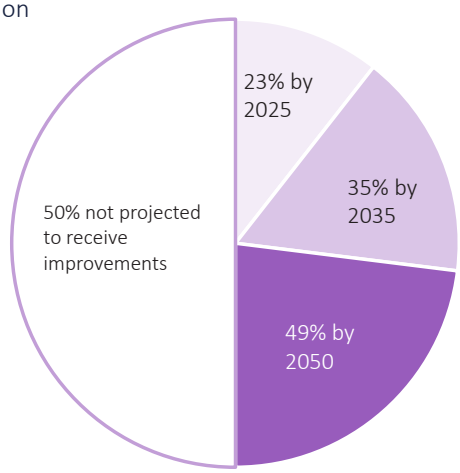
Regional Electricity Generatio

For electricity, the enti e Rutland Region is served by Green Mountain Power (GMP) except for a sliver of eastern Mount Holly that gets its electricity from Ludlow Electric Light Department.

The mix GMP uses to deliver electricity to its customers is varied yet dominated by market purchases through ISO New England. Only 18.2% of market purchases in this mix are sourced from renewable sources (8.7% from wind; 5.4% from wood; 2.2% from solar; 1.3% from hydro; and 0.6% from methane). Typically the majority of this share of the mix comes from natural gas. Moreover, associated RECs from these renewable sources are sold typically out-of-state.

As of April 2017, the region had the capacity to generate 34.3 MW through hydro, wind, solar, and biomass technology, according to data available from Vermont

Targets for Residential Electrical Improvements in the Rutland Region



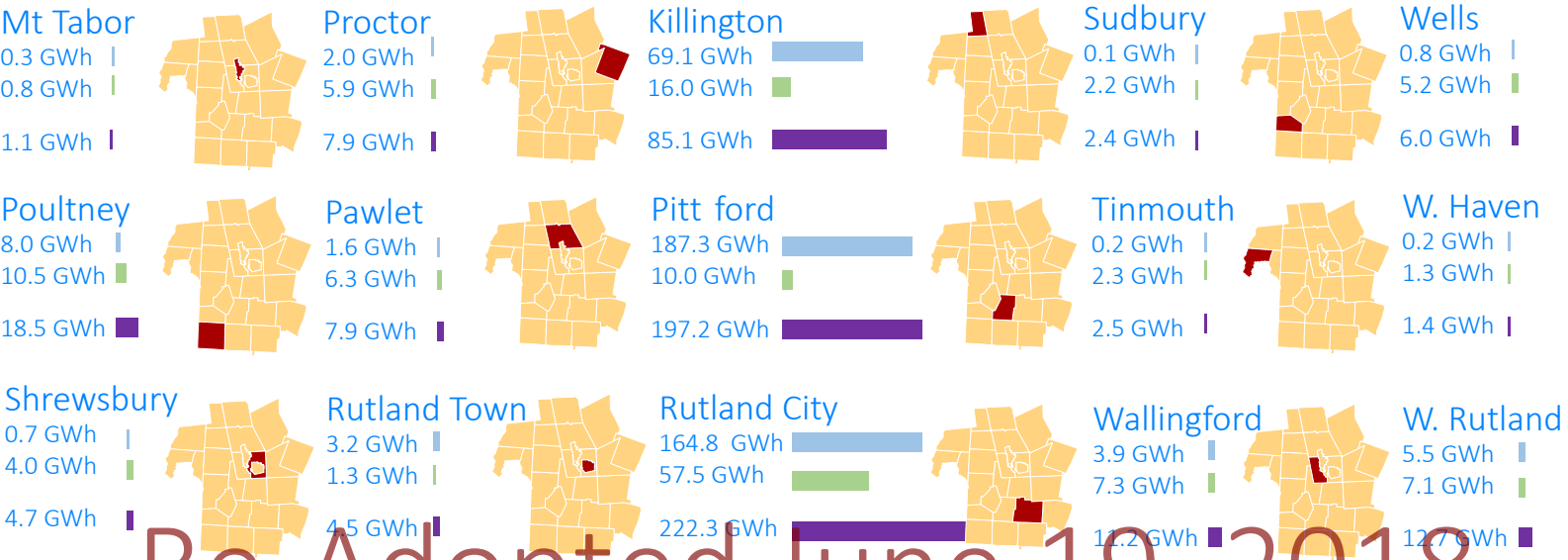
Renewable Energy Atlas. This is a "raw" number that does not take "capacity factors, renewable energy credits sold, or ownership of the systems" into consideration. There is no non-renewable energy generation in the region, such as fossil fuel-fi ed plants.

Hydro

The region has seven hydroelectric dams that generate 49,470 MW each year. All seven of these dams are owned by GMP. On the East Creek, there are the East Pitt ford Dam in Chi enden, Glen Dam and Patch Dam in Rutland Town. On the O er Creek, there are the Center Rutland and Proctor Dams. On the Poultney River there is Carver Falls Dam in West Haven. In Pawlet, there is the Flower Brook Dam.

Wind

There are no commercial wind power projects in the Rutland Region. There are 10 small wind projects that altogether generate 112,811 kWh per year or 47 kW of total capacity: Mt. Holly School, Castleton University, GMP in downtown Rutland, as well as seven private projects, that have a Certi ate of Public Good as decided by the PUC.



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Solar

For photovoltaic (PV) solar, there are 658 sites across the region with generating capacity of 19.4 MW electricity. This includes several large facilities: 2.2 MW in Clarendon (9,218 panels) and 2.2 MW at Sta ord Hill in Rutland City, and a 2.3 MW facility on the Cold River Road in Rutland Town.

Several even larger solar facilities are being proposed for the near future ranging in size of 7 MW in Rutland Town to 15 MW in Brandon. In additi n, across the region there are 236 roof-mounted PV sites with annual electrical generation of 2,040 MW.

The City of Rutland generates more solar power per capita than any other New England city. It also ranks #2 in the state for annual electricity generation for ground-mounted PV with fi ed racks. Through low cost programs, Green Mountain Power is o ering its customers home ba eries for solar back-up.

Access to solar energy has signifi antly increased as the cost of solar installation has dropped 70 percent within the past decade (2006-2016). Cost declines, when paired with supporti e energy policies, have enabled the growth of solar in new markets.

Community Solar Solution

Since 70% of Vermonters cannot do solar on their properties (due to tree coverage, not owning their home, etc.), community solar is another option. The links below o er a guide for communities considering group solar and a model contract for such projects.

VT NRC Community Solar Guide
VLCT template for model solar contract

Biomass

Before it was destroyed in a fi e in 2014, Rutland Plywood was generating 400 kW through its Combined Heat & Power (CHP) facility. There are also the seven biomass heat generating sites across the county listed in the Space Heating section of this chapter that do not produce electricity for the grid.

Online Tools

Community Energy Dashboard

The dashboard is designed to help communities in Vermont engage in shaping its energy future at the local level. It provides an array of interacti e tools used to evaluate current conditions, find data, set goals, track progress, map actions, and sha e stories.

Rutland Region Renewable Energy Generatio

	Generation * Capacity	Annual** Generation
Hydro	14.845 MW	42,460.0 MWh
Wind	0.047 MW	112.8 MWh
Solar	19.4 MW	23,401.7 MWh
Biomass	0 MW	0 MWh
Total	**34.3 MW**	**72,975.0 MWh**

* Total Electricity Generation Capacity April 2017
** Annual Electric Generation April 2017

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Regional Targets For Conservation and Generatio

This plan's focus is on settin targets for fuel switching, conservation and generatio of energy across the region. To create targets for conservation and generation, RRPC worked with the Vermont Energy Investment Corporation (VEIC). The VEIC staff used LEAP (Long-range Energy Alternati es Planning) soft are to create a model of the demand and supply of energy in Vermont and the region. The model created in LEAP (Long-range Energy Alternati es Planning) contains two scenarios, both based on projected future energy demand. The fi st is the "reference scenario."

This scenario reflects current energy usage and generation trends. The second scenario is designed to achieve the goal of meeting 90% of Vermont's total energy demand with renewable sources. This scenario, called the "90x50 VEIC scenario," utili es data from the Vermont Total Energy Study (TES)- information from Vermont public utilities commi ed electricity supply and from stakeholder input - and Utility Facts 2013 - both produced by the Vermont Public Service Department.

The di erence in total energy demand between the "reference scenario" and the "90 x 50 VEIC scenario" is important. This di erence, or "avoidance," estim tes the amount of total energy demand that will need to be eliminated through conserva on e orts to ensure that the state and region's energy goals are met by 2050 and needs to be planned for by the region.

Model Inputs and Assumption

Data sources used to compile the model are primarily drawn from the Public Service Department's Utility Facts 2013 and data available from the Energy Information Administration (EIA), a U.S. Department of Energy entity that keeps official federal energy stati tics. Projections used in the model came from the Vermont TES. In the model, the number of persons per household is projected to decrease from 2.4 in 2010 to 2.17 in 2050.

Data and projections for commercial energy demand are derived from commercial building area (the "driver") and extracted from inputs in the TES. Industrial energy use is entered into the model using actual totals without a "driver" specified. Commercial and industrial demand calculated at the state level is then allocated to the regions by service-providing and goods-producing North American Industry Classifi ation ystem (NAICS) codes respecti ely.

Transportation energy use in the model is based on projections of county totals of vehicle miles traveled (VMT) available from VTrans. While VMT has risen through most of American history, VMT in Vermont peaked in 2006 and has been declining slightly ever since. Because of this and Vermont's e orts to concentrate development and promote public transit and car sharing, the model assumes that VMT in the state and the Rutland Region will remain fl t or decline despite growth in population and economic activity (statewide).

The 90x50 VEIC scenario also assumes that diesel used in heavy duty vehicles is replaced with biodiesel and that electricity will replace gasoline in passenger (light duty) vehicles. It is also projected that electricity will be the source of an increasing amount of energy used for space heatin , primarily because of the use of cold climate heat pumps.

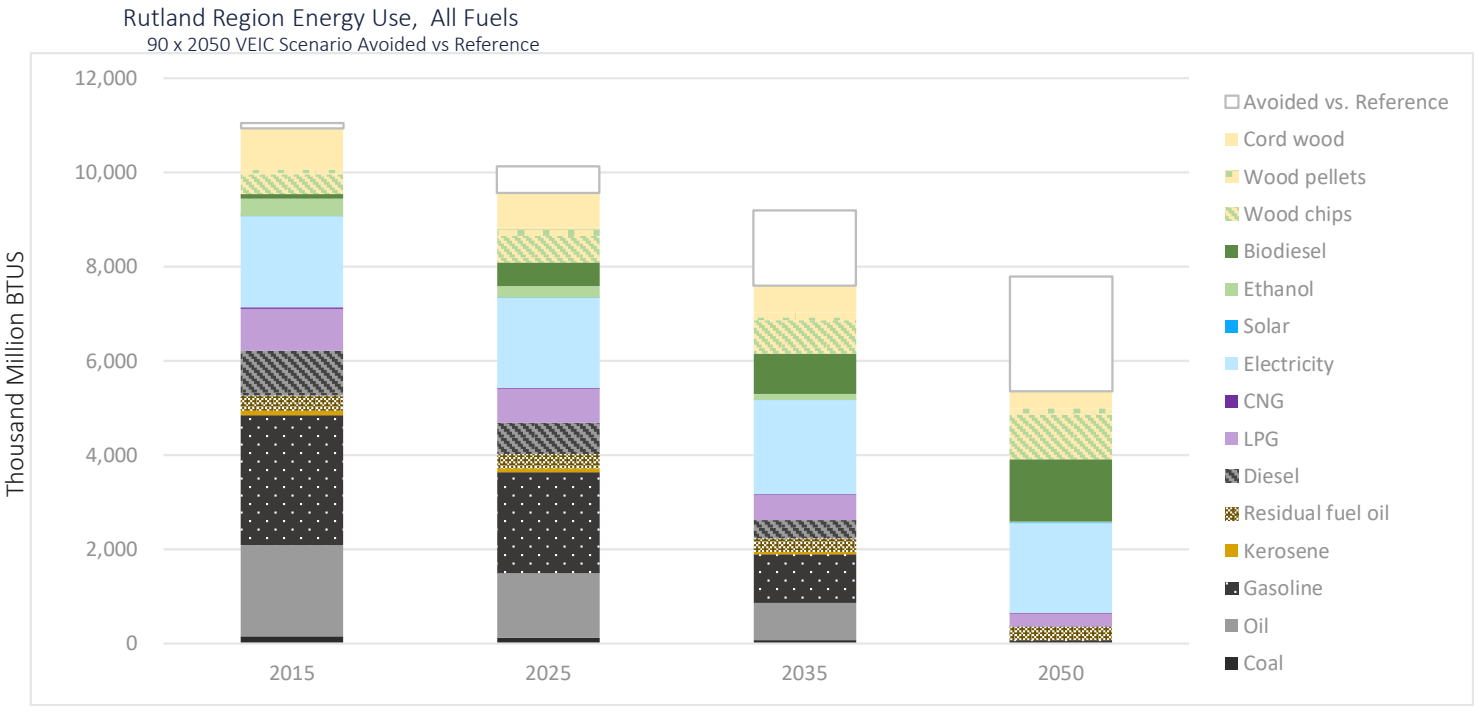
More information regarding the Total Energy Study and Utility Facts can be found on the Public Service Department Website

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Rutland Region Models

RRPC uses a standard unit: British Thermal Units (BTUs) for all scenarios. The LEAP 90x50 scenario shows a decrease of 49% in total energy use across all energy sectors in the Rutland Region between 2015 and 2050, from 10,929 thousand million BTUs in 2015 to 5,348 thousand million BTUs in 2050. The LEAP model results also provide the "avoidance" amount, or the di erence between the "reference scenario" and the "90x50 VEIC scenario" in total energy demand. In the scenario above, 2,445 thousand million BTUs will not be used (avoided) by 2050, or nearly a third of what would have been the total energy demand in 2050 (7,793 thousand million BTUs). Looked at another way, this avoided energy indicates how much weatherization, conservation and greater efficienc needs to occur if the state is to meet the targets set in the LEAP model.

Total energy demand decreases due to factors already mentioned: electrifi ation of transportation, increased reliance on electric heat pumps, and decreased use of fossil fuels. Biodiesel demand grows signifi antly over the scenario timeline. Electricity demand is higher as well although that is miti ated somewhat by conservation and efficien . Gasoline and other fossil fuels are either eliminated from the fuel mix or are greatly reduced. Fossil fuels account for 7,127 thousand million BTUs in 2015, but only account for 649 thousand million BTUs in 2050. Wood, on the other hand, increases slightly in the model timeline from 1,389 thousand million BTUs to 1,440 thousand million BTUs between 2015 and 2050. Yet the use of cord wood declines sharply, from 726 thousand million BTUs to just 352 thousand million BTUs due to technical efficiencie and the anticip ted conversion to electric heat pumps for space heating.



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Thermal - Space Heating and Coolin

Residentia

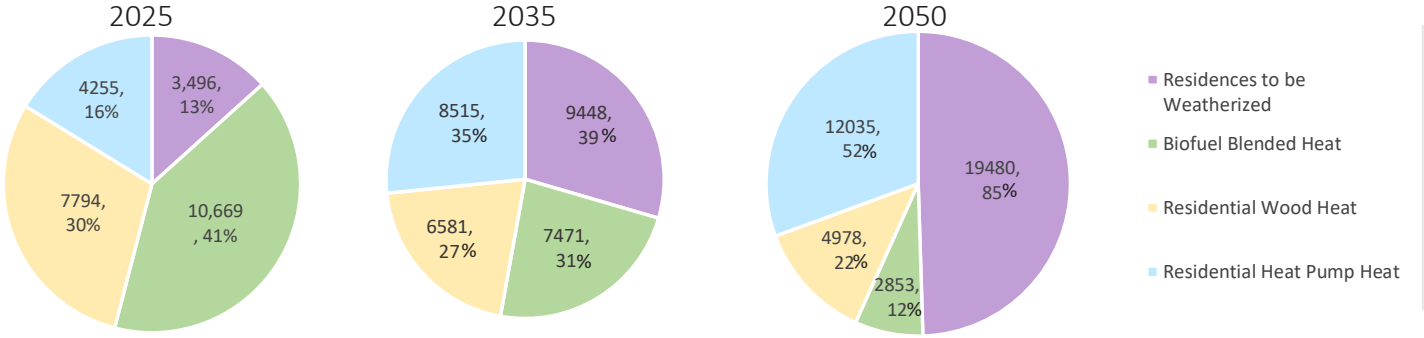
According to the LEAP 90x50 scenario results, energy used for single family home thermal (space heating) is expected to fall regionally by 56% between 2015 and 2050 due to the efficiencie from increased use of heat pumps, weatherization retrofits and constructi n of new single family homes that are compliant with the state's residential building energy standards (RBES), and conservation. The amount of energy used by electric-based heating in the region is assumed to increase and the use of heating oil, LPG and kerosene declines sharply, going from 884 thousand million BTUs in 2015 to just 41 thousand million BTUs in 2050 and with only LPG left in the fuel mix.

The use of cord wood in this scenario declines by 41%, which is attribu ed to weatherization, other efficiencie and ease of use with heat pumps versus wood stoves. In total, wood sources account for 55% of residential heating in 2050 in the 90x50 scenario, electricity-related uses account for 27%, biodistill tes make up 11%, and fossil fuels drop to about 7%. Heat pumps and heat pump water heaters account for 27% of all single-family home heating BTUs in 2050, up from less than 1% in 2015, another reflection of the in eased efficiency of electric-based h ting echnology.

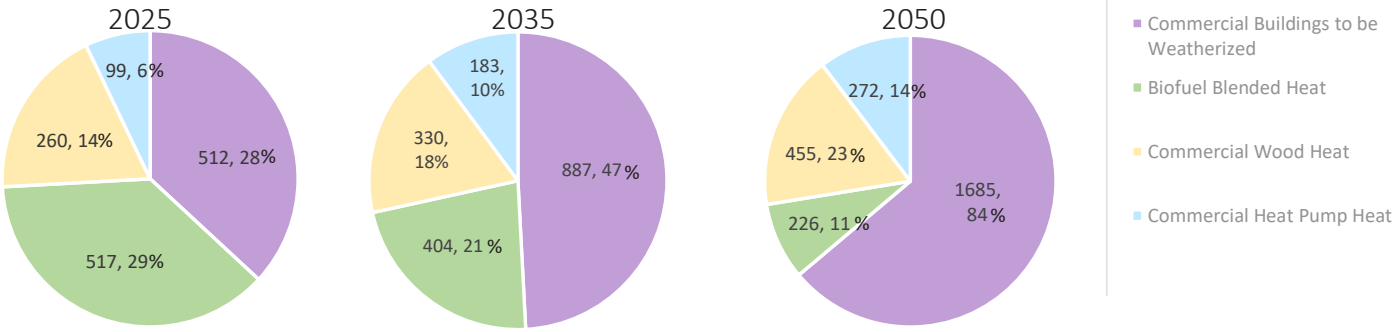
Commercial and Industrial energy demand for space heatin

In the LEAP 90x50 scenarios, industrial and commercial energy consumption (primarily for heating) depend more on switching fuels and less on using less energy (less avoided consumption). Yet the type of fuels that are replaced vary between the industrial and commercial sectors. For instance, in the industrial sector, the 20x50 scenario projects a sharp increase in the use of wood, a steep decline in electricity, and just a slight decrease in fossil fuels use except for coal. Whereas in the commercial sector, it is projected that use of fossil fuels declines markedly, electricity stays much the same, and the use of wood chips and biodiesel increases. As in earlier 90x50 scenarios, in the Commercial sector, total energy use declines from 2015 to 2050 in the Rutland Region, in this case, from 1,641 to 1,322 thousand million BTUs. Distill te fuel oil use declines the most and the use of biofuel and wood products increase the most, going from 149 to 496 thousand million BTUs.

Targets for Residential eatherization and Fuel Switching in the Rutland Region

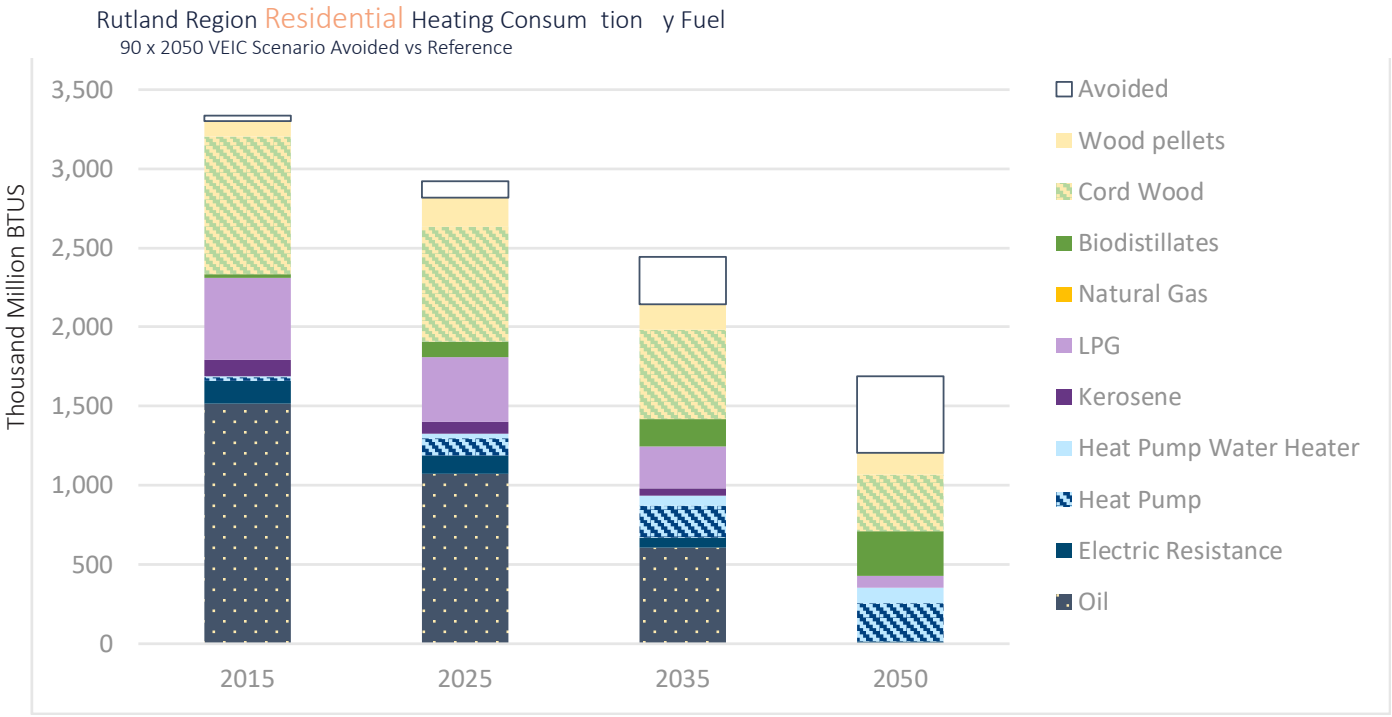


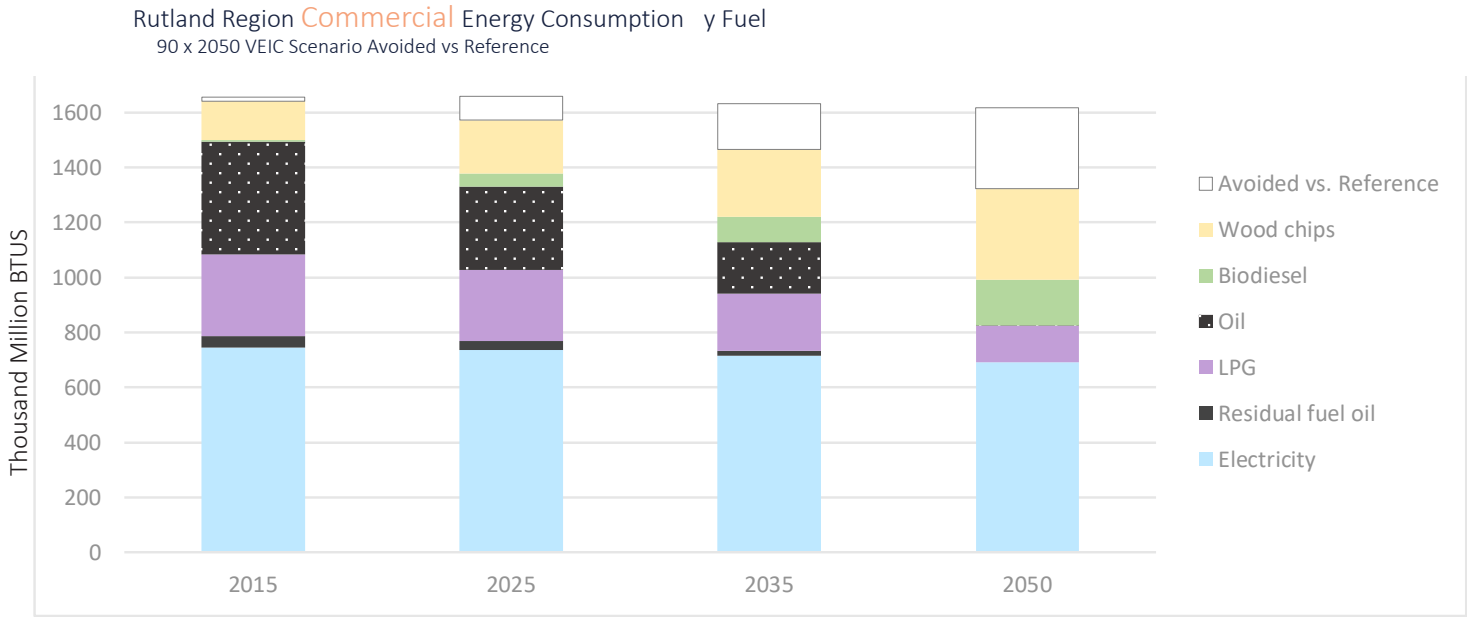
Targets for Commercial Weatherization and Fuel Switching in the Rutland Region



Displayed as number and percent of residences to have the fuel switched

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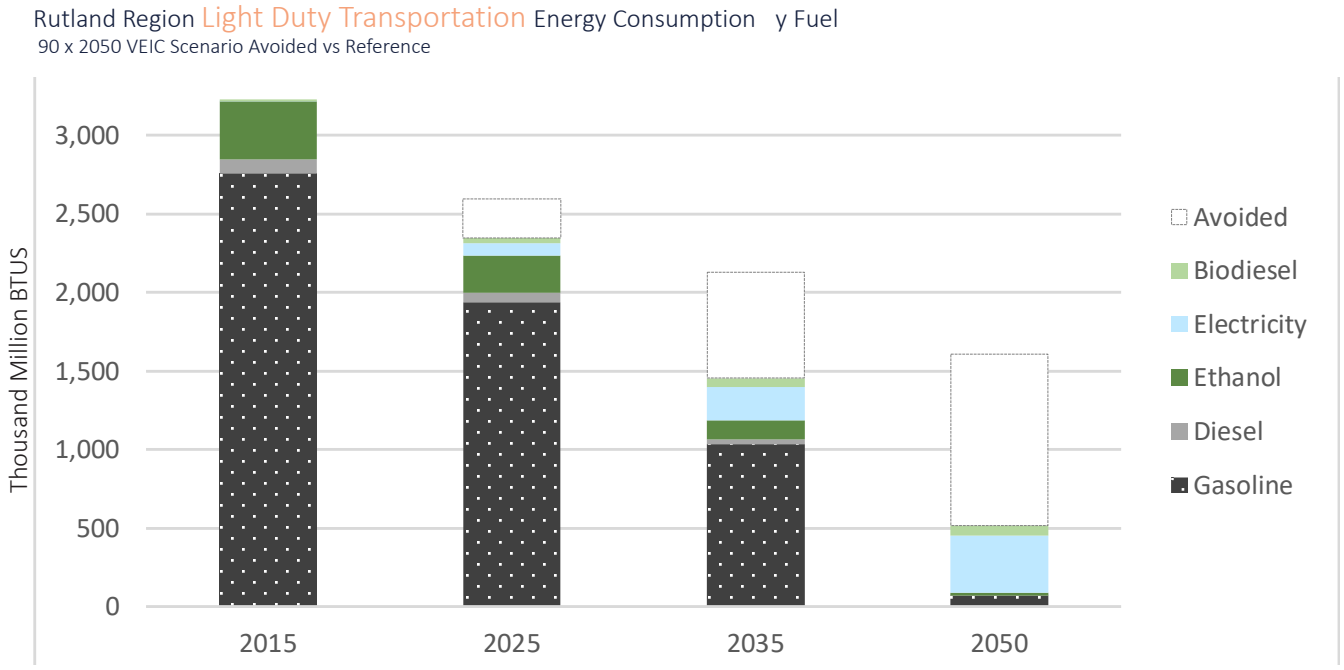


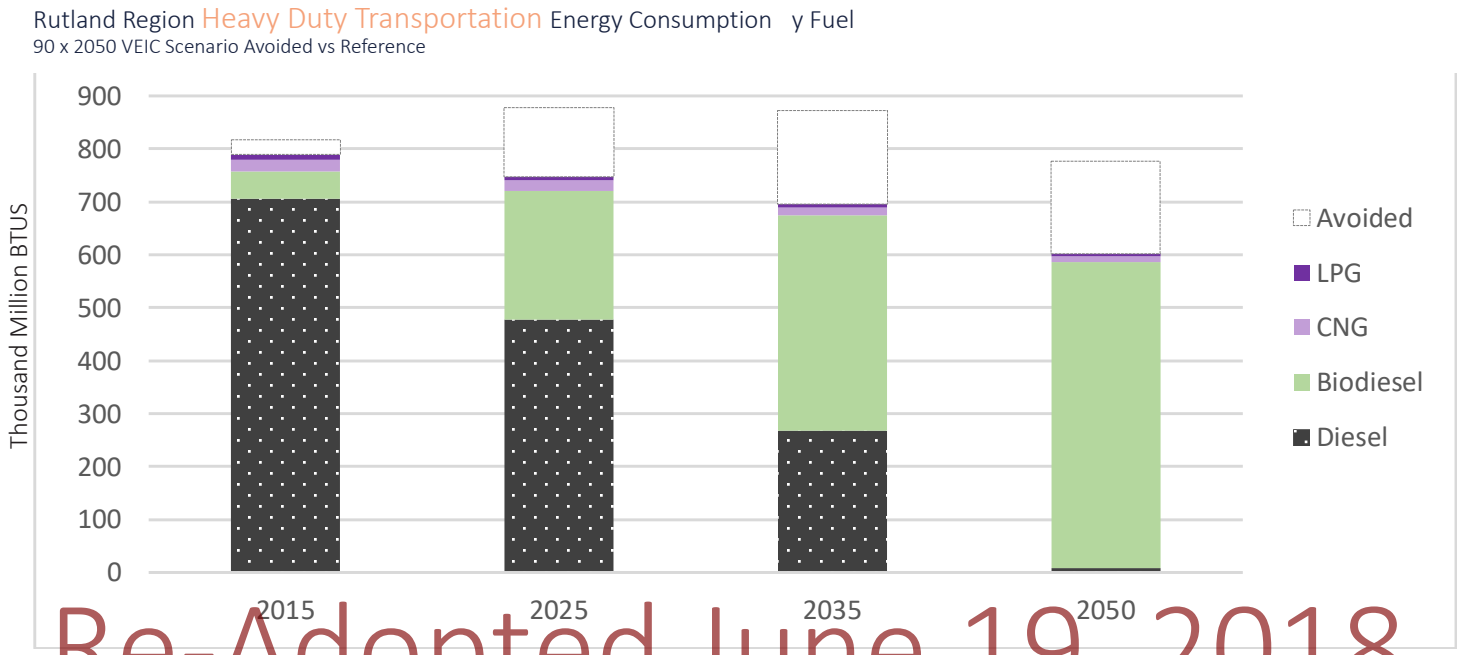
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Transportatio

According to the LEAP 90x50 scenario, energy consumptio in the region's transportation sector falls signifi antly between 2015 and 2050. The LEAP model is predicated on a constant number of vehicle miles traveled (VMT) for the region. It's also based on the increased efficienc of gasoline vehicles and the anticip ted switch to electrifi ation for the passenger or light duty vehicle fle t and a switch to biofuels of the heavy duty vehicle fle t result. It's assumed that biofuels will become much more viable as a fuel option for truckers and that electric vehicles will be more att acti e to passenger motorists. There are some fears that this model is unrealistic without ac ompanying behavioral change by motorists.

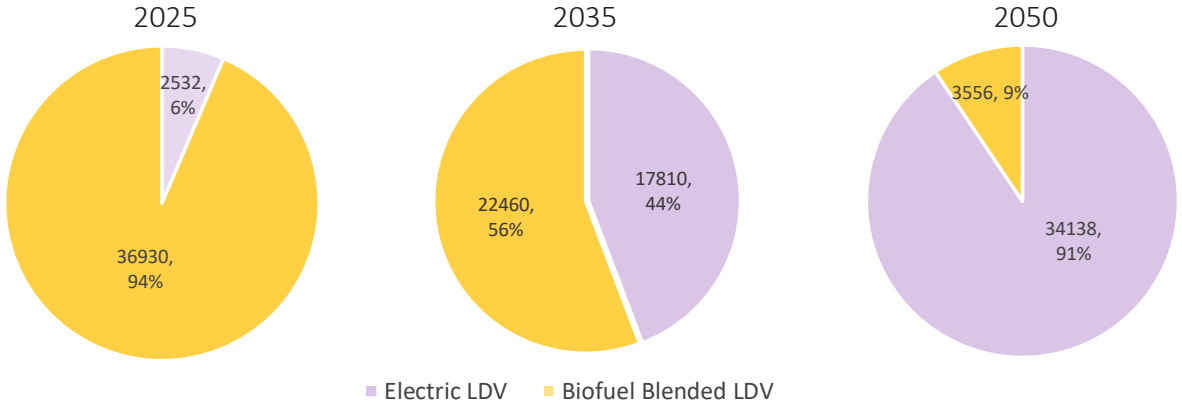
According to the LEAP 90x50 scenario, fuel sources for light duty vehicles in the Rutland Region will switch from primarily being gasoline-based to mostly electric. The use of gasoline will go from 2,555 thousand million BTUs to a mere 102 thousand million BTUs. The use of electricity for light duty vehicles will increase 256 times from 2015 to 2050 and biodiesel fuels are expected to increase steeply as well.





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Targets for Fuel Switching with Light Duty Vehicle (LDV) Transportation in the Rutland egion



Displayed as number and percent of LDVs to have the fuel switched

Meanwhile, in the LEAP 90x50 scenario, Rutland Region heavy duty vehicles between 2015 and 2050 are anticip ted to transition from fossil fuels, primarily diesel fuels, to renewable fuels, such as biodiesel. The amount of energy consumption for diesel falls by 2050 and the use of biodiesel increases. In the reference (or business-as-usual) scenario, diesel use in heavy duty vehicles stays constant and the very limited use of biodiesel decreases even more from 9 to 2 thousand million BTUs. The RRPC recognized that the heavy-duty transportation sector is one it has little if any control over. However, municipalitie are encouraged to switch to renewable energy-powered equipment when feasible.

Electricity and Electrical Generatio

With the widespread shift from fossil fuels to renewable energy sources, consumption of some fuel sources such as solar and wood increase while most other types of fuels decline in use. The use of electricity demand in the region, however, remains relati ely the same in the LEAP 20x50 scenario due to electrifi ation of heating and some transportation. In terms of total demand in BTUs, the demand for electricity decreases by just 2% between 2015 and 2050; dropping from approximately 1,913 thousand million BTUs in 2015 to 1,903 thousand million BTUs in 2050.

The LEAP model provides some pathways for reaching the state and regional 90x50 goals. The targets developed by VEIC show the region meeting its generation targets primarily through the development of additional in-state solar and wind generation. Regionally, the targets call for the development of up to 174 MW of new solar generation and up to 50 MW of new wind generation, and 7 MW of new hydro generation.

The new solar and wind generation targets are based on the estim ted needs per the LEAP model to reach the region's energy use in 2050. The generation targets call for only the addition of renewable energy sources in the region and do not include using biomass as a source of electric generation.

The hydro generation target of about 7 MW in the region is based on a study wri en by Community Hydro, a hydropower advocacy organization. The study looks at generation potential at existing dams of all sizes in the region that could be retrofi ed to produce electricity or more electricity. The model assumes that hydroelectric generation from Hydro-Québec stays relati ely constant. Nuclear electricity production reflects the closure of the Vermont Yankee facility and no new nuclear generation in Vermont, while at the same time, projects a relati ely constant rate of increased production out-of-state, mostly from the Seabrook Station in N w Hampshire.

On the facing page are the region's 2050 targets in MWs and MWhs by renewable: solar, small and commercial-scale wind, hydroelectric and biomass. MWhs are energy generated over time and are determined by the capacity factor of each renewable. For instance, given the limitations on solar generation due to clouds and nighttim darkness, solar has a much lower capacity factor than biomass and methane generation.

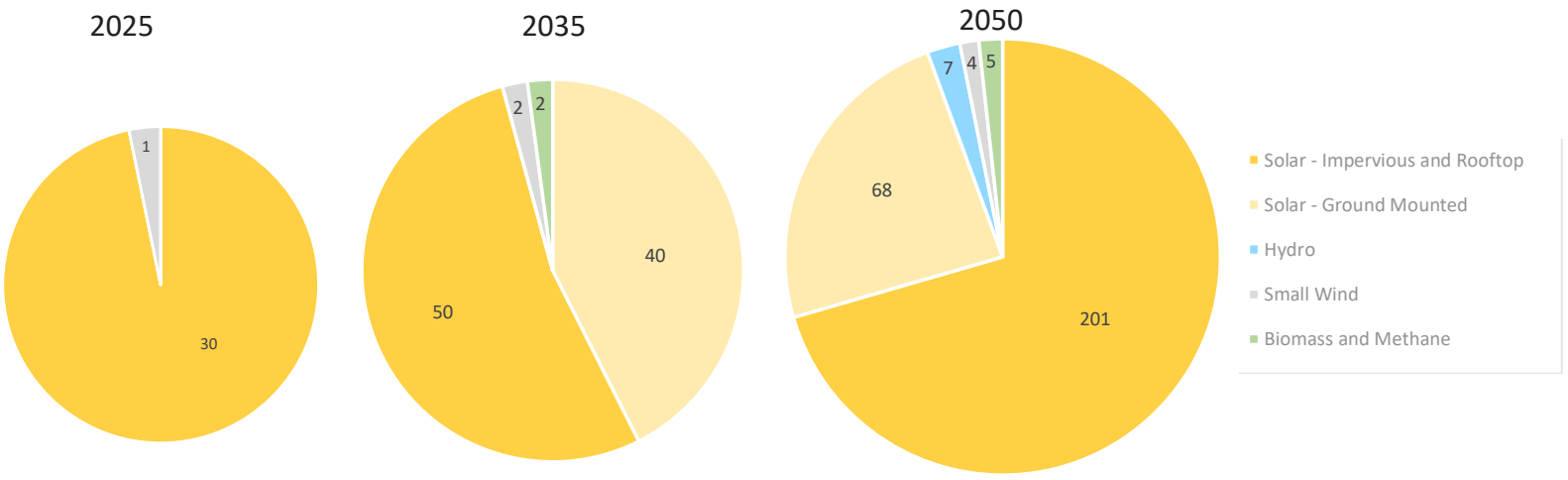
The chart shows how these generation targets can be met by each of the region's 27 municipalities. It is a calculation of each municipality's generation potential in MW and is a comparison with the acreage available for prime and secondary solar and wind with total acreage. Clearly, each municipality has more than enough land to meet its targets. This is especially true since the region anticip tes that small-scale solar and wind are going to dominate the region's renewable generation in the coming decades and will require even less acreage than indicated in these data. Even Proctor, which has the least acreage suitable for solar and wind in the region, has double the acres it needs to meet its target- 1,201 acres suitable for solar and wind compared to a maximum of 630 acres needed to meet its target of 10.5 MW (using the most conservati e method for determining

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suffici t land – 60 acres per MW).

VEIC is clear that the above generation targets represent only one possible way to derive 90% of total energy from renewable sources by 2050. While looking at these targets, it is important to understand that other combinations of energy generation may be possible. The targets suggested are there to provide a sense of scale and a basis for discussion about the need for future generation in the egion and the siting of electric eneration

Regional Renewable Energy Targets in MW



Renewable Energy Generation Potential by Municipality

Town	Existing	Potential
Benson	0.82 MW	3096 MW
Brandon	0.73 MW	1648 MW
Castleton	0.21 MW	1638 MW
Chi enden	0.91 MW	7262 MW
Clarendon	3.12 MW	1899 MW
Danby	0.009 MW	3391 MW
Fair Haven	0.7 MW	456 MW
Hubbardton	0.03 MW	2073 MW
Ira	0.02 MW	2090 MW
Killington	0.06 MW	5254 MW
Mendon	0.1 MW	3169 MW
M. Springs	0.11 MW	2514 MW
Mt Holly	0.12 MW	6365 MW
Mt Tabor	0 MW	1828 MW
Pawlet	0.09 MW	4153 MW
Pitt ford	1.09 MW	1558 MW
Poultney	0.46 MW	3074 MW
Proctor	5.81 MW	223 MW
Rutland City	5.86 MW	330 MW
Rutland Town	3.14 MW	1016 MW
Shrewsbury	0.174 MW	5030 MW
Sudbury	2.35 MW	1198 MW
Tinmouth	0.04 MW	2710 MW
Wallingford	0.3 MW	2708 MW
Wells	0 MW	1429 MW
West Haven	1.73 MW	680 MW
West Rutland	0.228 MW	799 MW

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Energy Resource Maps

The Vermont Public Utility Commission (PUC) has jurisdiction over all energy generation facilities that are part of the public electrical grid.

The RRPC has developed renewable energy resource maps for four renewable energy resources: solar, wind, hydro and biomass, existi g renewable energy generation, and regional constraints and preferred areas. Through the creation of these regional energy resource maps, the RRPC is planning for the development of additional renewable generation facilities in the region (using the LEAP model targets as the basis) and providing clarity regarding regional land conservation and specific policies for the siting of renewable energy faciliti s. **The RRPC has excluded industrial wind facilities from planning for regional energy generation.**

The fundamental element of the energy resource maps is the natural existence of potential for each of the energy resources. The analyses used to produce maps of wind and solar resource areas were done by the Vermont Center for Geographic Information. These are the same analyses featured on the Community Energy Dashboard.

Prime Resource Areas

These are areas with high resource potential and no identified onstraints (Known or Possible).

Secondary Resource Areas

These are areas with high resource potential and no Known Constraints, but where at least one Possible Constraint exists.

Mapped Renewable Resource Areas

Solar Resource Area

These are areas where there is likely to be suffici t solar radiation for solar energy development. The GIS-based analysis factored in direction, slope and location of land to maps areas with high solar radiation po ential.

RRPC is projecting to help meet its renewable energy generation target with mostly non-utility and non-Standard O er Program scale solar (≤ 500 kW). Because of the rapid pace of technological advances in the field of PV solar, it is expected that residential, commercial and industrial scale projects will dominate the region's solar generation by 2050. For that reason, in addition to mapping solar resources for the town (as described above), RRPC included impervious areas in the regional Preferred Locations map which included parking lots roo ops, sand and gravel pits, disturbed land (under construction), industrial areas, quarries, farm complexes, transfer stations, and junk ards.

The mapping analysis showed that there are 14,373 acres of impervious surfaces in the region, which does not include residential roo ops. This should be more than enough area to accommodate small scale solar and meet the region's renewable energy generation target. The impervious data layer available from VCGI is a subset of the National Land Cover Database 2001 and includes roo ops and paved areas.

Wind Resource Area

These are areas where there is likely to be suffici t wind at a specified height for industrial scale wind energy development. The analysis used digital wind speed at various heights (30, 50, and 70 meters) and identifie areas with the highest wind speeds at each of those heights.

The RRPC has decided not to include industrial scale wind in its renewable energy generation targets, so it is looking at areas other than the wind potential areas identifie that can accommodate residential scale (less than or equal to 10kW) and commercial scale turbines or windmills (less than or equal to 100 kW). Due to anticip ted technological advances, residential and commercial scale wind generation is projected to be feasible throughout most of the region at lower eleva ons in High and Medium Density Areas, as shown on the RRPC Future Land Use Map.

Hydro Resource Area

These are areas most feasible according to the natural conditions. Existin , powered and existing non-powered dam sites where a generator could be installed or existing hydropower sites where equipment could be upgraded or expanded to provide additional generation (with potential production) were mapped. Considerable time and expense would be involved with permittin hydropower projects, which are reviewed at the federal level.

Biomass Resource Area

Locations with high woody biomass potential and where renewable energy generatio would likely be most feasible according to the natural conditions of an a ea.

Certain areas where development was not possible – such as rivers and roads – were removed. The mapping also considers various other conditions, such as ecological zones that may impact the feasibility of renewable energy development. These conditions are known as constraints.

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Preferred Areas

Preferred Areas

Statewide preferred areas are roo ops (and other structures), parking lots, previously developed sites, brownfields, gravel pits, quarries, and Superfund sites and include many of the regional Impervious Surfaces. The impervious data layer available from VCGI is a subset of the National Land Cover Database 2001 and includes parking lots, roo ops, sand and gravel pits, industrial areas, disturbed land (under construction), quarries, farm complexes, transfer stations and junk yards.

Preferred Areas for New Renewable Generatio

The RRPC has determined that several types of locations in the region should be targeted for future solar generation. These locations a e not shown on the solar generation maps, yet are considered "preferred locations" y the RRPC. These suggested preferred locations a e merely a partial li t and it is anticip ted that municipalities will add to the following list:

Impervious Surfaces / Rooftops / Former landfill sites / Brownfields sites with Environmental Site Assessment / Earth resource extraction sites (sand pits, gravel pits, rock quarries) / Surface parking lots / Impervious areas within Industrial Parks

These sites are typically underutili ed (e.g., former land-fill si es, brownfield si es, and earth resource extraction sites) or are already heavily developed (e.g., roo ops and parking lots). Solar siting should be priori ed in these locations. The e currently is a lack of geographic data that accurately shows parking lots, former landfills, xisting and abandoned quarries and potential b ownfield lo ations in the region. RRPC is acti ely working to develop this data to help provide additional guidance or future development of solar facilities

In the Rutland Region, solar generation is the preferred method of renewable generation. Solar will have to meet generation levels higher than the targets set by the LEAP model to make up for the expected lack of hydro and wind generation facilities in the region. However, the generation targets remain feasible. The development of other types of renewable generation (e.g., wind, hydro, biomass) is also possible in the region, and the regional generation maps in this section provide guidance on how those types of renewable energy generatio facilities should be deployed in the region.

The maps along with accompanying statements and analyses provide comprehensive and clear directions with direction RRPC's regional land use policies on renewable energy generation

RRPC supports all kinds and scales of renewable energy generation; the only exception being industrial scale wind facilities. The reason for excepting industrial wind is because it generally does not conform with regional land use constraints in low density development designated areas in the regional plan and the region's Future Land Use map that discourage ridgetop and steep slope development. In addition, many Rutland Region municipal plans prohibit development in high elevations

The Rutland Region has more than enough land to meet its 2050 target for renewable energy generation - even a er subtracting the acreage included in the Regional Known and Possible Constraints- Current Use and Additional Conserved/ Protected Areas.

Using the most conservati e calculation for acreage needed per MW, 60 acres per MW, the Rutland Region needs 17,010 acres with Prime and Secondary Solar and Wind resources to meet its target. Even if all 169,173 acres in Current Use and 176,354 acres in Additio al Conserved/Protected Areas in the region are in Prime or Secondary Solar and Wind resource areas (which is not likely), the region still has 185,657 acres remaining in Prime and Secondary resources for potential generation a er deducting for the Regional Constraints.

A er adding the 14,372 acres of impervious surfaces in the region (the state's Preferred Areas), there are 200,029 acres with solar and wind potenti l. This is more than 11 times more than what is needed to meet the regional target.

The numbers are even more favorable for the region meeting its target considering that the acreage estim te for Current Use is infl ted because it includes data already accounted for in the state's Possible Constraints layer for prime, state and locally important soils. At this point, there is not a way to separate the state's Possible Constraints layer from that for all Current Use lands.

Also, even though the region considers utilit -scale wind as unsuitable, the acreage numbers for Prime and Secondary Wind include 30-meter hub heights which means the data accommodate residential and commercial-scale wind projects. As mentioned earlier, since the region anticip tes that smaller-scale solar and wind, residential and commercial, are going to dominate the region's renewable generation in the coming decades, this means much less acreage will be needed to meet the regional target than indicated by the data in the preceding figu e. The maps along with accompanying statements and analyses provide comprehensive and clear direction

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Constraints

Statewide Constraints

Known Constraints

These are high priority constraints that limit where energy can be generated. Energy generation facilities are not very likely to be developed in Known Constraints areas due to the presence of natural resources that are regulated at the federal, state or local level. These include: Vernal Pools,DEC River Corridors,FEMA Floodways, State-significant Natural Communities and Rare, Threatened, and Endangered Species, National Wilderness Areas, Class 1 and Class 2 Wetlands. Accordingly, these constraints have been removed from the raw resource potential mapping layers. Site-specific study is required to ascertain whether one of the mapped constraints truly exists on the site and some sites not captured by the Known Constraints mapping may have such high-priority constraints, depending on the results of site-specific tudy.

Possible Constraints

These are lower priority constraints that may limit where energy can be generated. Possible constraints can impact the si ng process for generation facilities, and should always be considered in planning for these facilities, but do not necessarily preclude placement in corresponding areas. Possible Constraints can include: Agricultural soils (prime farmland, additional farmland of statewide importance, and additional farmland of local importance), Hydric Soils and Act 250 Ag Soil Mitigation Areas, FEMA Special Flood Hazard Areas, Protected Lands (State fee lands and private conservation lands), Deer Wintering Areas, ANR's Vermont Conservation Design Highest Priority Forest Blocks (Habitat Blocks 9 & 10). Site-specific solutions are o en possible when one of these conditions exists. Site-specific study is required to ascertain whether one of the mapped constraints truly exists on the site and some sites not captured by the Possible Constraints mapping may have such lower priority constraints, depending on the results of site-specific tudy.

Regional Constraints

The PSD has set a much lower target for wind generation than for solar generation in the region. The generation targets call for 27 to 50 MW (up to 130,000 MWh) of wind generation by 2050. Wind potential at wind "hub" heights on 30 meters, 50 meters, and 70 meters have been regionally mapped. Smaller, net-metering scale wind generation may be possible in the region at lower elevations; RRPC supports this scale of wind generatio . RRPC does not support the construction of industrial scale wind generation facilities within the region.

The regional wind resource maps show wind generation areas with prime or secondary wind potential. These areas shown are either on prominent ridgelines or conserved lands. Discouraging wind energy development in these areas is consistent with existing language in the Rutland Regional Plan (p. 29). "Areas shown as "development-constrained" have signifi ant limitations upon current or future development because of conservation easements, public ownership, or severe natural limitations. These include lands owned or overseen by the National Forest Service, the State of Vermont, or land trusts, as well as large tracts of land that are on slopes over 25% grade or are wetlands. For the future, conservation of the natural landscape and careful management of lands is sought for these areas.

This policy for industrial wind is consistent with the Rutland Regional plan and development in Constrained and Low-Density Development areas. RRPC is promoting the use of residential and commercial wind in high and medium density development areas. If the region cannot meet the 27-50 MW wind generation target with residential and commercial projects, the RRPC may need to plan for additional generation from other renewable sources, most likely solar and biomass.

Across Vermont, concerns have been raised regarding the lack of standards for large-scale wind generation facilities about sound levels, aesthetics, surface water degradation, and the "flic er e ect" (caused by moving turbine arms and the sun).

Known Constraints Areas

RRPC proposes that additional conserved and protected lands in the region be included as part of the regional known constraints. These additional areas include state forests, state parks, town/city forests, historical parks, the Appalachian Trail Corridor, wildlife management areas, stream bank conserved areas, and the Green Mountain National Forest. The region considers these lands just as valuable as natural and scenic resources as are the state's Protected Lands.

Possible Constraints Areas

Use Value (Current Use) Parcels: RRPC recommends that agricultural and forestry lands be included as a Possible Constraint. This would ensure that all parcels now in agricultural or silvicultural production and used for long-term food or wood production are included as part of the state's Possible Constraints. A working landscape is a high priority for land use and development in Vermont and meets several of the goals of 24 V.S.A. § 4302.

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Most of the areas shown on the regional wind resource map are either on prominent ridgelines or conserved lands. Discouraging wind energy development in these areas is consistent with existing language for Constrained and Low-Density Development areas in the Rutland Regional Plan: "Areas shown as "development-constrained" have signifi ant limitation upon current or future development because of conservation easements, public ownership, or severe natural limitations. These include lands owned or overseen by the National Forest Service, the State of Vermont, or land trusts, as well as large tracts of land that are on slopes over 25% grade or are wetlands. For the future, conservation of the natural landscape and careful management of lands is sought for these areas. Development should remain extremely limited."

If the region cannot meet its 27-50 MW wind generation target with residential and commercial projects, the RRPC may need to plan for additional eneration f om other renewable sources, most likely solar and biomass.

How to Use the Resource Maps

The energy resource maps, and the corresponding data, should be used to inform energy planning e orts by municipalities and regions. They may also be used for conceptual planning or initial site identi ation by those interested in developing renewable energy infrastructure. However, they should NOT take the place of site-specific investi ation for a proposed facility, and should therefore not be thought of as "siting ma s."

Another key element of the Resource Maps is the location of electric grid infrastructure, including three-phase and other high-capacity distribution lines. These are shown on each of the resource maps. The location of transmission and distribution infrastructure was not specifi ally factored into the mapping analysis or the development of energy generation goals at the regional scale. However, grid infrastructure location and capacity will play a vital role in determining the economic feasibility and tim table for development of a certain site for a renewable energy generation acility.

For more detailed information on grid infrastructure and capacity, please refer to Green Mountain Power's "Solar Map" which is an online interacti e GIS-based map that shows the specific apacity of each section of the utili 's grid.

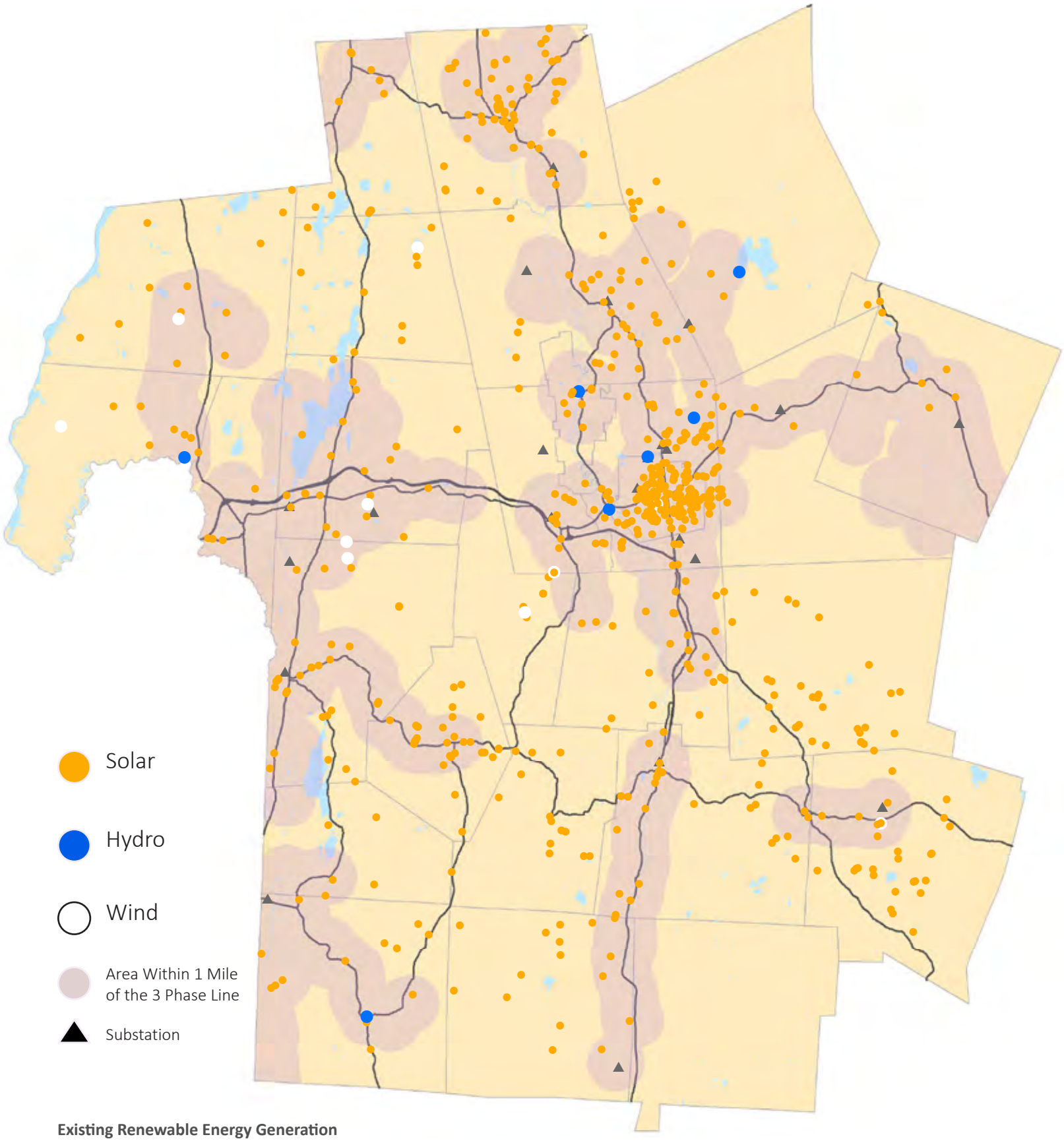
The renewable energy resource maps illustrate the guidelines considered when determining appropriate locations for these facilities. These maps and guidelines can be used to evaluate preferred locations for generation around the region, to sati fy Act 174 mapping requirements for municipal and regional plans, and to provide input during Public Utility Commission regulatory (Section 248) proceedings. Municipalities are encouraged to reference renewable energy resource maps for their use and to adopt and modify the guidelines based on local concerns and opportunities. These maps are not to be used by developers to claim "substantial d ference" for their projects.

Regional Renewable Energy Potentia

Total Available Acres	590,858
Acres suitable for Solar (Prime and Secondary)	108,540
Acres suitable for Wind (Prime and Secondary)	422,644
Acres Suitable for both Solar and Wind (Prime and Secondary)	531,184
Acres Suitable both Solar and Wind (Prime and Secondary, A er Deducting rotected and Conserved Lands)	185,657
Acres Suitable for both Solar and Wind (Prime and Secondary A er Deducting rotected /Conserved Lands and Adding Impervious Areas)	200,029
Acres Needed to Meet Target: 17,010	17,010
Suffici t Land to meet Target?	**Yes**



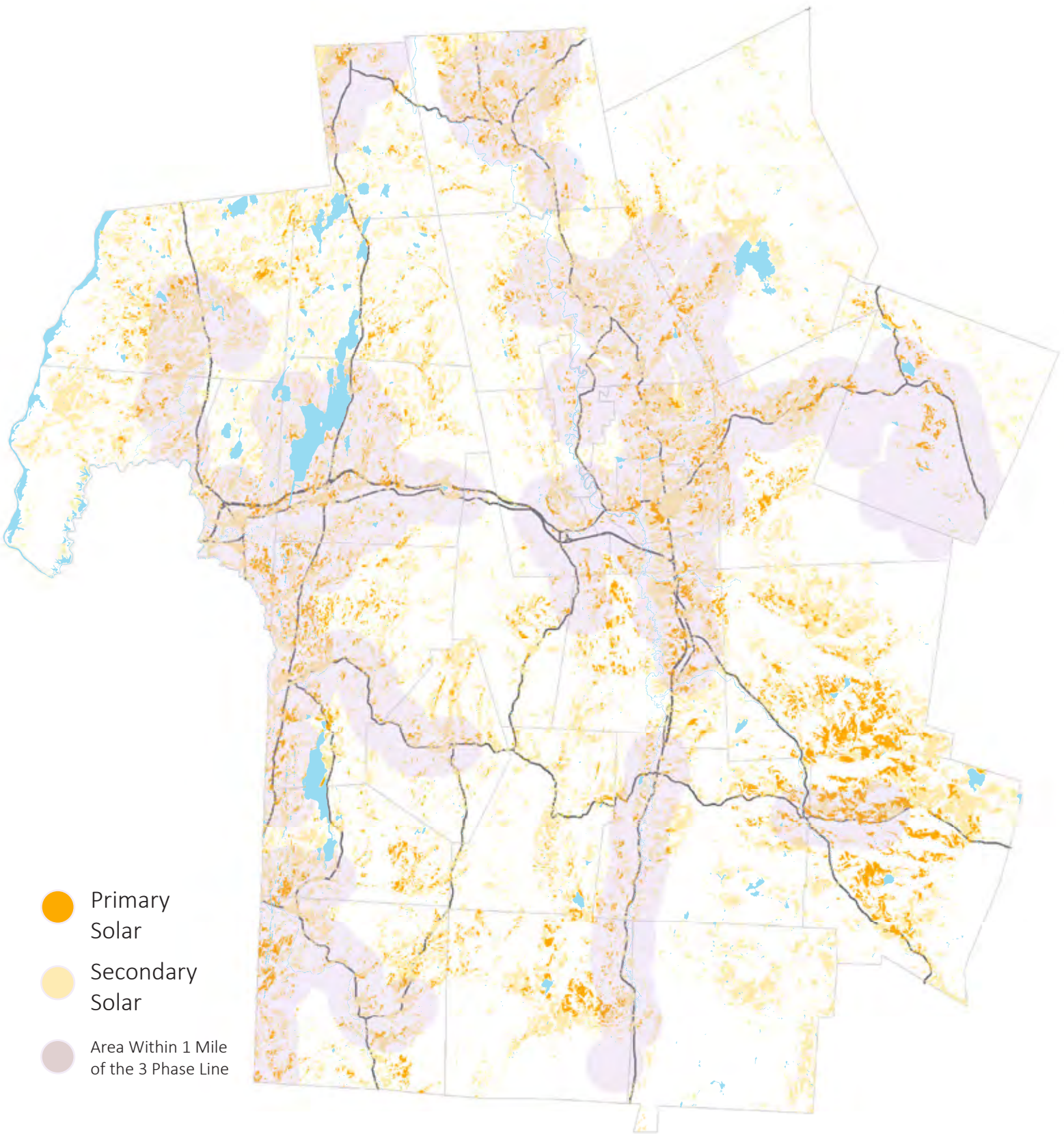
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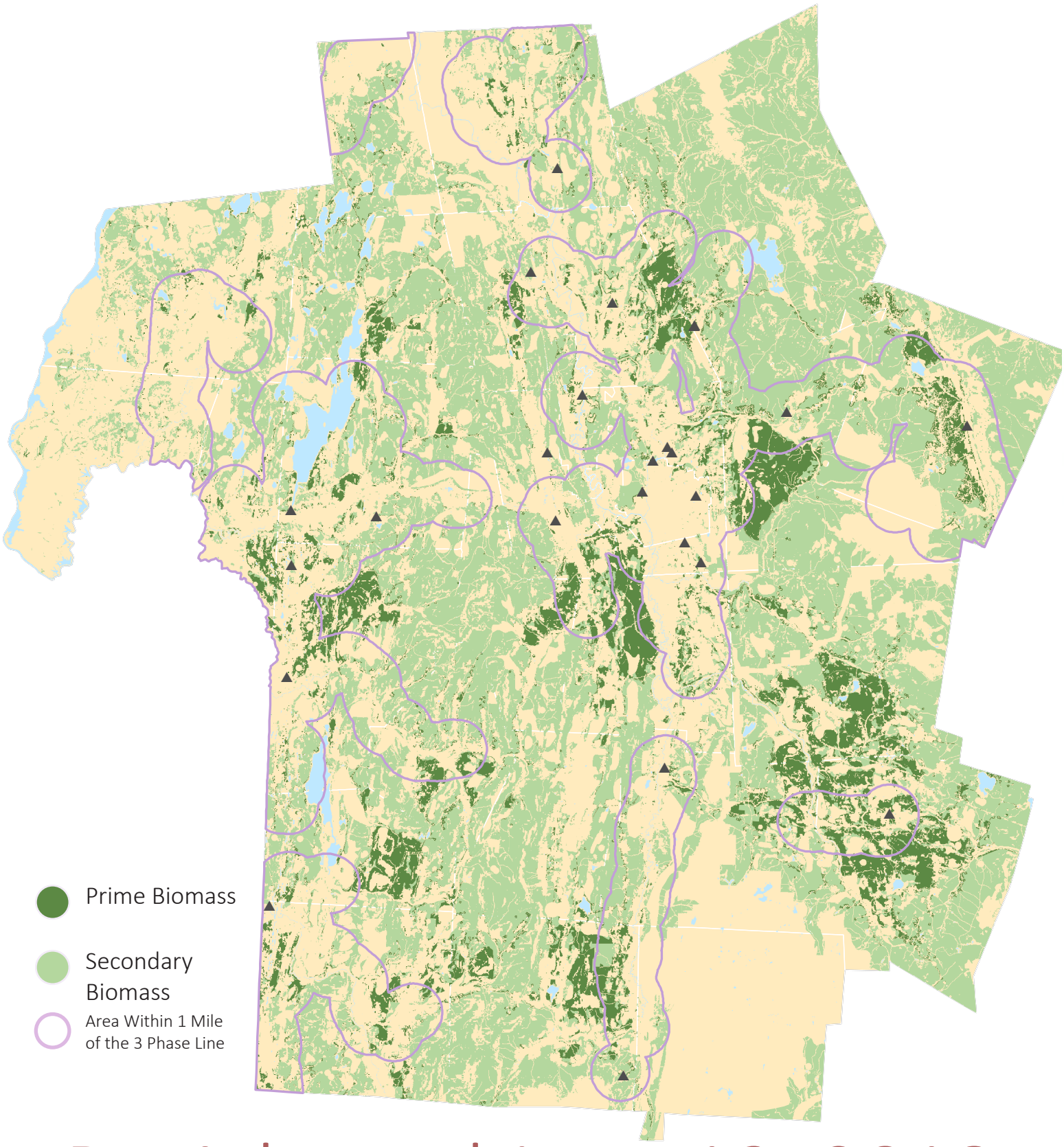
Existing Renewable Energy Generation

Sites where there is renewable energy generation in the region. This map is based on data in the VEAN Community Energy Dashboard which reflects all renewable projects that have received Certi ates of Public Good.

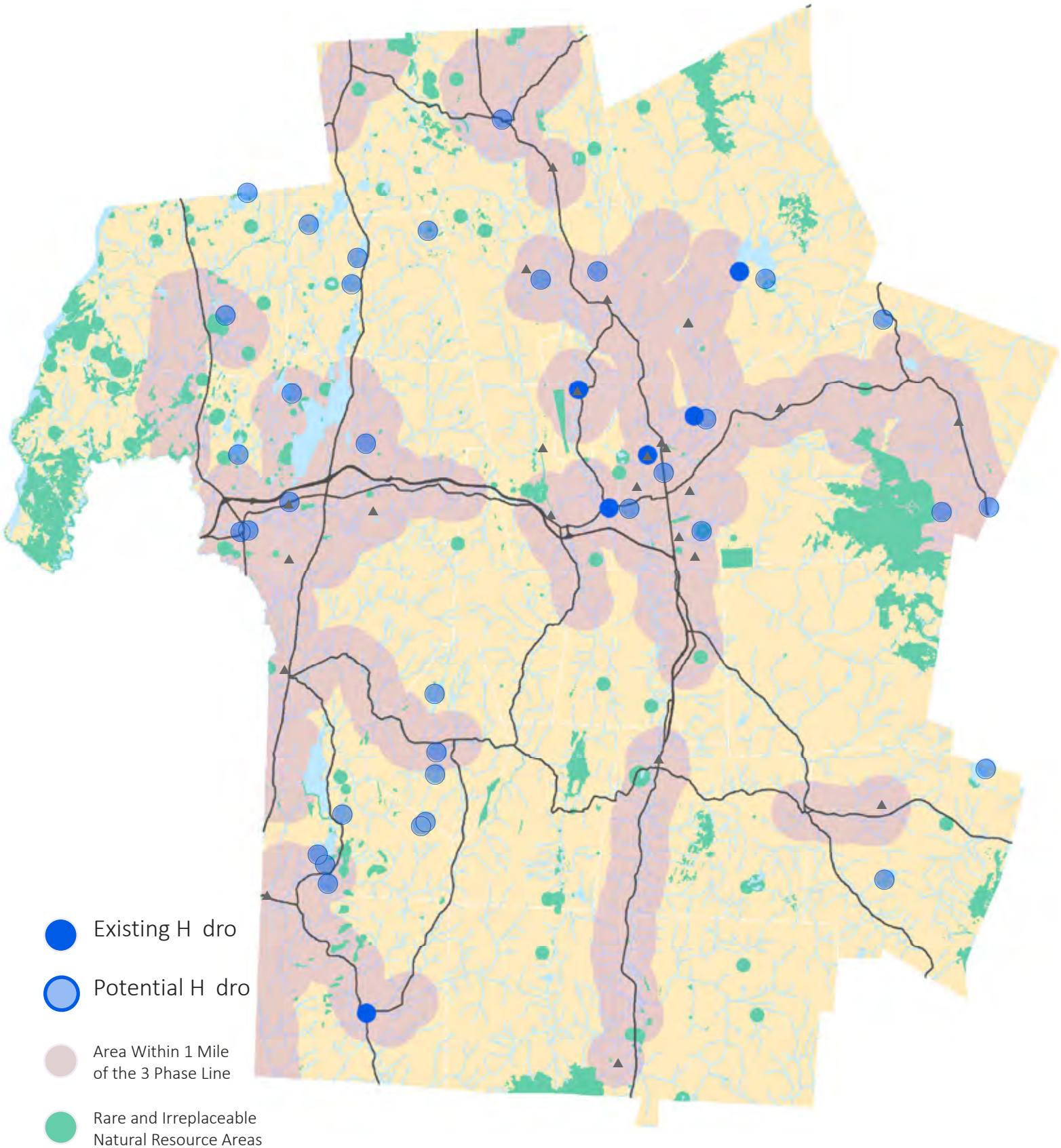
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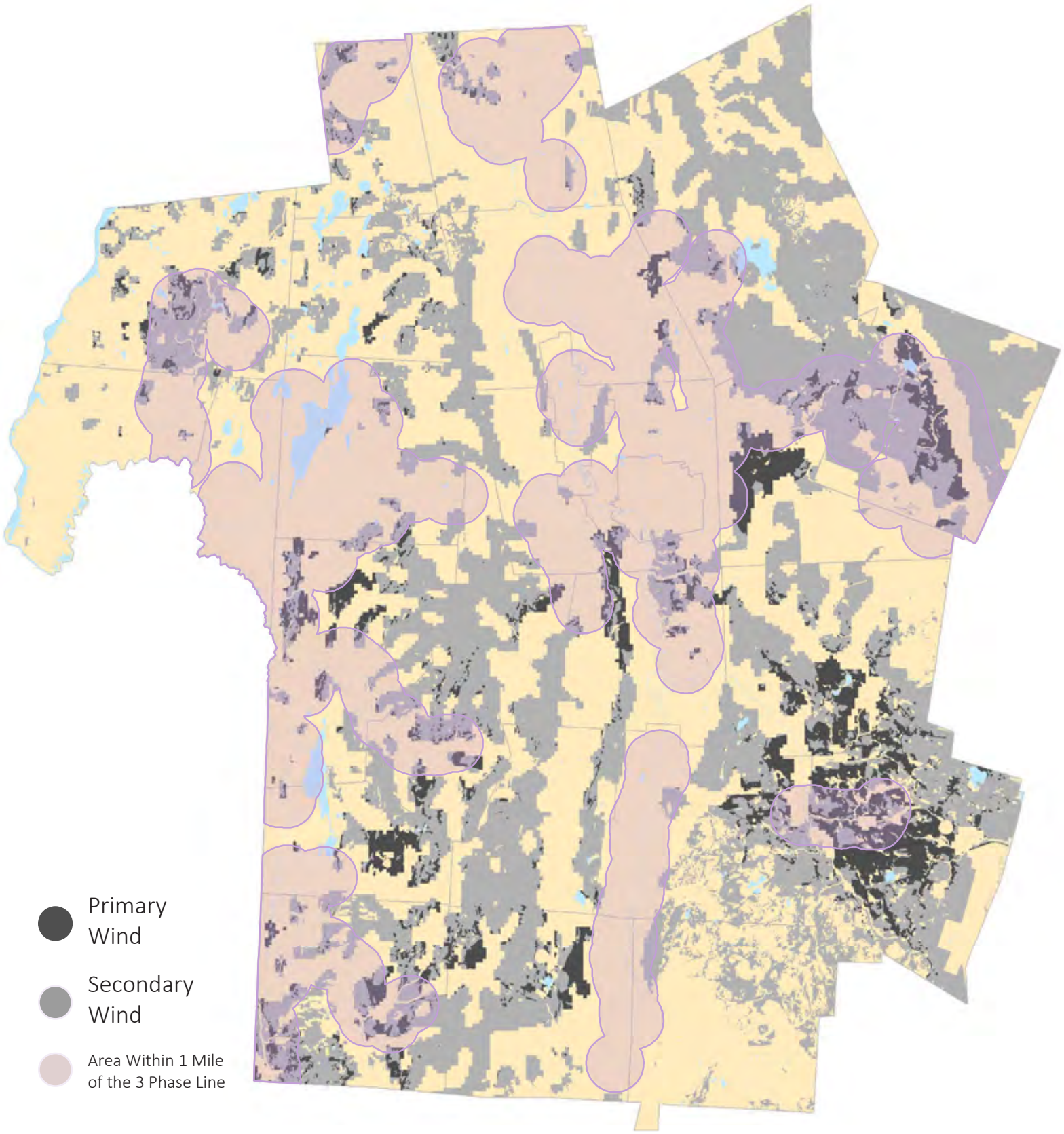
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Additional egional and Community Standards for Energy Facility Siting and D velopment

To carry the most authority in a Public Utility Commission (PUC) p oceeding, a municipal or regional plan must be clear, specific, and onsistent in expressing community standards. A plan must be unambiguous on stating a ommunity's position on the d velopment of energy facilities. A ollaborati e approach shall be used to ensure there is a thoughtful pla - ning process that includes input from the region and the municipality and encourages developers and utilities o involve regional and municipal officials as early as possibl

The following sections l y out specific tandards for particular types of ene gy transmission and generation acilities. Where a new generation acility requires a new transmission facility, including electrical substations, both the eneration and transmission standards shall apply. The standards below are not the exclusive standards and are intended to apply along with policies elsewhere in the Rutland Regional Plan.

All Transmission and Generation acilities

1. The Rutland Regional Plan requires facilities o conform to all policies stated throughout the Plan.
2. All facilities shall onform to local, state and federal regulations
3. Every facility above 10 kW shall specify an action plan and gua anteed funding source for decommissioning to ensure the site is safe, stable, and free of structures and hazardous materials.
4. Road access to the facility shall not contribute to unsafe conditions or the general public.
5. Light pollution is minimi ed to every extent possible. Non-criti al outdoor lighting is ac ated by motion-senso s or on-site personnel. Light fi tures are shielded down to minimize light trespass and upward glare or glow. Lighting or air safety shall be radar acti ated.
6. Every facility, with the exception of wind turbines, shall be designed and onstructed to meet the audible noise regulation of the municipality; if the municipality has no noise tandard, the facility shall not exceed daytime l vels of 40 dBA Lmax and nighttime vels of 35 dBA Lmax, as measured at the property line.
7. No facility shall create conditions th t reduce or interfere with television, radio, radar, or other communication signals, including public safety communication ystems.
8. Every facility of 200 kW or greater generation apacity, and every transmission substation acility, shall prominently display 24-hour emergency contact information and file s e plans and emergency response plans with the fi e departments serving the location.
9. Facility construction and enovation is onsistent with historic preservation guidelines published y the Secretary of the Interior and the Vermont Division for Historic Preservation
10. Any proposed facility shall comply with the plan and bylaws of the municipality where it is to be located.
11. Any proposed facility shall consider the cumulati e impact of land use aesthetics, p operty values, forest fragmentation and landowner compensation or multiple ene gy generation and t ansmission facilities
12. Any proposed facility should avoid state-designated primary agricultural soils unless site-specific onditions a e not favorable for agricultural activitie
13. Any proposed facility should avoid forested sites and shall not remove forest cover equaling no more than 15% of the project footprint.

Solar Electric Facilities

Photovoltaic and other solar electricity facilities shall be designed, onstructed, and operated such that:
1. The facility is located to make use of a developed or existing tructure or brownfield si e, including parcels contaminated or perceived to be contaminated that otherwise hinders redevelopment.
2. The facility is designed to locate inverters and support structures away from existing esidences, wetlands, special flood areas, and slopes.
3. The facility is designed to reduce visibilities f om the road and from neighbors with setbacks and screening.

Hydropower Facilities

Hydropower facilities used o generate electricity shall be designed, constructed, and operated such that:
1. The facility makes use of an existing impoundme t or watercourse structure to generate electricity without changing the water quality, water temperature, upstream and downstream habitat of the facility. Vermont Agency of Natural Resources regulations or stream fl w shall apply. The Plan recognizes the viability and importance of utilizing xisting dams, including upgrading outdated equipment to maximize generation.

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2. The facility does not increase flood ha ard to public or private structures or public infrastructure.
3. The facility does not impair or inconvenience recreational use s. Any portage is well marked, as short as possible, and features stable shoreline areas for landing and launching.
4. The facility is compliant with guidelines of the Low Impact Hydro Institu e to protect fish habi at and migration.

Biomass Facilities

Facilities th t burn woody biomass to generate electricity shall be designed, constructed, and operated such that:
1. Biomass inputs (fuel) are sourced in accordance with a wri en procurement standard approved by the Vermont Agency of Natural Resources. If a standard is not available, a majority of fuel shall be sourced from lands managed under the Use Value Assessment program; or from harvests monitored by a professional forester.
2. The facility is designed and operated to utili e waste heat for an integral purpose, such as district heating of multipl buildings; manufacturing or processing; or agricultural production
3. The facility shall be designed to avoid traffic t ough residential a eas, provide safe access onto local or state highways, and not contribute to unreasonable congestion on a ea highways.
4. The facility shall use the least amount possible of water withdrawal and discharge by using latest technology, such as dry cooling.
5. The water that is discharged by the facility shall not increase the nutrient load on waterbodies in the area.
6. The use of wood waste shall be encouraged provided it does not contain toxic materials.
7. The facility shall provide a lifecycle analysis that includes all fossil fuel consumption used or harvesting and trucking
8. The facility shall be located to minimize air pollution impacts d wnwind.

Wind Facilities

Facilities th t generate electricity using the force of wind and designed with generation apacity of 5 kW or greater shall be designed, constructed, and operated such that:
1. Facility components, including towers, shall be located to minimize component visibility from beyond project boundaries.
2. Since wind turbines have a unique sound profile th t is more annoying at lower decibel levels, facilities shall not xceed 40 dBA Lmax daytime/ 35 d A Lmax nighttime meas ed from the property line.

Electrical Transmission Facilities:

Electrical transmission facilities in xcess of 30 kV and related substations shall be designed, onstructed, and operated such that:
1. Existing rig ts-of-way shall be used by new facilities. The need or a new facility beyond these corridors shall be based on the PUC review of system need, reliability, and economic benefit
2. Any transmission line, substation or other tructure is located away from special flood ha ard areas and wetlands.
3. Any upgrade to 3-Phase requires a permit. From the Public Service Board.
4. When electrical transmission lines are less than 50 feet from residences, they shall be re-routed or buried.
5. Whenever possible, transmission lines will be reconductored instead of widening existing right of way and adding another set of poles and wires.

Natural Gas Facilities

Fixed natural gas transmission facilities shall be designed, onstructed, and operated such that:
1. New or expanded facilities shall use xisting utility or ansportation rig ts-of-way.
2. New or expanded facilities shall se ve existing d velopment within 2.0 miles of the transmission route—including all downtowns and village centers as designated by the Agency of Commerce and Community Development.
3. Any gate station, ompressor facility, or other above-ground structure shall comply with the plan and bylaws of the municipality.
4. Any transmission trunk line (including the pipeline) shall be set back at least 150 feet from any habitable structure (at the time of p tition) t t is not related to the facility. The owner of the structure within this setback distance may waive requirements for their property in writing
5. Applicants shall develop a methodology for addressing landowner issues to avoid the use of eminent domain or burdening landowners with legal costs associated with the taking of private property for the public good.

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Energy Strategies to Achieve Regional Targets: Conservation and Gene atio

To meet the 90x50 goal, LEAP establishes the following targets:

Reduce overall energy consumption in the Rutland Region by 32%, with a third of that coming from conservation measures.

For residential heating, virtually eliminate use of fossil fuels by switching to electric (heat pumps) and biodiesel.

For transportation, sharply curtail use of gasoline and other fossil fuels and replace with biodiesel and electricity.

RRPC adopts these statements of policy to demonstrate its commitment to meeting state and regional energy goals and to satisfy the determination standards established by the Vermont Department of Public Service:

Statements of Policy

RRPC supports conservation e orts and the effici t use of energy across the transportation, heating and electricity sectors.

RRPC supports the reduction of in-region transportation energy demand, reduction of single-occupancy vehicle use, and the transition to renewable and lower-emission energy sources for transportation

RRPC supports pa erns and densities of concentrated development that result in the conservation of ene gy.

RRPC supports the development and siting of renewable energy resources in the Rutland Region that are in conformance with the goals, strategies, and standards outlined in this plan.

The plan up to this point reported modeling for the reduction of energy demand and the increased use of renewable fuels across three sectors – thermal, transportation and electricity – in the region. The following identifie actions specific to the Rutland Region. For these actions to succeed, there will need to be collaboration among local communities, regional organizations such as RRPC, private businesses, and state agencies.

Conservation Strategies

To help with the transition from fossil fuel use to renewable energy sources for heatin , the modeling done by LEAP developed several di erent pathways. In the case of the residential sector, it is through electrifi ation. For the industrial and commercial sectors, it is with an increased use of biodiesel, wood and electricity.

The availability of alternati e, effici t heating sources is key to ensuring greater thermal efficienc in the region. It is anticip ted that cold climate air-source heat pumps will be an effici t alternati e for residential and some commercial buildings. The RRPC will encourage municipalities to weatherize existing structures in the region's downtowns and village centers. These areas contain more residential and commercial units and include a very high percentage of rental housing, The RRPC supports e orts to reduce the costs of converting to heat pump systems and supports assistance programs to make such fuel-switching more a ordable for the region's residents.

Improving the energy efficienc of newly constructed structures can be addressed through regulatory means. Efficienc Vermont recently adopted a "stretch" code for commercial and residential structures in Vermont. A stretch code has higher energy standards than the currently required Residential Building Energy Standards and the Commercial Building Energy Standards. Also, some municipalities may be interested in adopting a building code to increase energy efficiencies There is potential for geothermal heatin , also known as ground source heat pumps. Several facilities in the region currently use biomass heatin , but there is only one district biomass heating facility in the region (where a central biomass facility heats several structures).

The modeling done by LEAP developed several di erent pathways. In the case of the residential sector, it is through weatherization and the use of electricity generated from renewable sources. For the industrial and commercial sectors, it is with an increased use of biodiesel, wood and electricity.

Thermal Goal

To reduce annual regional fuel needs and fuel bills for heating structures, and facilitate the transition from non-renewable sources to renewable fuel sources.

Thermal Implementation Actions

Strategize with NeighborWorks of Western Vermont Heat Squad and BROC-Community Action in Southwestern Vermont about ways to increase the effectiveness of the weatherization programs in the region.

In partnership with municipalities, utilities and other regional stakeholders, educate homeowners, including owners of rental housing, about weatherization and funding opportunities.

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Study and assess the feasibility of biomass district heating and/or combined heat and power systems in the region, particularly in areas of the region with large institutions, such as hospitals and colleges.

Provide technical assistance to municipalities to revise bylaws to allow and encourage the location of forestry and biomass-related industries in appropriate locations.

Provide outreach to municipal officials and contractors regarding the use and enforcement of residential and commercial building energy standards for all new construction, including new stretch codes.

Encourage buildings and houses to incorporate energy-efficient design and orientation.

Transportation and Land Use Strategies

Transportation is an area that RRPC is deeply involved in and one that will greatly influence the region's ability to meet the targets set by the LEAP model. State statute (Title 24 Chapter 117) enables the RRPC to have a considerable influence on land use and transportation issues in the region, especially in the Act 250 process and through the implementation of the Transportation Planning Initi ti e (TPI), a program through which the Vermont Agency of Transportation coordinates policy development and planning with regional planning commissions.

Transportation has a major impact on three energy issues of the future: compact development, rail use, and fuel type. Compact development located in or adjacent to existing downtowns or villages has the potential to signifi antly decrease regional transporta on energy demand and costs by reducing vehicle miles traveled (VMT) and potentially increasing the use of public transportation. Compact development also creates infrastructure efficienc and requires fewer tax base dollars to provide and maintain roads, water and sewer infrastructure. Many studies have found that increased walkability is associated with higher retail rents, values and sales.

Based on historical development trends, RRPC expects there will be continued growth in rural residential areas that does not meet the definition of ompact development.

The survival of many of these smaller rural towns depends on its residents commuting to jobs in other towns or urban areas. RRPC is dedicated to supporting agriculture and forestry working lands, and telecommuting i frastruture.

As detailed in the Rutland Regional Plan (p 27), the region's land use goals demonstrate a commitment to compact village centers surrounded by rural working lands:

To maintain and improve the accessibility, livability and viability of existing built-up areas. To protect the character of rural areas and resource areas by discouraging scattered development and incompatible land uses.

To promote competitive and sustainable agricultural, forestry, mineral extraction, and other practices that make use of the Region's natural resources.

To encourage and facilitate development in existing and future growth centers appropriate to the scale of the centers.

To promote intensive land uses and development in areas where adequate public services, facilities, and employment centers are available. To protect the natural environment and its economic, ecological, sociological, psychological and aesthetic benefits.

Specifi ally, the state has a long-standing initi ti e to improve the infrastructure along the Western Corridor route between Burlington, Rutland, Bennington and Hoosick Junc on. Also, although transitioning from fossil fuels to renewable, cleaner sources of energy will lead to more effici t energy use, it entails some infrastructure challenges to accommodate the switch to renewable fuels, such as ensuring there's enough electric vehicle charging stations in talled for electric vehicles.

The increasing use of rail in the region, by both passengers and freight services, will also decrease energy demand and costs.

Transportation and Land Use Goal

Decrease vehicle miles traveled (VMT) per capita by reducing the share of single occupancy vehicle commute trips by 20%, doubling the share of pedestrian and bicycle commute trips, increasing public transit ridership by 110% by 2050, and encouraging development in or near existing downtowns and villages.

Quadruple region-based passenger rail trips (21,126 departures and arrivals), complete the Western Corridor passenger rail route, and double rail freight tonnage in the region which is now 5% of all freight tonnage.

Increase the share of renewable energy in transportation to 10% by 2025 and to 80% by 2050 by increasing the use of renewable and less carbon intensive fuels, such as electricity, biofuels, and compressed natural gas.

Make compact development a priority by making

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communities walkable, encouraging a connected street network, decreasing vehicle dependence, and supporting socially vibrant areas through architecture and urban design.

Transportation and Land Use Action Items

Compact Mixed-Use Centers

Work with municipalities to support redevelopment of centers by assisting with the creations of plans for mixed-use development, conducting brownfields assessments, and educating on the benefits of Downtown and Village Center Designation.

Assist with local planning commissions in amending land use regulations and plan infrastructure improvements that support mixed-use centers.

Advocate for local plans and regulations that promote land conservation and maintenance of the working landscape (farms, forestry, and supporting uses) over low-density residential development in rural areas. Support programs that provide incentives to maintain economically viable rural open lands.

Telecommuting

Encourage telecommuting and broadband access to reduce transportation energy needs. In some areas of the Rutland Region some of the fastest internet speeds in the state are available through high speed fiber optic connections. This expands opportunities for residents to work at home, not have to commute, and not having to live in a growth center area.

Safe Walking & Biking

Work with municipal officials and staff to develop an awareness of complete street principles that will be reflected in new town and village transportation projects.

Provide training and sample regulatory language to include in municipal bylaws to ensure that site plan reviews include provisions for requiring features that support pedestrian and bicycle mobility, access, and safety.

Participate in Act 250 land use hearings and request that adequate accommodations be made for bicycle, pedestrian, and public transportation development plans and permit conditions.

Assist municipalities in redesigning streets to improve access for pedestrians and bicycles and will work to obtain funding to implement those designs.

Identify specific needs for pedestrian and bicycle improvements in the region, including sidewalks, crosswalks, multi-use pathways, and other projects, especially focusing on projects that close gaps in the transportation network and provide access to key destinations in and around town and village centers.

Public Transportation & Carpooling

Consult with the Marble Valley Regional Transit and determine how routes promoting commuting services and different work shifts might continue to operate in the region.

Work with towns and business groups to promote and provide information about carpooling. Information about park and ride lots should be provided to employees as well.

Electric Vehicle Use

Work with the Drive Electric Vermont program to publicize the merits of EV ownership and use to residents. Events where people can see and operate an EV would be particularly effective, especially when combined with outreach through local newspapers and public access television.

Assist municipalities in supporting public awareness and acceptance of EVs by replacing some of their vehicles with EVs and by providing charging stations at prominent locations in municipal parking lots.

Include electric-assist bicycles in any outreach efforts on EVs and events showcasing electric vehicles. Electric-assist bikes are a low cost and highly efficient transportation option for some people.

Passenger & Freight Rail

Work with Marble Valley Public Transit and Amtrak on re-establishing bus shuttle services and routes to the Rutland Amtrak station.

Work with municipalities and state agencies to support projects that maintain the integrity of the existing main rail lines through the region and preserve rail access to important industrial sites along rail spurs. Projects that would help facilitate efficient transfers of freight between rail and truck, including development of a local trans-loading facility, should be supported.

Work with municipalities and state agencies to extend passenger rail service on the Western Corridor route.

Liquid Biofuels

Support the expansion of oil seed crop production in the region, with local manufacture of vegetable oils and biodiesel.

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Use of liquid biofuels to power vehicles and equipment used in regional agricultural and forestry operations should be strongly encouraged. Assist in efforts to obtain funding and expand related business opportunities.

Support municipalities in purchasing vehicles and heavy equipment that can use biodiesel and in purchasing biodiesel from local suppliers when available.

Electricity Strategies

To meet its energy goals, the Rutland Region will rely much more heavily on renewable energy delivered through electricity. This development of infrastructure to generate electricity from renewable resources must be consistent with the Rutland Region's goals to "protect the character of rural areas and resources areas by discouraging sca ered development and incompatible land uses" and to " protect the natural environment and its economic, ecological, sociological, psychological and aesthetic benefits Rutland Regional Plan, Future Use of Land, 2015, p. 27; and for "identi ying renewable energy development so as to not adversely impact wildlife and natural habitats", Rutland Regional Plan, Wildlife and Natural Habitats, 2015, p. 135.

Because of the expected increase in demand, largely from the transportation and thermal sectors, it will be necessary to conserve electricity, improve the efficienc with which electricity is delivered and used, and signifi antly increase the amount of electricity generated from renewable energy sources within the region.

The region will need to develop at least 387,962 MWh or approximately 285 MW of new generating capacity from solar, wind, biomass and hydro sources over the next 35 years. It's extremely important that these generating facilities be sited in locations with good access to the energy resources and close to load, while not adversely impacting important environmental or community resources.

Electricity Goal

Increase the renewable energy generation capacity in the region to include an additional 285 MW of new generating capacity from solar, small-scale wind, biomass and hydro.

Electricity Action Items

Assist municipalities into identifying preferred areas for development and siting of renewable energy generation facilities and, if requested, help in getting these sites qualified as net-metering preferred areas in the Public Service Department application process as needed.

Identify and map potential brownfield sites, gravel pits, quarries and other previously disturbed sites in the region that may be appropriate for future renewable energy generation facilities.

Identify and utilize all roof-tops and on-site locations in the region that have solar potential.

Work with municipalities to identify areas that are unsuitable for siting renewable energy generation facilities or specific scales of renewable energy generation facilities.

Identify opportunities to increase production at existing hydroelectric facilities through implementation of advanced operational controls, more efficient equipment, and/or conservation flow turbines at the dam.

Work with municipalities to set up microgrids to connect homes, businesses, and other buildings to their own central power sources. These microgrids can function as power islands in case of emergencies or power outages and can lower power costs for users.

The region will need to develop at least 387,962 MWh or approximately 285 MW of new generating capacity from solar, wind, biomass and hydro sources over the next 35 years. It is extremely important that these generating facilities be sited in locations with good access to the energy resources and close to load, while not adversely impacting important environmental or community resources.

Implementation easibility

This plan was created by the Rutland Regional Planning Commission, in partnership with The Vermont Department of Public Service and The Vermont Energy Investment Corporation. Public input was sought through a series of public meetin s and presentations during the development of this plan.

RRPC developed goals, strategies and implementation actions for conservation, consumption and generation that will help the Rutland Region achieve the 90x50 goal for renewable energy. There are issues with developing wind and hydro in the region. Solar generation is the preferred method of renewable generation in the region. Because of that, solar and perhaps biomass will have to meet generation levels higher than the targets set by the LEAP model.

The Regional Plan Implementation Timeline can be accessed at: **Rutland RPC Vision**

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Implementation Challen es

Land use pa erns and the desire for a rural lifestyle

Many residents of the Rutland Region live here because they enjoy living in a rural landscape rather than a compact community or village. The Region also enjoys some of the most extensive broadband internet availability in the state making it feasible for residents to live and work in a rural landscape. Many homes and roads to the south and east of Rutland City have access to the fastest service in the state – with speeds upwards to 900 Mbps for downloads and 900 Mbps for uploads. For these reasons, the Rutland Region may identi y di erent land use and transportation pa erns to meet its goals compared to more urban areas of the state that do not enjoy high speed fiber o tic i ternet service.

Baseload vs. intermi ent electricity

Solar and wind generation technologies create electricity intermi ently: when the sun is shining and when the wind is blowing. Unfortunately, the times when this kind of power is being generated does not always correspond to the times when electric demand is at its peak. "Baseload" electricity, or electricity that is available on demand, is needed to ensure that peak demand can be met at any time. Currently, baseload electricity is being generated by non-intermi ent sources, such as fossil fuel, nuclear, or hydro generation sources. Reaching the 90x50 goal will require alternati e technologies, such as more effici t and large-scale ba eries to enable renewable generation acilities o supply baseload electricity.

Grid limitation

The Vermont electrical grid was designed to have a one-way fl w of electricity. However, with the growth in renewable energy generation, the way in which electricity is generated has changed and it's no longer one-way. In some parts of the region, the grid may not be fully capable of accommodating renewable energy generatio facilities in every community. Public utilitie and Vermont Electric Power Company (VELCO) will need to increase the pace of system-wide upgrades. However, this will likely have an impact on ratepayers by increasing the cost of electricity.

Inclement weather

The region's weather may pose a challenge for an increased reliance on electricity for regional heating and transportation energy needs. Winter storms and high winds o en threaten the region's electrical distribution infrastructure. For households solely reliant on electric heat pumps and/or electric vehicles, downed power lines could impact the ability of some households in the region to provide heat or to have a means of transportation. Although this challenge may be alleviated by improved storage ba ery technology, it is likely that most households will need a secondary means of heating their homes. Other solutions to overcoming the challenge of inclement weather include creating grid redundancy, creating microgrids (girds that can disconnect and operate when the main grid is not functioning), and developing more accurate weather prediction tools such as VELCO's weather analytics tool.

Difficulty in veloping new hydro

It is di cult to develop new hydro power sources, even at exis ng dam sites, due to costs, licensing issues and environmental implications. Achieving the LEAP target of hydro genera on in the region may be difficul or even impossible.

Biofuels and ethanol

The LEAP targets are very reliant on biofuels and ethanol as energy sources for heavy vehicles, and signifi ant technological advances will be needed to make this transition. In addition, current biofuels and ethanol production requires considerable fossil fuel inputs. There also are major infrastructural challenges to creating a supply chain to distribute and sell biofuels in the region, or anywhere in the state. On the other hand, the manufacture of biofuels specifi ally may be an economic opportunity for local farmers.

Reliance on cord wood and biomass

The LEAP model depends heavily on biomass and wood use for residential, commercial and industrial for heat and electrical generation. Although the Rutland Region has the resources to provide these types of fuel, there is a question about the potential environmental impacts of increased reliance on wood, including increased greenhouse gas emissions.

Impacts on local energy companies

The changing energy landscape may have negati e impacts on local energy companies that find it difficul to fundamentally change their business models. The consequences may result in the inability for the region to access new, innovati e hea ng technologies or even the failure of these companies and a resulting loss of jobs in the region.

Lack of RBES and CBES outreach and enforcement

Although Efficienc Vermont has provided some outreach to local contractors and the public regarding the requirements of RBES and CBES, there is still a lack of knowledge about the programs. The state also lacks the ability to enforce the code.

Limits of regional jurisdictio

There are limits to how much RRPC can do to ensure the 90x50 goals are accomplished. Many of the changes that will be required will need to happen on a macro scale (federal or state policy) or on a micro scale (landowners and individual energy users). RRPC must be mindful of its limitations when implementing this plan.

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Chapter 17: Emergency Management

INTRODUCTION

Emergency management deals with all aspects of minimizing the effects of unexpected incidents in the Region. These can range from individual accidents and health emergencies to fires, burglaries, floods, traffic accidents, and intentional acts of terrorism or violence.

Emergency management includes four phases:

- Mitigation - effort to permanently reduce or eliminate long-term risk;
- Preparedness - development of plans to deal with emergencies and training of first responders, local officials, and the public;
- Response - management of the incident; and,
- Recovery - completion of a return to normalcy and rebuilding of damaged buildings and infrastructure.

Emergency management programs must align with all other forms of development in order to provide the services needed by individuals, businesses, and communities. This section of the *Regional Plan* is intended to identify key elements for continuing to provide services that meet the changing needs of the Rutland Region.

Emergency response capabilities are subject to many of the same forces that affect development. For example, as communities age, so do their volunteer responders. That, and similar trends, are reflected in the section below.

As noted in the State Hazard Mitigation Plan (2013), "Flooding is the most common recurring hazard event in the State of Vermont" (p. 4-7). The worst natural disaster in recent years came in August of 2011 from Tropical Storm Irene, which dropped up to 8 inches of rain in some areas of Rutland County and caused major damage to roads, businesses, homes and other infrastructure. Tropical Storm Irene served as a wakeup call for many state agencies as well as local communities, which has led to the improvement of emergency management in various ways.



DEFINITIONS

Mitigation: a sustained effort to permanently reduce or eliminate long-term risk to people and property from the effects of hazards that can reasonably be anticipated based upon past events.

CURRENT CONDITIONS

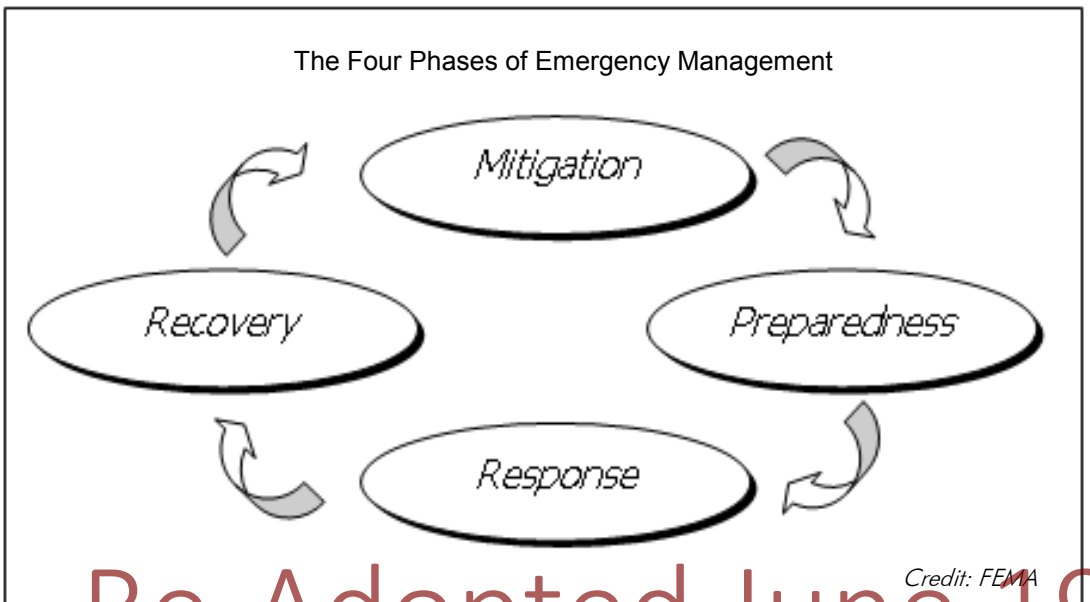
Mitigation

Mitigation forms the link between emergency management, infrastructure, and land use planning. Understanding that the creation of a Local Hazard Mitigation Plan improves a community's ability to



DEFINITIONS

Local Hazard Mitigation Plan: a document that identifies the hazards a community is most likely to face, analyzes the risk of damage to key buildings, roads and other public facilities, and outlines strategies the town could take to prevent or limit the amount of damage that would otherwise occur.



Credit: FEMA

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FAST FACT

Vermont's E-911 address system, introduced in 1996, allows fire, police, and rescue to locate homes in towns throughout the state using their odometers. Street numbers in rural areas are measured off by tenths of a mile.

lessen the financial, social, and environmental impacts stemming from possible disaster events, the Rutland Regional Planning Commission has worked with many towns in the Region to develop and adopt mitigation plans. Maintaining a FEMA-approved hazard-mitigation plan allows municipalities to access Federal Hazard Mitigation Assistance for mitigation projects, and helps increase towns' funding level from the State Emergency Relief and Assistance Fund (ERAF). The Rutland Region Hazard Mitigation Plan has also been updated and received FEMA approval in 2012.

During the mitigation planning process, communities have noted that many ongoing town activities can lessen damages from future disasters. For example, the adoption of road and bridge standards, source water protection plans, Town Plans and ordinances regulating development on steep slopes and floodplains ensure that public and private infrastructure is not placed in areas that are repeatedly damaged by disaster events. Additionally, improved preparedness is a form of advance mitigation.

Preparedness

Community-based and Region-wide organizations have undertaken a broad series of programs to enhance training, education, and preparedness among responders and the public at large.

All response organizations are engaged in ongoing local training for their membership – and at the regional and statewide levels.

All towns in the Region have developed and adopted Local Emergency Operations Plans (LEOPs) – lists of key personnel and facilities in the community. Some communities have also adopted full Emergency Operations Plans that spell out strategies for alerting the public of emergencies and identify the scope of responsibility for various departments.

These plans also identify potential emergency shelter locations. They include schools, town halls, granges, and other larger community buildings. In most cases, these shelters have been approved by the American Red Cross, allowing them to set up and manage the shelter in the event of an emergency. Emergency shelters and other critical facilities should always be located in non-hazardous areas, for instance outside of floodplains.

At a regional level, the Rutland Region Local Emergency Planning Committee (LEPC #2) has brought primary and secondary response organizations together to establish connections and agreements among agencies, develop regional emergency plans, and host training exercises. The LEPC helps to update local plans, host practice drills for local officials, undertakes communications studies, and helps identify and apply for equipment for first response organizations. See the case study on the following page.

The statewide E-911 program has been a tremendous asset in assisting with emergency preparedness and response. Initiated in the mid-1990s, the system has been adopted by virtually every community in the state, with a handful of exceptions.

Response

Emergency response in Rutland County is based primarily at the local level and relies heavily on mutual assistance between communities and organizations for large-scale incidents. There are essentially two levels of response.

Primary response is provided by the Region's fire department, law enforcement, and emergency medical services, with support from local road crews.

Fire Departments

A total of 25 fire departments are based in the Rutland Region. Rutland City is home to the largest and only paid department; the remaining 24 are volunteer organizations operating

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Case Study: Rutland Region LEPC

The Rutland Region Local Emergency Planning Committee (LEPC #2) has been in existence since the late 1980s.

The LEPC is not a response organization. Its primary objective is to provide resources and guidance to the Rutland Region through education, coordination and assistance in mitigation, preparedness, response and recovery planning for all hazards to assure public health and safety.

It has done so with a clear policy of encouraging participation by all organizations that feel they have a stake in emergency preparedness in Rutland County. In 2011, the LEPC won an Innovation Award from the National Association of Development Organizations for its mini-tabletop exercises which have been conducted throughout the Region.

The LEPC's success is due in large part to the individuals who have volunteered their time to help its mission. Below is a short list of the programs and projects undertaken by the LEPC in recent years:

- Completed a full update of the Rutland Region Emergency Management Guide, a resource and planning guide for the Region.
- Helped start a quarterly Emergency Management Directors and Coordinators Roundtable for the Region.
- Hosted multiple mini-tabletop exercises to discuss incident scenarios, such as a shooter scenario at Castleton State College and a natural gas leak scenario at the hospital.
- Co-sponsored hazardous materials reporting workshops for local businesses and facilities.





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FAST FACT

Emergency dispatch for Rutland County responders is handled through five primary sources:

- Vermont State Police (Rutland Barracks)
- Washington County (NY) Dispatch
- Rutland County Sheriff's Department
- Rutland City Police
- Rutland City Fire

throughout the Region. Most departments are members of the Rutland County Fire Mutual Aid Association and all provide back-up support to one another as needed.

Law Enforcement

Law enforcement is managed at several levels. Each community has an elected constable responsible, at a minimum, for local ordinance violations. Six communities have local police departments, although some only operate part-time. The Vermont State Police and Rutland County Sheriff's Department operate throughout the county. State game wardens and the Federal Bureau of Investigation also maintain offices and jurisdiction for their various services in the Region.

Emergency Medical Services

Emergency Medical Services are provided by a series of ambulance services, rescue squads, and first response squads. Twelve towns in the Region have rescue squads or first response squads which are localized and provide initial first aid in their communities. Regional Ambulance Service also serves twelve towns in the Region, and some local squads in and outside the region cover towns that do not have other services. All response agencies in the Region are members of Emergency Medical Services District #10.



Participants in the Vermont Rivers and Roads training program. Properly sized culverts and bridges are critical for public safety.

Exterior Mutual Aid

Response organizations rely heavily upon one another for support in the event of large incidents. For communities on the Region's borders, this includes partnerships with fire, law enforcement, and emergency medical services in Addison, Bennington, Windsor, and Windham Counties, as well as with departments in New York State.

Medical Facilities

In addition to the Rutland Regional Medical Center in Rutland, there are clinics in Rutland, Castleton, and Brandon, as well as a series of private doctors' offices throughout the county.

Specialized Response and Support

More specialized response is offered by a long list of paid and volunteer organizations. They are typically called to a scene under special circumstances, and include the American Red Cross, Vermont Department of Health, amateur radio operators, towing companies, the Vermont State HAZMAT team, and others.

Another volunteer group is the Rutland County Community Emergency Response Team (CERT). These volunteers have taken short training courses in order to provide support to first responders in an emergency. Their training includes traffic control, damage assessment, etc.

Local response is supported by statewide resources. Teams of specialized responders (including hazardous materials response teams, underwater teams, confined space teams, and others) are coordinated by the Vermont Division of Emergency Management and Homeland Security.

Since quite a number of buildings are in the flood hazard area and many road segments and crossing structures are subject to damage from erosive flooding, the RRPC encourages communities to develop specialized flood response plans.

Funding and Support

All local first response agencies receive municipal funds, annually voted upon by the taxpayers, to support operations. Most also engage in private fundraising efforts,

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including mailings, coin drops, and suppers. State and federal grants assist in the purchase of equipment and vehicles, trainings, and exercises.

Recovery

Recoveries from large-scale incidents in the Rutland Region have generally been related to flooding and/or severe thunderstorms, most notably the devastating impacts of Tropical Storm Irene in August of 2011. The most common recovery practices have included repair of washed out road segments and culverts, removal of tree limbs, and restoration of power, telephone, and cable utilities. Some communities in the Region have a particularly high level of exposure to flood and erosion damage and may want to develop post-flood plans ahead of time.

Recovery at the household or business level is generally independent of Region-wide or town-based initiatives; however, various assistance programs are sometimes available such as FEMA's Individual Assistance Program for households and the Small Business Administration's disaster loans. Individual property owners can also purchase flood insurance which is often more readily available than federal funds; currently many structures in flood hazard areas throughout the Region are not insured.

UNMET NEEDS

Mitigation

A number of key Region-wide needs have been identified during the development of mitigation plans. They include:

- Examining the condition of rivers in the area with regards to erosion and flooding issues. This is important when determining actions to take so that a "solution" in one town does not unintentionally cause larger problems in another town further downstream.
- Many critical facilities in towns (such as shelters and emergency operations centers) are in need of backup generators for use when power outages occur. Other municipal



The Pawlet Volunteer Fire Department conducted an Interior Structural Firefighting Training in 2012. Photo Credit: Libby Panoushek



FAST FACT

Rutland City is home to the busiest rail yard in Vermont. Most goods coming in and out of Vermont move right through downtown Rutland's rail yard for destinations north, south, east, and west.

CONNECTING THE PLAN

Many of the mitigation concerns raised by town officials were related to roads and bridges—issues further discussed in the Transportation chapter of this *Plan.*

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buildings require upgrades and retrofitting to reduce vulnerabilities to various hazards.
- Towns rarely have established systems for documenting impacts, which makes hazard mitigation planning and applying for mitigation funds a challenge.
- A number of roads are repeatedly subject to flooding and are regularly impassable by emergency vehicles, and culverts and bridges are in need of replacement and upsizing.

Preparedness

Though preparedness at the local level is strong in the Rutland Region, officials have identified a number of areas in need of further enhancement. They include:

- Training for local officials in the Incident Command System and other key resources. It is important that everyone understands their role in an emergency and how they can be most effective in using this nationally-accepted system.
- Education for the public about how to prepare for emergencies and where to go for information, especially for vulnerable populations.
- Communities are in need of policies to ensure they review and re-adopt Local Emergency Operations Plans on an annual basis, after Town Meeting and before May 1.
- Equipment and knowledge of existing resources for fire, law enforcement, emergency medical services, public works, and other organizations. Though Homeland Security funds have greatly improved equipment in the area, most departments must rely on neighbors for support.
- General awareness of the organizations available for support throughout the county and their capabilities in the event of an emergency.
- Communication between response agencies, especially across disciplines, and communication with some of the key facilities they serve, including schools and large businesses.
- Maintenance of the statewide E-911 system. As road names change and new structures are built, communities must ensure that data is sent promptly to the State E-911 Board so that emergency response organizations have accurate information.



Towns like Brandon that were hit hard by Tropical Storm Irene in 2011 are still recovering. Photo Credit: Burlington Free Press

Response

Funding for response agencies remains a need in Rutland County, as does attracting and retaining personnel. Key unmet needs identified by local response agencies include:

- Comprehensive radio coverage in the Rutland Region. Funding and difficult topography are the principal obstacles.
- Operating funds for most departments are limited and must be supported by fundraising events that take time for volunteer responders who already face significant training responsibilities.
- A lack of fixed-site and portable generators to support critical

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infrastructure has been voiced by many community and response officials.

- Response agencies face significant turnover and a continual need to attract and train more individuals to serve on volunteer squads. The need has been exacerbated as more people commute to separate towns to work. Many fire departments have automatic pacts with neighboring communities to assist in the event of a fire during a weekday.
- Employers are becoming increasingly weary of allowing employee-responders to leave work to tend to local emergencies, in part because of changing business practices and in part because of increased reliance on dwindling number of local responders in many communities.
- Law enforcement agencies in the Rutland Region have no mutual aid association like that of fire and emergency medical services. A Regional association may enhance preparedness and response.
- There is no well-established system at the county level to help coordinate state resources when needed.

Recovery

A need for better reporting of expenses related to incident management—especially recovery from local flood damage— has been identified. Only those town expenditures reported to state or federal authorities following a major disaster are eligible to receive federal disaster relief assistance.

FUTURE TRENDS

Aging Population

As the average age in Rutland County increases, the impact on emergency services will grow in step. The older population will slowly increase the need for hospital space and services, ambulance space and services, and education for the elderly about how to cope in an emergency.

In addition, the aging population will likely mean the retirement of many volunteer firefighters and rescue personnel. Response organizations will have to find ways to attract more new volunteers and consolidate response.

Scattered Development

Scattered development will continue, which will have negative impacts. If development is scattered it is harder for effective response by limited volunteer-based first responders. Compact flood-safe, fire safe walkable communities may be important to provide the human resources and context for sustainable emergency services.

Increased Awareness

Recent events, namely Tropical Storm Irene in 2011, have raised awareness among Rutland County residents, businesses, and responders. Communities throughout the Region have begun to reassess their situations based on threats

CONNECTING THE PLAN

For more information about development and where it is taking place, see the Land Use Chapter of this *Plan*.

See the Flood Resiliency Chapter of this *Plan* for more on reducing the risk of damage from flooding and fluvial erosion.



LEPC #2 members updated the Emergency Management Guide for the Region from 2014 to 2015.

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previously underestimated.

MEETING CURRENT AND FUTURE NEEDS

A number of emergency service organizations and communities have taken innovate steps to meet locally-identified needs. These models can be examined for use in other communities:

- The development of junior programs for the youth of the community to train the next generation of responders.
- Working with area businesses to explain the insurance premium benefits of high-quality local emergency response and to develop agreements for allowing employees to respond to incidents.
- Becoming more involved in development review to ensure that emergency vehicle access is possible, especially in remote areas with steep slopes and flooding/erosion issues.
- Establishing annual review to update Local Emergency Operations Plans.
- Developing a capital budget or priority list for resolving problems listed in Local Hazard Mitigation Plans.
- Provision of introductory-level Incident Command System training for municipal and school officials.
- Increased public outreach on a variety of topics including general emergency awareness, evacuations, sheltering-in-place, and warning systems.

The Rutland Local Emergency Planning Committee should continue to develop and maintain its plan for the Region.

Response agencies and businesses must work together to ensure that records of hazardous materials being transported or stored in the Region are maintained to state standards.



FOOD FOR THOUGHT

Emergency preparedness is an important activity for everyone—responders, town officials, volunteers, businesses, and citizens.

RUTLAND RPC GOALS

- Serve as a resource to the Rutland Region Local Emergency Planning Committee.
- Assist towns to annually review Local Emergency Operations Plans, and to develop and maintain Local Hazard Mitigation Plans.
- Support more data for river corridor planning and protection.
- Assist the Vermont Center for Geographic Information to maintain current data.
- Support emergency and flood response planning by communities and use this to help inform municipal plans, bylaws and hazard area regulations.
- Support continuity of operations planning by communities, institutions, and businesses.
- Provide outreach and assistance to towns and non-profits in applying for equipment, training, and funding (especially for hazard mitigation grants, Assistance to Firefighters grants, and funds to increase fire protection of historic structures).
- Work with the Rutland Region Transportation Council to advocate for funds for improved transportation networks.
- Establish a Regional coordination center to help supply resources to municipalities when necessary.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

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DRAFT Flood Resilience

INTRODUCTION

The devastation caused by flooding during Tropical Storm Irene in 2011 was a massive disaster for the Rutland Region and many other areas of Vermont. It also was a turning point. Out of the recovery and rebuilding efforts from Irene came a new goal for the state: flood resilience.

As the Vermont Climate Assessment puts it, the state has "begun to pursue public policy that builds resilience within all 256 towns" (VCA, 2014). Examples of the new priorities include Act 16, the flood resiliency planning statute (24 VSA §4302), as well as new rules for qualifying for state matches for Emergency Relief and Assistance Fund.

The challenge for Vermont communities is "turning vulnerability to resiliency by taking action through adaptation and mitigation," says the Assessment. *Resilience* being the ability of the Region to effectively plan for, manage and, in a timely manner, recover from flooding. And *adaptation* and *mitigation* as resiliency actions that are two sides of the same coin. Mitigation reduces exposure and vulnerability, and is informed by *past* events. Adaptation reduces exposure and vulnerability, and is informed by *future* projections.

The focus of this chapter is how flood resilience, mitigation, and adaptation are linked to land use, transportation, education, economic development, as well as many other aspects of regional planning. This chapter is designed to be a tool for town officials, non-profits, developers, and individuals to help make all communities flood resilient and to guide coordination of these actions throughout the Region.

CURRENT CONDITIONS

Types of Flooding

Flooding events are Vermont's most frequent and costly type of natural disaster. There are two types of flooding that impact communities in Vermont: inundation and flash flooding. Inundation is when water rises onto low lying land. Flash flooding is a sudden, violent flood which often entails fluvial erosion (stream bank erosion). The combination of flash flooding and fluvial erosion cause the most flood-related damage in the state.

Even before Irene, Vermont had been

Tropical Storm Irene



Courtesy: CBS6 Albany



US Rt. 4 in Killington
Courtesy: 22News WWLP



Courtesy: Huffingtonpost.com





Left: Rutland area flooding. Courtesy: VTrans
Right: Brandon flooding. Courtesy: VTrans

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CONNECTING THE PLAN

Economic Development
Floodplain function protection and fewer disasters help reduce costs/losses, supports public wellbeing, and is needed for enterprise/ business continuity.

experiencing more frequent and severe flooding which is projected to continue in the future.

Yet there is a site-specific nature to flooding. Risks can vary site-by-site, to the point where parcels located adjacent to one another may be impacted differently in a flood event. This can be attributed to a number of factors, such as: steep topography; locations of structures on a site; characteristics of the stream or river, including its course and ability to access its floodplain; soil composition; the presence of riparian buffers; and the presence of wetlands nearby and their quality. This site -specific nature of flooding underscores the need for basic systematic steps to protect the ability of streams and rivers to access their floodplains and not cause damage.

Causes of Flooding

Flooding is natural, inevitable and typically beneficial. Flood damage is avoidable.

Because of Vermont's mountainous terrain, rural geography and small communities with limited transportation routes and communication systems, the state has had a long history in channelizing rivers and streams to maximize agricultural land uses and to facilitate the transportation infrastructure. Channelization, in combination with widespread floodplain encroachment, has led to as much as 70% of Vermont's streams being disconnected from their floodplains (VT Hazard Mitigation Plan, 2013). This is an unsustainable condition, and when energized by flood events, catastrophic adjustments of the channel frequently occur, usually with consequent fluvial erosion damage to adjacent or nearby human investments. Transportation infrastructure and agricultural property are the most frequently endangered types of human investment affected by fluvial erosion hazards. Residential, commercial, utility infrastructure and municipal properties are also frequently endangered.

Implications of Climate Change on Flooding

Gilbert White, considered the father of

FAST FACT

Flood Resilience means the ability of a municipality to effectively understand, plan for functional river corridors and floodplain functions so as to avoid damage and protect public safety and wellbeing.



US Route 4 south of Rutland where the highway is interfering with natural river flow and causing what some landowners believe is an impoundment area. Courtesy: ANR Natural Resources Atlas

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floodplain management in the U.S., wrote, "Floods are 'acts of God', but flood losses are largely acts of man." (*Human Adjustment to Floods, 1945)*. University of Chicago Department of Geography Research Paper No. 29. Chicago: University of Chicago Department of Geography.) White's views guided floodplain management for decades. But now they may need to be updated since it could be said that floods also are acts of man – because of the effects of greenhouse gas accumulations and climate change, exacerbated in the last 60 years by auto-centric development and infrastructure.

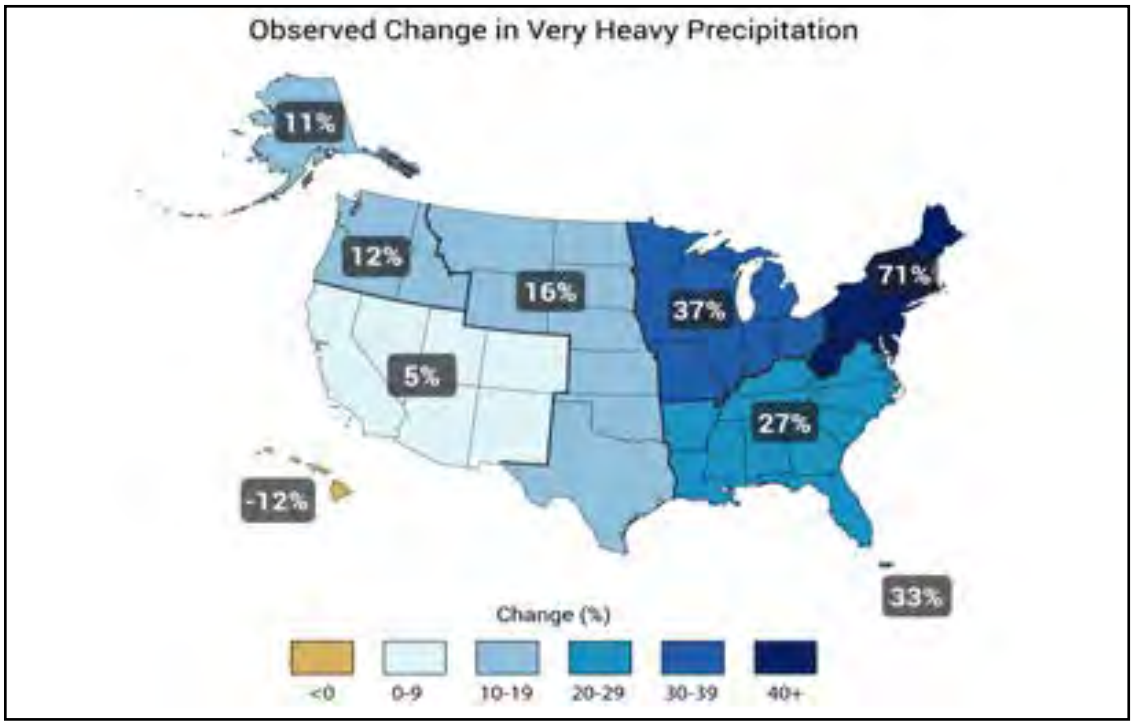
Every county in Vermont announced FEMA disaster declarations in response to flooding events in 2011, the year of Tropical Storm Irene as well as earlier spring flooding. The Vermont Climate Assessment, the first of its kind in the nation, released in June 2014 by the University of Vermont's Gund Institute for Ecological Economics, states that "Climate change is no longer a thing of the future; it is affecting Vermont today." Among the climate trends it says are already documented in Vermont:

- Rising temperatures: average annual temperature has increased by 1.3 ° F since 1960.
- Increasing precipitation: average annual precipitation has increased 5.9 inches since 1960; almost half (48%) of this change occurring since 1990.
- Extreme events, such as heavy downpours, have become more frequent and/or intense. (*Vermont Climate Assessment, 2014)*

The report's projected trends call for more of the same: even warmer temperatures, more precipitation, and weather extremes. The Vermont Assessment echoes a national one released earlier in 2014. The U.S. Climate Assessment documents heavier downpours increasing nationally, especially over the last three to five decades. The largest increases are in the Midwest and Northeast.

Flooding in the Rutland Region

Flooding (particularly flooding-caused erosion) is the mostly costly natural hazard



Source: US Climate Assessment, 2014

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FOOD FOR THOUGHT

Primary Forms of Damage from Flooding and Erosion

- Disrupted Transportation
- Disruption of Government Services
- Economic Loss
- Fast Moving Water
- Landslide/Mudslide/ Erosion
- Health Problems
- Toxic Release
- Loss of Utilities
- Building/Structure Collapse

Secondary Effects of Flooding

- Building/Structure Collapse
- Communications Failure
- Explosion/Fire
- Isolated Areas
- Power Outage
- Water Pollution
- Water Supply Disruption

Impact of Flooding on the Community

People:

- Displaced Families
- Loss of Sanitation Services
- Loss of Water Services
- Casualties & Deaths

Property/Environment:

- Air Pollution
- Water Pollution
- Soil Contamination
- Bridges/Roads
- Fire/Explosion

Economy

- Business Interruptions (Permanent/Temporary)
- Loss of Tax Base
- Unemployment (Long/ Short Term)

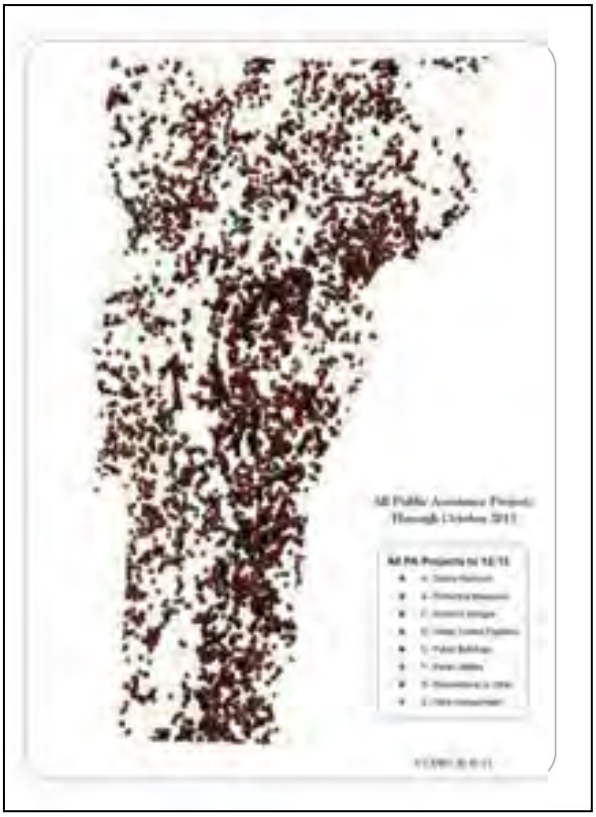
(*Rutland Region Mitigation Plan 2011 Update, P 26*)

in Rutland County.

Past instances of flooding in the Region have included rain and/or snowmelt events that cause flooding in the major rivers' floodplains and intense rainstorms over a small area that cause localized flash flooding. Both kinds of events can be worsened by the build-up of ice or debris which can contribute to the failure of important infrastructure, such as culverts, bridges, and dams.

In our Region, there is a history of flooding along many of the major waterways. In almost any countywide event, the Otter Creek floods low-lying areas, fields, and roadways. Often the Otter Creek will flood along its entire length affecting Clarendon, Rutland City, Rutland Town, Pittsford, and Brandon. Other rivers that flood are faster moving and more likely to cause extensive infrastructure damage. These include Poultney River, Castleton River, Cold River, Neshobe River, Mill River, Tenney and Moon Brooks. On occasion, Lake Champlain, along the borders of West Haven and Benson, has also been known to flood. (Rutland Region Mitigation Plan, 2011 Update). Please refer to each municipality's Local Hazard Mitigation Plan for floodplain information in the Hazards Analysis and Areas of Local Concern maps.

Significant flooding events have occurred in the Rutland Region throughout recorded history, such as the summer flood of 1811 when extensive economic damages were reported due to the loss of mills, dams, crops and field erosion. Floods also have occurred nearly everywhere in the state. The map in the upper right hand corner shows past infrastructure repair and replacement projects funded with a combination of federal and local recovery funds. Very few areas have escaped disruption and damage, including the Rutland Region.



Regional Economic Impact of Flooding

As noted in the 2013 State Hazard Mitigation Plan, "Flooding is the most common recurring hazard event in the State of Vermont." Several major flooding events have affected the state, resulting in multiple Presidential Disaster Declarations. From 2003 to 2010, Rutland County experienced $1.4 million in property damages due to flood events (State HMP 2013). The worst flooding event in recent years came in August of 2011 from Tropical Storm Irene (DR 4022), which dropped up to 8 inches of rain in some areas of Rutland County (State HMP 2013). Across the state six Vermonters lost their lives, two of them in Rutland Town. Irene also caused widespread flood inundation and severe fluvial erosion in the Region. As of 2013, the total amount of FEMA Public Assistance funds disbursed throughout Rutland County for Tropical Storm Irene is $11.8 million. FEMA has also disbursed Individual Assistance payments of $1.6 million in home repair assistance, $303,317 in rental assistance, and $155,921 in other needs assistance

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throughout Rutland County (State HMP 2013). All told, Irene cost the state at least $850 million. Far more damage was not insured or reimbursed.

Other Presidential Disaster Declarations related to flooding occurred for Rutland Region:

- April 2007 – DR 1698 (Severe Storms and Flooding)
- December 2000 – DR 1358 (Severe Winter Storm)
- July 2000 – DR 1336 (Severe Storms and Flooding)
- September 1999 - DR 1307 (Tropical Storm Floyd)
- June 1998 – DR 1228 (Severe Storms and Flooding)
- January 1996 – DR 1101 (Storms and Flooding)

Floodplain Mapping

Because flooding and flood damage are spatial in nature, we can begin to identify areas in the Rutland Region that are most vulnerable to flooding through mapping analysis. By compiling flood data from multiple events over time, we can begin to see the areas that are consistently flooded with little damage to life and property, and

Significant Flood Events in Rutland Region in last 10 Years

Property Damage (Adjusted for Inflation)	Dates	Remarks
At least $ 13,859,238.00	8/28-29/2011	Tropical Storm Irene
$ 41,600.00	10/1/2010	
$ 2,080.00	3/23-24/2010	
$ 79,591.84	7/29/2009	Flash Flood
$ 105,050.51	8/6/2008	Flash Flood
$ 105,050.51	6/28/2008	Flash Flood
$ 787,878.79	6/14-15/2008	Flash Flood
$ 21,894.74	6/12/2007	Flash Flood
$ 62,173.91	1/18/2006	Flood
$ 11,555.56	4/3-4/2005	Flood
$ 35,862.07	8/12/2004	Flood
$ 5,977.01	7/31/2004	
$ 11,954.02	5/24/2004	
$ 2,390.80	4/2/2004	
$ 1,857.14	12/25-26/2003	
$ 2,476.19	10/29/2003	
$ 30,952.38	7/24/2003	
$ 37,142.86	4/13-14/2003	

Source: State of Vermont Hazard Mitigation Plan, 2013



FAST FACT

The National Flood Insurance Program (NFIP) was created by Congress to provide private property owners with a means of getting insurance against flood losses.

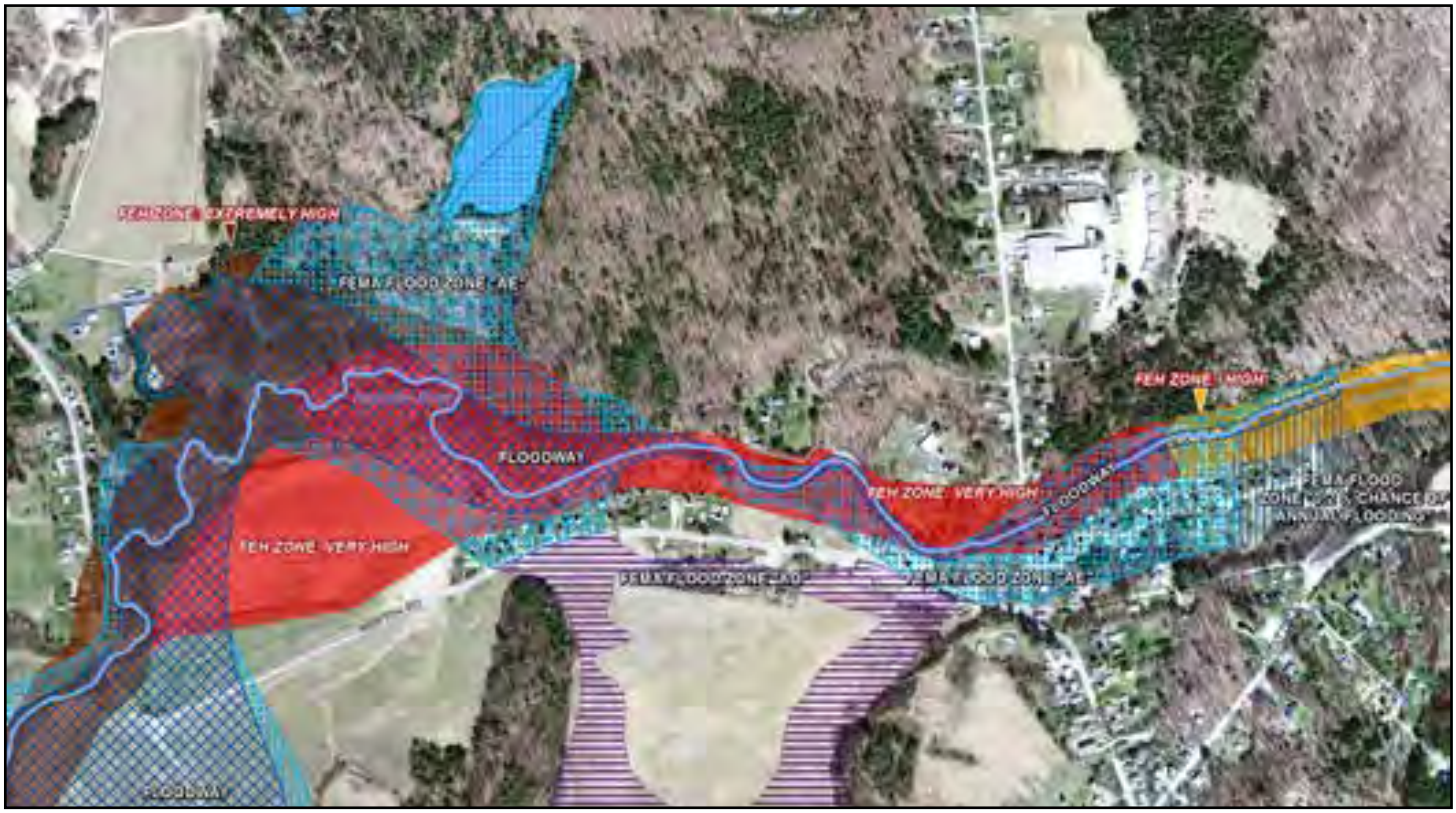
Flood insurance rates are based on Flood Insurance Rate Maps (FIRMs) or Digital Flood Insurance Rate Maps (DFIRMs). Delineated on these maps are Special Flood Hazard Areas (SFHA) or areas with a 1% annual chance or more of flooding (100 year flood). The common term "100 year flood" is misleading since such floods can occur in multiple years.

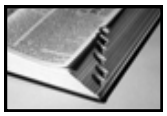
Participation in the NFIP is based on an agreement between local communities and the Federal Government that states that if a community will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses.

Town participation in NFIP is voluntary.

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Brandon Floodway
FEMA Special Flood Hazard Areas and fluvial erosion hazard (FEH) zones





DEFINITIONS

FEMA Special Flood Hazard Areas (SFHAs)

Zone A: areas subject to inundation by the 1% annual chance flood event. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown.

Zone AE: areas subject to inundation by the 1% annual chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown within these zones.

Zone AO: areas of shallow flooding where the potential run-up is less than 3-feet above an overtopped barrier crest.

Base Flood Elevation (BFE) : the elevation of the water surface resulting from a flood that has a one percent chance of equaling or exceeding that level in a given year.

which areas have repeatedly sustained significant flood damage.

There are two sets of official maps which can govern floodplain development in Vermont. They are the Federal Emergency Management Agency's (FEMA's) Flood Insurance Rate Maps (FIRMs) and the Vermont Agency of Natural Resources' (ANR's) river corridor maps. These maps can be used together to avoid direct losses from flood and erosion and to enable the river to become less powerful and damaging.

The FIRM shows the floodplain that FEMA has calculated which would be covered by water in a 1% chance annual inundation event, also referred to as the "100 year flood" or base flood. This area of inundation is called the Special Flood Hazard Area (SFHA). FIRMs also may show expected base flood elevations (BFEs) and floodways (smaller areas that carry more current). Every municipality in the Rutland Region except Killington has flood risk areas mapped by FEMA. FIRMs are only prepared for larger streams and rivers. Flood hazards near larger populations are often studied by detailed methods. In more rural areas the maps may be done by approximate Zone A methods. Flood plains on smaller sources or more remote locations are often not mapped.

Remarkably, two thirds of flood damages in Vermont occur outside of federally mapped flood areas. Most of the damage in Vermont is to roads, culverts, bridges, and sometimes houses being damaged by the erosive power of moving water - not by getting wet.

Since FEMA maps in the Region are only concerned with inundation, flash flooding and erosion areas are often not required to have flood insurance. Flash flooding in these areas can be extremely erosive, causing damage to road infrastructure, streambeds and mountainsides, and even landslides. Undersized or blocked culverts can lead to further erosion and streambank or mountainside undercutting.

Vermont ANR's river corridor maps on the Natural Resources Atlas show the area where the river channel will adjust over time in response to the water, energy,

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sediment and debris in the watershed. Inside of this area there is a higher likelihood of erosion, but most importantly, this is the area that the river needs to accommodate its load, slow down, and continue to access its floodplain so as to not cause more damage to roads and buildings downstream.

In these areas, the lateral movement of rivers and associated erosion are more of a threat than inundation floodwaters. Elevation or flood-proofing alone may not be enough protection in these areas as erosion can undermine structures. River corridor maps are now available across the Rutland Region. Where unmapped (streams with a watershed of less than two square miles), the river corridor dimension can be protected with a 50 foot setback from the top of bank/top of slope. The maps will be updated as the RRPC works with communities to secure field-based data. Visit Flood Ready Vermont (www.floodready.vermont.gov) to learn more about how river corridors relate to fluvial erosion hazard areas and Special Flood Hazard Areas.

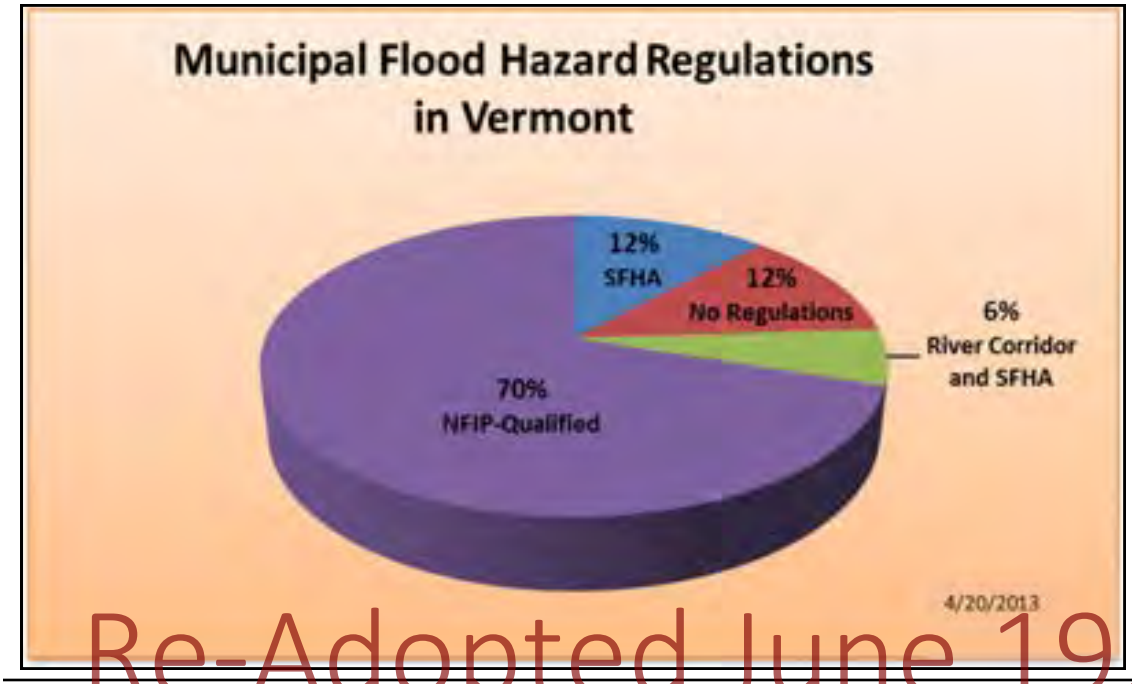
Flood Hazard Regulations

Most communities in the Rutland Region have flood hazard regulations and participate in the National Flood Insurance Program. These were updated before the effective date of the Rutland Digital Flood Insurance Map in 2008. Since that time new model regulations have become available to encourage communities to protect river corridors and require "no adverse impacts" from development in Special Flood Hazard Areas. At this time, three towns in the Rutland Region do not participate in NFIP: Tinmouth, Killington and Mount Tabor.

Repetitive Loss Properties in Vermont

There are also areas within Vermont that present significant losses but do not fall under the FEMA definition of a repetitive loss property.

Repetitive loss structures are a serious concern from a mitigation standpoint. Tropical Storm Irene greatly increased the number of repetitive loss properties in the State of Vermont. According to the 2010 state HMP, there were 65 non-mitigated multiple loss properties in 33 Vermont towns. Currently, there are 139 non-mitigated multiple loss properties in 45 communities. In our Region, the state lists 22 multiple loss properties in Rutland City multiple and two in Rutland Town – the only ones in the county. For example, Clover Street in the City of Rutland is



CONNECTING THE PLAN

Emergency Management

This plan is designed to be used in the development and implementation of community Local Emergency Operations Plans, Local Hazard Mitigation Plans, and capital improvement plans.

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FAST FACT

Tinmouth Channel

In 2001, the Tinmouth Channel wetlands complex was upgraded to a Class I wetland, which affords it the state's highest protection.

The Tinmouth Channel flows into the Clarendon River between Mountain View Road and East Road in Tinmouth and covers 450 acres comprised of wetlands and forest habitat.

This is one of only three wetlands in Vermont to receive a Class I designation. The other two Class I wetlands are Dorset Marsh in Dorset and North Shore Wetland in Burlington.

Wetlands, such as Tinmouth Channel, function as floodplains and are often identified as Special Flood Hazard Areas on FIRMs.

repeatedly flooded by Moon Brook after major rainstorms. However, that number is expected to rise as more data become available.

Property Buyouts

Following the flood damage in 2011 caused by spring flooding and Tropical Storm Irene, a number of property owners in Vermont applied for property buyouts, funded by FEMA's Hazard Mitigation Grant Program (HMGP) and Housing and Urban Development's (HUD's) Community Block Grants for Disaster Recovery (CDBG-DR). Typically, such funding requires that structure(s) on each buyout property be demolished and ownership transferred to the municipality. Future development on these sites is restricted. Three properties in the Rutland Region were approved for buyouts: one each in Brandon, Clarendon and Danby.

The buyout process can have be an effective way to reduce a community's vulnerability to future flooding and can improve the community's overall resilience to flooding.

One consequence of home buyouts is the loss of a community's housing base, and sometimes, from the community's affordable housing base. Oftentimes, affordable or low-income housing is located in areas at a high risk for flooding. If the housing base is affected, it is important for the community to have a thoughtful and creative approach to rebuilding its housing base. This will maintain its improved flood resilience, along with providing affordable and safe housing for residents.

Lands Which Help to Prevent Flooding

Watershed Resources

Mapping river corridors is not just about identifying hazards and better understanding the physical processes and watersheds, but such assessments also aid communities in making knowledgeable and strategic decisions about how to best protect, manage, and restore watershed resources. Wetlands prevent flood damage and are a vital component for maintaining the ecological integrity of land and water. Riparian buffers reduce flood hazards and stabilize stream banks, attenuate floods, provide aquatic and terrestrial habitat and wildlife corridors, filter runoff, absorb nutrients, and shade streams to keep them cool. In addition, upland forests moderate flood impacts and attenuate flood impacts.

Wetlands

The benefits provided by wetlands include flood and stormwater control, maintenance of surface and ground water quality, open space and aesthetic appreciation, fish and wildlife habitat, ecological research and educational opportunities, and sources of nutrients for freshwater food chains. Such areas include but are not limited to marshes, swamps, sloughs, potholes, fens, river and lake overflows, bogs and ponds.

Draining, filling and development have resulted in the loss of more than 35% of Vermont's original wetland acreage, primarily due to agricultural and large-scale development projects. At present, roughly four percent of Vermont's lands are classified as wetlands, totaling 244,000 acres.

The Vermont Wetlands Rules (10 VSA Chapter 37) classify wetlands into three categories. Class I wetlands are those identified as "exceptional or irreplaceable in their contribution to Vermont's natural heritage." The 450-acre Tinmouth Channel is one of only three Class I protected wetlands in Vermont. Class II wetlands, also considered significant by the state, generally have areas of at least three acres. Class III Wetlands are those that have not been evaluated or are not considered by the Water Resources Panel of the Natural Resources Board (formerly Water Resources Board) to be significant.

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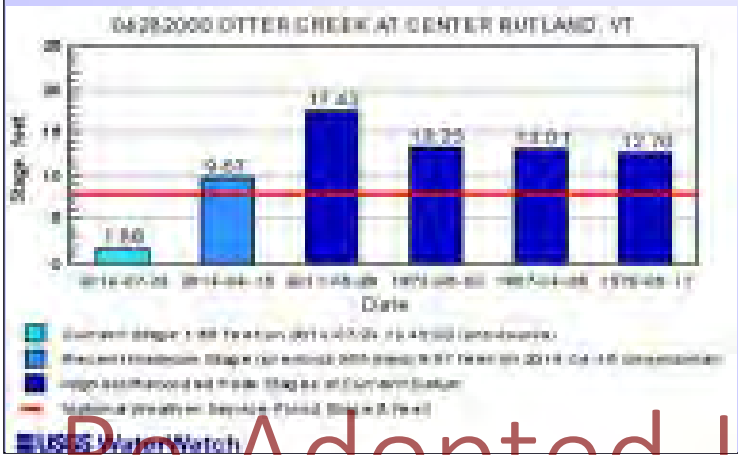
CASE STUDY: OTTER CREEK'S NATURAL RESILIENCY



During Tropical Storm Irene, the community of Middlebury in Addison County was spared devastating flooding, despite the fact that the Rutland Region basin incurred substantial damage during the storm, including major damage to roads and bridges. Why was this?

It's because the Otter Creek Basin and Watershed worked like a natural system should: dramatically spreading, slowing and sinking floodwaters. At the height of Irene, Otter Creek flooded Rutland with the highest flow ever recorded for that location, perhaps comparable to the flood of 1927 (which occurred before official river flow data collection on the Otter Creek). During Irene, even though the Otter Creek flood flows peaked at approximately 19,000 cubic feet per second (CFS) in Rutland, 33 miles downstream when the peak came the flow was only 7,000 CFS. Upstream where communities and the river have little access to a flood plain, the river's volume increased by nearly twenty fold in one day's time.

What's noteworthy about the Otter Creek during Irene is in most rivers, flood peaks increase as the water moves downstream and collects water from other streams in the watershed. Not so in the Otter Creek Basin and Watershed. This floodplain between Rutland and Middlebury is broad and flat, with an extensive complex of wetlands and swamps. Irene's floodwaters spilled over into this complex, filling the broad, low-lying Otter Creek floodplain with water. Only gradually did this water flow back out of the swamp and into the river, resulting in a markedly diminished peak flow in Middlebury compared to Rutland and minimizing damage to homes and property downstream. The crest came and went suddenly. But down river in Middlebury, the crest came days afterwards. And instead of seeing a drastic and dangerous increase in volume, Middlebury residents saw the Otter Creek grow at a slower and safer pace. It receded gradually over most of September. (Marangelo, The Nature Conservancy, Vermont Chapter)



Because of this well-functioning watershed, peak flows in the Otter Creek watershed were substantially reduced downriver of the basin. "The difference was due to acres of swamps, with tall trees emerging from beds of cattails, and broad floodplains with comparatively little development on the riverbanks. These natural features functioned, as nature intended, like a massive sponge, sopping up, slowing down and weakening the flood's destructive force. Especially after Irene, we know that the key to flood protection lies in giving rivers room to move, keeping flood plains intact and building roads and bridges that are ready for our new climate." (Porter, *Irene and Flood Protection,* VPR, 8-21-12)

Although most watersheds in Vermont exist in narrow valleys that limit the ability of floodwaters to spread into wetlands and floodplains, what happened along Otter Creek shows the benefits of protecting and preserving natural defenses against floods. Using the Otter Creek example, there have been other efforts to increase wetlands designations in the Region to enhance basins and watersheds. For instance, the Nature Conservancy has been modeling and mapping active floodplain areas and incorporating this information into river corridor conservation work in pilot projects in the Lewis Creek and the Poultney River watersheds, to help protect habitat and increase flood resilience.

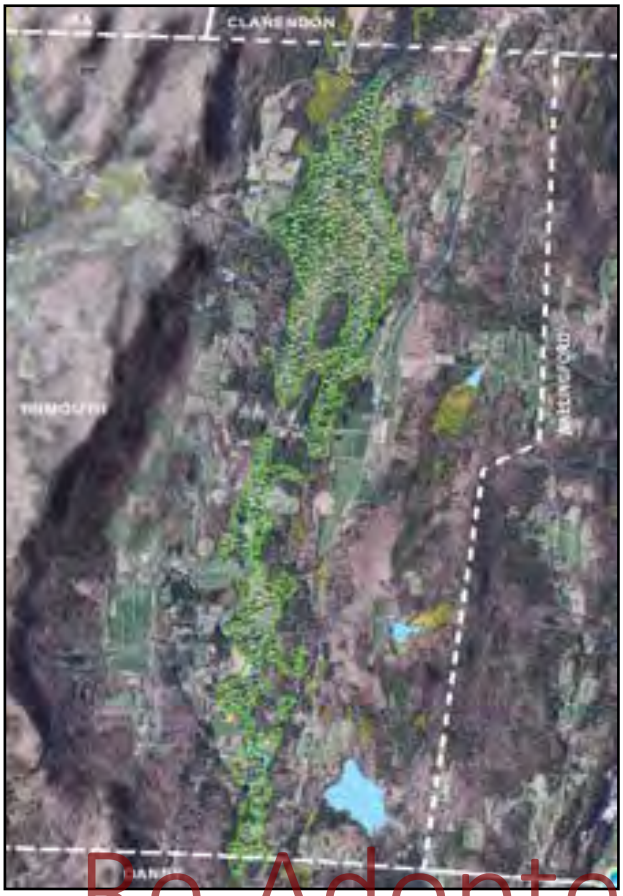
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Riparian Buffers and Lands Adjacent to Streams

Naturally vegetated riparian zones (adjacent to surface waters) are essential for healthy and resilient river corridors. These vegetated buffers provide floodwater attenuation; habitat for aquatic and terrestrial organisms; river bank support and stabilization; help prevent bank undercutting and bank collapse; reduce flood and ice damage to stream channel and adjacent lands and structures; shade the river channel; intercept, absorb and filter pollutants; and slow surface water runoff.

Outside of the riparian buffer, lands adjacent to streams also provide benefits, especially during flood events. Once water overtops the river or stream channel, these areas help to dissipate flood water. This also slows the velocity of the water. Although much of the region is steep and mountainous and does not have an abundance of flat lands surrounding streams and rivers, the importance of these lands were demonstrated during Tropical Storm Irene.

Tinmouth Channel Wetland Complex



Upland Forests

By definition, upland forests contain a nearly continuous canopy cover of 60% or more. Upland forests also comprise many small streams which make up the headwaters of watersheds. Activities occurring in the headwater streams can impact an entire watershed. Healthy and well-managed upland forests and reduce flooding by intercepting rainfall and infiltrating rainwater, thereby slowing the flow of rainwater into small, headwater streams. These streams are notoriously "flashy" and experience fluvial erosion, especially in mountainous areas.

Because of the importance of upland forests, sound logging practices should be encouraged and the development of roads discouraged to protect what are in many cases are intact ecosystems.

Stormwater, Impervious Surfaces, and Green Infrastructure

Because impervious surfaces prevent the infiltration of water into the soil, these man-made surfaces exacerbate flooding by increasing the amount and velocity of stormwater runoff, particularly in areas where these surfaces are prevalent. This stormwater adds to the "flashiness" of localized flooding, especially in heavy rain events. Man-made impervious surfaces include parking lots, rooftops, roads (even gravel roads), and severely compacted soils. Stormwater runoff picks up debris, chemicals, sediment or other pollutants on impervious surfaces. A heightened slug of stromwater also accelerates erosion and phosphorus runoff where it discharges.

The percentage of impervious surfaces can be reduced by limiting the number of rooftops and pavement, by using permeable surfacing materials, employing disconnection practices, and by implementing Low Impact Development (LID) and "Green Infrastructure" principles.

Although the terms "LID" and "Green Infrastructure" are often used interchangeably to include principles that mimic conditions present before the development of an area, there is a slight technical difference between the two terms. LID refers to the process of designing and implementing practices that can be implemented at the site-level to control stormwater and attempts to replicate the pre-development conditions at that site. Green Infrastructure refers to a broader view at the community or watershed scale, and is focused on implementing LID practices as part of a coordinated effort to reduce impervious surfaces and stormwater runoff. They

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include porous pavement, bio-swales, "green" landscaping, vegetated buffers, rain gardens and rain barrels.

Because stormwater has a profound impact on flooding, the state of Vermont has regulations in place to control stormwater on larger projects and problem areas, such as discharge permits.

While widespread impervious surfaces are detrimental to water quality, impervious surfaces in some areas, such as village centers and downtowns, are the result of historic settlement patterns as well as dense development. Because this landscape is important to the fabric of Rutland Region, it is critical to maintain the denser development patterns of village centers and downtowns. However, it also is important to understand stormwater runoff issues and how to mitigate their effects, even in these areas of dense development.



Spread It, Slow It, Sink It

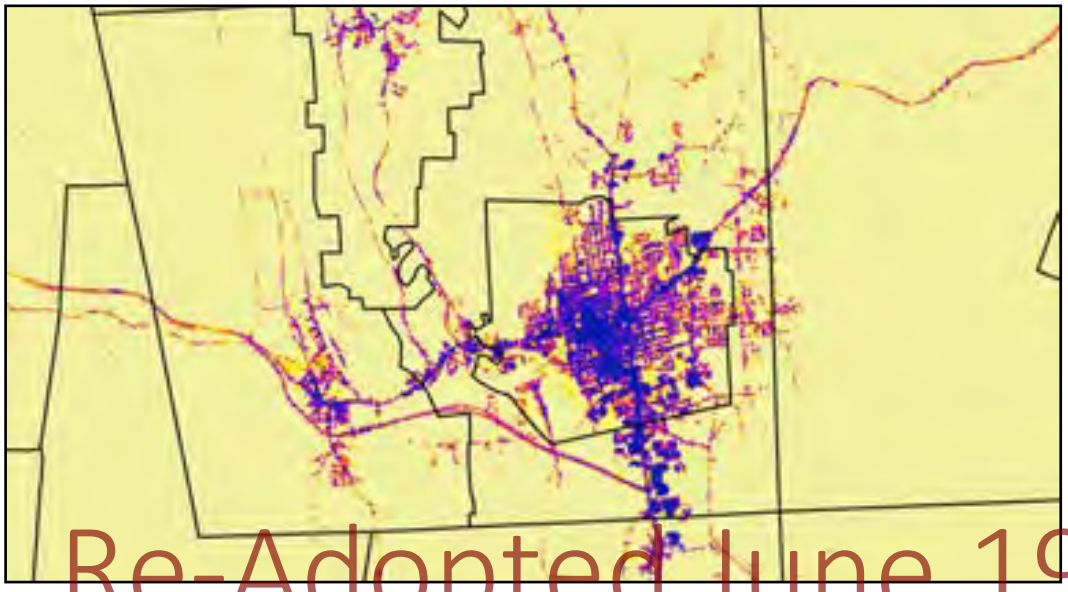
Connection to Act 250/Section 248 applications

In participating in Act 250 and Section 248 application processes, the Rutland Regional Planning Commission recognizes that development and new energy projects can negatively impact flood resiliency. Because of that, the RRPC will not support any development or new gas and electric purchases, investments, and facilities in the river corridor and flood zones in the Region. Please refer to Hazard Analysis and Areas of Local Concern maps in Local Hazard Mitigation Plans for SFHA and FEH zone locations in specific communities and to Natural Resources maps (1 & 2) in individual town plans.

Legal Implications

There are potential legal implications for not adopting flood regulations. Courts throughout the nation, including the U.S.

Impervious Surfaces in Rutland, West Rutland and Proctor





FOOD FOR THOUGHT

The Five Steps for Resilience Planning

1. Assess Hazards and Assets
Identify mapped floodplains, river corridors and other landscape features that moderate flood damage.

2. Avoid Increasing Risk
In Vermont most communities have some development regulations through zoning or as stand-alone regulations to address flood hazard areas.

3. Reduce Current Risk
Identify, prioritize, and adapt critical facilities and public infrastructure to become more resilient, support equilibrium conditions, and to reduce risk of damage.

4. Prepare for Emergency
For the purposes of coordinating local response and working with other towns and agencies, the community should have an up-to-date Local Emergency Operations Plan (LEOP).

5. Insure Residual Risk
Is the use of flood insurance adequate? Roughly two-thirds of the structures in the high risk Special Flood Hazard Area in Vermont do not carry flood insurance. Also many structures may not be fully insured to receive "replacement value" after a disaster.

(VT Agency of Natural Resources)

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FAST FACT

Association of State Floodplain Managers' No Adverse Impact Policy

"No Adverse Impact Floodplain Management" is a managing principle that is easy to communicate and, from legal and policy perspectives, tough to challenge.

In essence, No Adverse Impact floodplain management takes place when the actions of one property owner are not allowed to adversely affect the rights of other property owners.

Supreme Court, have consistently shown great deference to governments acting to prevent loss of life or property, even when protective measures restrict some uses of private property.

Recent decisions confirm that:

- Communities have the legal authority to manage flood risks and development;
- Communities have the legal responsibility to do so, and may be liable for any harm resulting from failure to exercise that responsibility;
- Property owners who increase flooding or erosion, or violate reasonable watershed or floodplain standards, are intruding on the property rights of others. The community is seen as the first line of defense against this intrusion.

UNMET NEEDS

Current gaps in the Rutland Region regarding flood resiliency:

- Need for additional state grants and loans or self-insurance to cover the costs of disaster recovery.
- Three municipalities are not part of National Flood Insurance Program which in return for adopting floodplain regulations, the federal government makes flood insurance available to the citizens of a community, even those located in a floodplain.
- Several communities in the Rutland Region (Shrewsbury and Brandon) are currently recognized as providing protection for river corridors. The RRPC will support efforts by participating communities to update their bylaws to address no adverse impact to river corridors and floodplain.
- Municipalities with critical infrastructure in floodplains, including older structures, roads, and bridges. Some of these features are noted on the Expanded Community Reports at Flood Ready Vermont. Structure data for culverts and bridges may be available where river corridor plans have been completed.
- Lack of municipal and regional planning to address roads and transportation and other critical infrastructure endangered by flooding.
- Town roads and culverts that are at risk because of their location in floodplains. Very undersized culverts and other needs identified in Local Hazard Mitigation Plans may be eligible for funding to upsize them.
- Roads susceptible to closure due to repetitive flooding.

Refer to Areas of Local Concern maps and LHMPs for town roads in floodplains.

FUTURE TRENDS

To continue to be eligible for state and federal disaster relief and be prepared for heavier precipitation projections, communities in the Rutland Region are being asked to become more flood resilient. Among the key trends:

Increased Federal and State Attention and Incentives to Address Flood Hazards

- Vermont is "encouraging" more flood planning by linking the Emergency Relief Assistance Fund (ERAF) to certain flood resilience actions (such as Local Hazard Mitigation Plans, National Flood Insurance Program (NFIP), Town Road and Bridge Standards, Local Emergency Operations Plans (LEOP), and protection for river corridors. The RRPC should encourage the integration of Region Hazard Mitigation Plan and individual community Local Hazard Mitigation Plans with Regional and Municipal Plans to facilitate flood planning.
- Vermont is offering more resources and technical assistance for communities to plan for future flooding. Website: *Flood*

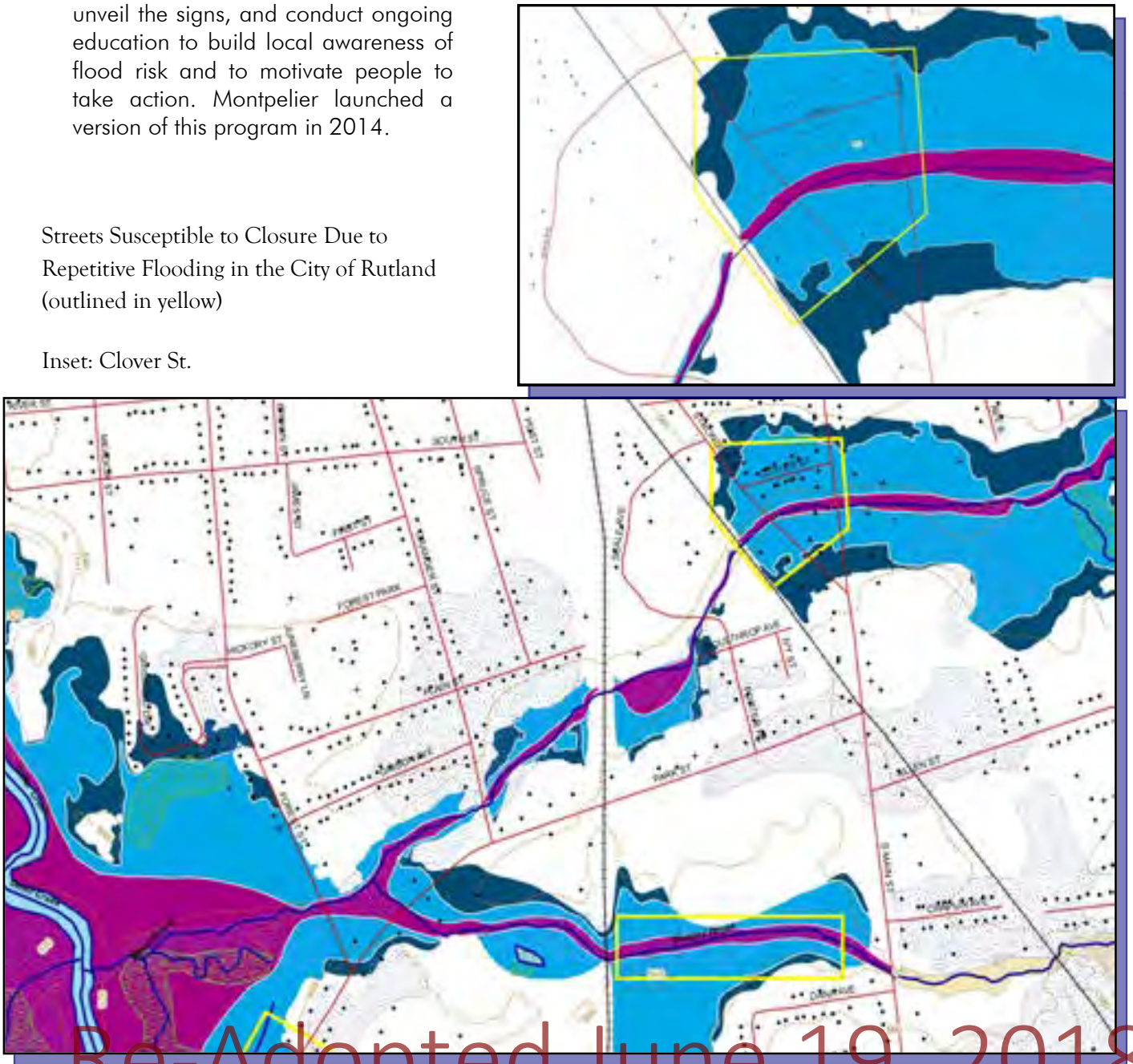
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Ready Vermont: www.floodreadyvermont.gov

- FEMA's Hazard Mitigation Grant Program recently relaxed the need for a Benefit-Cost Analysis for buyout and elevation changes for properties in floodplains.
- "Know Your Line: Be Flood Aware High Water Mark Initiative" created by FEMA and seven other federal agencies, this program encourages participating communities to post high water mark signs in prominent places, hold a high profile launch event to unveil the signs, and conduct ongoing education to build local awareness of flood risk and to motivate people to take action. Montpelier launched a version of this program in 2014.

Community Pressure to Move Infrastructure out of Floodplains

- It is important to steer new public (and private) investments to safer locations. Many towns in Vermont, including some in the Rutland Region, have older structures, roads, bridges, and sometimes critical facilities built in the flood hazard area. Yet few communities have adequate financial resources to provide for public safety during flood events. Communities will be encouraged to include flood



Streets Susceptible to Closure Due to Repetitive Flooding in the City of Rutland (outlined in yellow)

Inset: Clover St.

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Post-Disaster Checklist

In the Event of a Disaster

Municipal officers should report all damages to DEMHS as quickly as possible in order to receive a determination from DEMHS and VTrans as to whether the damages qualify for federal assistance:

- Vermont Division of Emergency Management and Homeland Security 1-800-347-0488
- Local Agency of Transportation District Administrator. District 3 Rutland 802-786-5826

And use your Local Emergency Operations Plan!

Post-Disaster Funds

Several sources of funding may become available after a disaster. The most important source of support for municipalities is federal Public Assistance (PA). After a disaster it is important to ***keep good records***. Photograph and document losses and costs.

Public Assistance and FEMA Programs

The single most important source of post-disaster funding for municipalities is federal Public Assistance (PA) administered by FEMA after a federally-declared disaster. PA funding covers at least 75% of qualified damage to public assets such as roads and culverts. As of 2014, the **Public Assistance Program in Vermont** is managed by the State Public Assistance Officer at the Department of Emergency Management and Homeland Security: http://vem.vermont.gov/publicassistance

Federal Individual and Households Assistance – (FEMA IHA) - This is a site for individuals seeking assistance after a disaster and links to additional resources including loans through the Small Business Administration: http://www.fema.gov/apply-assistance

FEMA Hazard Mitigation Grants (HMGP) - These federal grants are available after a disaster to help reduce (mitigate) the impact of future disasters. These grants are available in communities that have a Local Hazard Mitigation Plan and can provide up to 75% of qualified project costs: http://floodready.vermont.gov/find_funding/hazard_mitigation_assistance

Vermont ERAF / Emergency Relief and Assistance Fund

The Vermont Emergency Relief and Assistance Fund (ERAF) supplements federal Public Assistance. After October 23, 2014, communities that have already taken specific mitigations steps will be eligible for 12.5 % or 17.5% funding from the State:
http://floodready.vermont.gov/find_funding/emergency_relief_assistance
Look up your community's ERAF reimbursement rate: http://floodready.vermont.gov/assessment/community_reports

VTrans – Town Highway Disaster Assistance

- VTrans offers assistance to municipalities before, during and after disaster events that affect town highways. This support is described in Section 6 of the VTrans Orange Book.
- A structure crossing a stream or river needs a permit from an ANR River Management Engineer:
- http://www.watershedmanagement.vt.gov/rivers/htm/rv_management.htm confirming that the span will accommodate at least 1.2 times the bank full width and not obstruct geomorphic equilibrium.
- See Roads and Culverts for more on reliable roads. Any structure replaced after a disaster must meet this standard.
- VTrans administers the Federal Highway Administration's Emergency Relief (ER) Program (See Orange Book p.6-6) support for specified Federal-Aid Highways including some maintained by municipalities. These roads are typically built to a higher standard than most municipal roads and experience less damage. Work through DEMHS and your VTrans District Administrator regarding these funds.

Insurance

- Homeowners' insurance will not cover losses due to flooding. Flood insurance can help cover the cost of damage to buildings and their contents from the effect of overland flow. Flood insurance through the National Flood Insurance Program (NFIP) is available anywhere in a community that participates in the program: http://floodready.vermont.gov/find_funding/flood_insurance
- Flood insurance needs to be acquired before the disaster. It does not require a disaster declaration.
- After a loss, an insured structure in the Special Flood Hazard Area can also access $30,000 in funding to help meet the Increased Cost of Compliance (ICC) by elevating, relocating, demolishing, or flood-proofing as needed to comply with community hazard regulations: http://www.fema.gov/national-flood-insurance-program-2/increased-cost-compliance-coverage
- In Vermont many municipalities secure insurance for themselves through the Property And Casualty Intermunicipal Fund (PACIF) program offered by the Vermont League of Cities and Towns (VLCT). PACIF covers flood losses for municipal structures. Contact VLCT for more information: http://www.vlct.org/rms/pacif/
- Municipalities should plan to safely locate irreplaceable legal and historic documents and artifacts. Insurance can help defray the loss to municipal buildings, contents and equipment.

Other Funds

- The Federal Housing and Urban Development Program offers annual Community Development Block Grants (CDBG) and after Irene the program released Community Development Block Grants – for Disaster Recovery (CDBG – DR). Contact ACCD for more information: http://accd.vermont.gov/strong_communities/opportunities/funding/cdbgdr
  Of particular importance: CDBG funds can be used to match the federal portion of FEMA Hazard Mitigation Grants.
- Artists and artisans may be able to get support after a disaster from Craft Emergency Relief Fund/Artists Emergency Resources (CERF+): http://craftemergency.org/ CERF+ offers direct financial and educational assistance to craft artists including emergency relief assistance, business development support, and resources and referrals on topics such as health, safety, and insurance.

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mitigation projects in capital improvement plans and to pursue hazard mitigation steps.

- Municipal Plans and land use bylaws will incorporate clear community standards regarding flood resiliency, which will guide Act 250 and Section 248 decisions.

RUTLAND RPC GOALS

- Assist communities in identifying and designating flood hazard areas.
- Designate those areas to be protected, including floodplains, river corridors, lands adjacent to streams, wetlands, and upland forests, to reduce the risk of flood damage to infrastructure and improved property.
- Assist communities in mitigating risks to public safety, critical infrastructure, historic structures and municipal investments.
- Encourage communities to avoid development in flood hazard, fluvial erosion and river corridor protection areas.
- Encourage communities to adopt flood hazard bylaws.
- Promote natural areas, non-structural outdoor recreational and agricultural uses as the preferred land uses within river corridor areas.
- Encourage moving or abandoning roads in flood hazard areas when there are more cost effective solutions or other routes.
- Promote river corridor protection and support phase two data for updates.
- Encourage communities to adopt "no adverse impact" standards.
- Promote river corridor easements to help farmers accommodate the need for river channel adjustments.
- Encourage emergency preparedness and flood response planning.
- Identify community goals to enhance information dissemination and public understanding.
- Directly engage and include community in identifying safer locations for community development and encouraging growth in those locations.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes, training and education, information dissemination, preparing funding applications, and GIS mapping.

Emergency Relief Assistance Fund (ERAF)
(2014 Changes)

12.5% state funding for communities which have adopted:

1. National Flood Insurance Program (participate or have applied);
2. Town Road and Bridge Standards – (annually certify adopted standards that meet or exceed the standards in the current: 2014-2016 VTrans Orange Book: Handbook for Local Officials);
3. Local Emergency Operations Plan (adopt annually after town meeting);
4. Local Hazard Mitigation Plan - Adopt a FEMA- approved local plan (valid for five years). Or, a draft plan has been submitted to FEMA Region 1 for review.
5. 17.5% state funding for communities which also:
6. Protect River Corridors from new encroachment; or, protect their flood hazard areas from new encroachments and participate in the FEMA Community Rating System.

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Chapter 19: Telecommunications

INTRODUCTION

Developments in telecommunications continue to impact communities in the Rutland Region in new and continually evolving ways. Of particular note for the *Regional Plan* are the impacts on land use, emergency preparedness, transportation, and economic development.

Telecommunications encompasses a broad series of technologies, including telephone lines, digital cable, towers, repeaters, antenna, and satellite receivers. The industry is in a constant state of flux, with new technologies emerging on a continual basis, providing new services and demanding new infrastructure.

CURRENT CONDITIONS

Service Users

There are multiple key users of telecommunications services in the Rutland Region, including:

- Businesses
- Government
- Personal and home office
- Educational institutions and students
- Emergency responders
- Travelers

Overall demand by all of these users has increased in recent years, and will continue to increase in the future, especially with regard to broadband internet and wireless telephone access.

Each of these groups relies on the availability of safe, timely, and accurate information for their use. It was suggested at a workshop held in Fairlee in January 2005 that the availability of fast, mobile telecommunications services may have as widespread and critical impact in the 21st century in Vermont as rural electrification did in the 20th century. Now in 2015, it appears that this prediction is coming true, as the internet and wireless phone services are widely used every day by many residents.

Internet Service

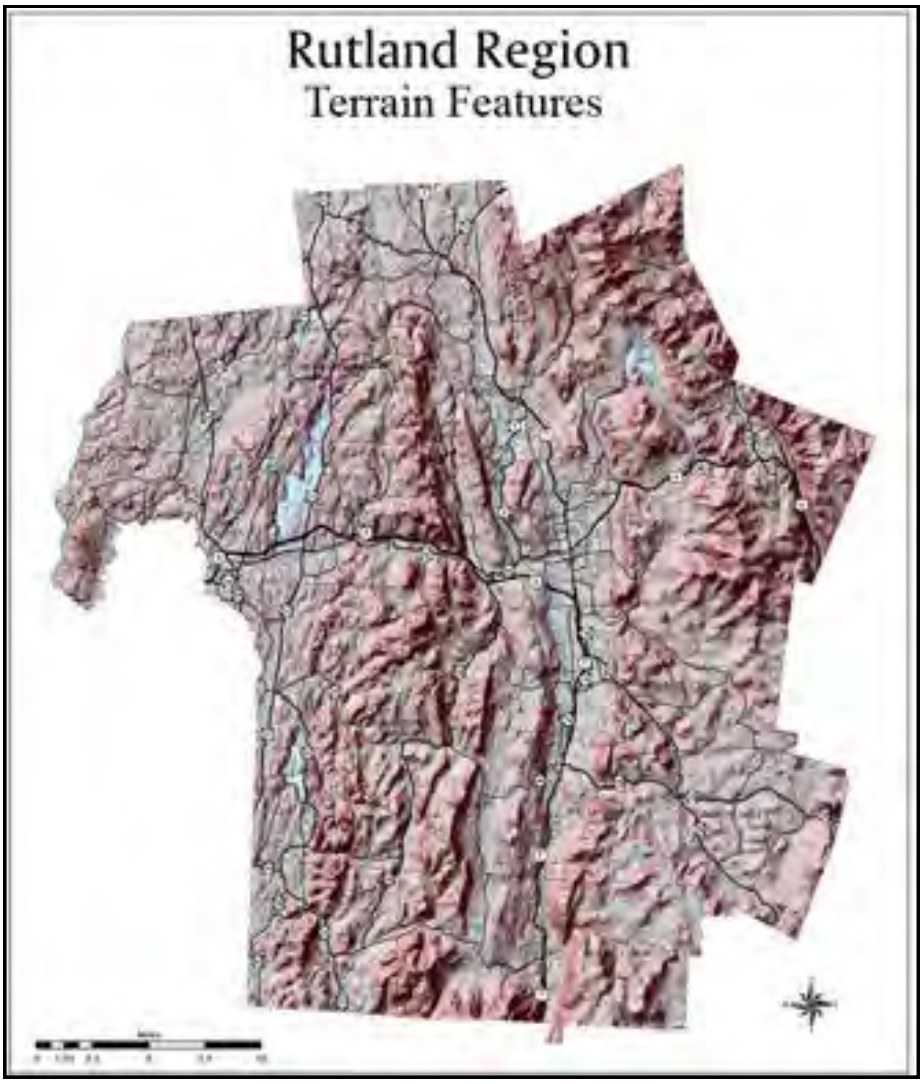
Internet services have become integral to the Region's economy and educational system over the past decade. Approximately two-thirds of all Vermonters were internet users in 2003. By 2012, this number increased to include about three-fourths of all Vermonters using the internet at home.

In recent years, broadband (or high-speed) internet access has become increasingly popular and is now available to about 99% of all locations within Vermont (Vermont Telecommunications Plan). Currently, broadband is delivered to Rutland County users via fiber optic networks installed throughout the Region.



FAST FACT

The Rutland Regional Planning Commission currently maintains a website that includes up-to-date meeting notes, announcements of certain upcoming events, RRPC publications, and links to other websites of interest to users.
www.rutlandrpc.org



Topography is the most significant obstacle to improving wireless telephone and internet service in the Region.

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FOOD FOR THOUGHT

There are many different types of internet connections. They can be divided into three general categories:

1. Dial Up: The most basic connection. Data is sent back and forth using standard phone connections.
2. Broadband: Faster connections used by homes and small businesses. Includes cable modem, DSL, and wireless and satellite connections
3. Backhaul: The fastest connection to the internet. Businesses use fiber-optic or wireless connections to send and receive large amounts of data.

DSL is currently available throughout most of Vermont Telephone's service area and in the more populated areas serviced by Verizon.

Comcast, the county's cable television provider, offers cable modem internet access throughout its service area. Satellite and fixed-location wireless broadband services are also available in Rutland County. These services are a limited but growing segment of the residential and small-business market.

Wireless Internet Hot-Spots

Wireless internet hot spots are now widely available in many towns, available for free to residents in downtown areas. For example, Poultney gives anyone on Main Street access to free Poultney WiFi. WIFi is also free in the Castleton village and, to a limited extent, in the Middletown Springs village. Many cafes and restaurants and almost all libraries also offer free internet Examples such as this demonstrate the extent of the penetration of the internet into the every day lives of Rutland Region residents.



Lucas Somers

Telecommunications tower at the top of Pico Mountain in Killington

Wireless Telephone Services

Approximately 46% of households and 44% of businesses in Vermont subscribed to wireless telephone service in 2003, according to the Vermont Department of Public Service. By 2011, a span of less than ten years, this number had risen to 99% in the Rutland Region (State of Vermont Department of Public Service Market Analysis Report). Facilities of different scales, ranging from antennas mounted atop municipal and other structures to a series of stand-alone towers, provide for the majority of the Region's wireless infrastructure.

Due to the Region's terrain and dispersed population, service areas receive limited wireless telephone and radio services. Private providers have clearly stated their goal of serving populations along US Route 4 and 7 first, followed by mid-sized communities on other routes. Reception for some wireless telephone providers can still be sporadic in the more rural areas of the Region.

Users across the state have stated a clear desire for increased and improved wireless telephone and radio coverage. They have also stated that infrastructure should not have an undue adverse effect on local wildlife habitats or views on pristine ridgelines and peaks.

There are several wireless telephone service providers in the Region, each with different coverage areas including Verizon, T-Mobile, AT&T, and Sprint.

Landline Telephones

Landline telephones are falling out of favor in the Rutland Region as wireless telephone services become more popular. In 2009, the *Economist* reported that "… US telecoms were losing landlines at a

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rate of 700,000 per month and at that rate of loss, the last landline would be cut in only 2025." (State of Vermont Department of Public Service Market Analysis Report) However landlines, still have an important role to play, as many people in the Region still live in areas without reliable wireless telephone signal and therefore depend on landlines.

There is much concern among some residents that even current landline telephone service may not be good enough in certain areas during power outages. This is due to landline telephones being fiber based, which is a passive system and does not power itself. Therefore, an in house battery is required for each customer. However, the battery only has an 8 to 10 hour life, and therefore during extended outages, residents may lose access to phone lines of any type, particularly if they live in an area with no cellphone service. This can become a safety issue, particularly for very rural or elderly residents.

Television

Television reception is available to Rutland County residents through over-the-air antennae, cable, and satellite. None of these are available universally, depending on topography, proximity to populated areas, or local site considerations.

As broadband subscriptions have increased, cable subscriptions have slowly decreased due to a preference for internet based video content on sites such as Netflix, YouTube, and Hulu. In 2009, the number of cable connections in Vermont was 139,275. By 2012, this number had fallen to 132,373 and is expected to continue on this downward trend (Vermont Telecommunications Plan).

Siting and Regulation

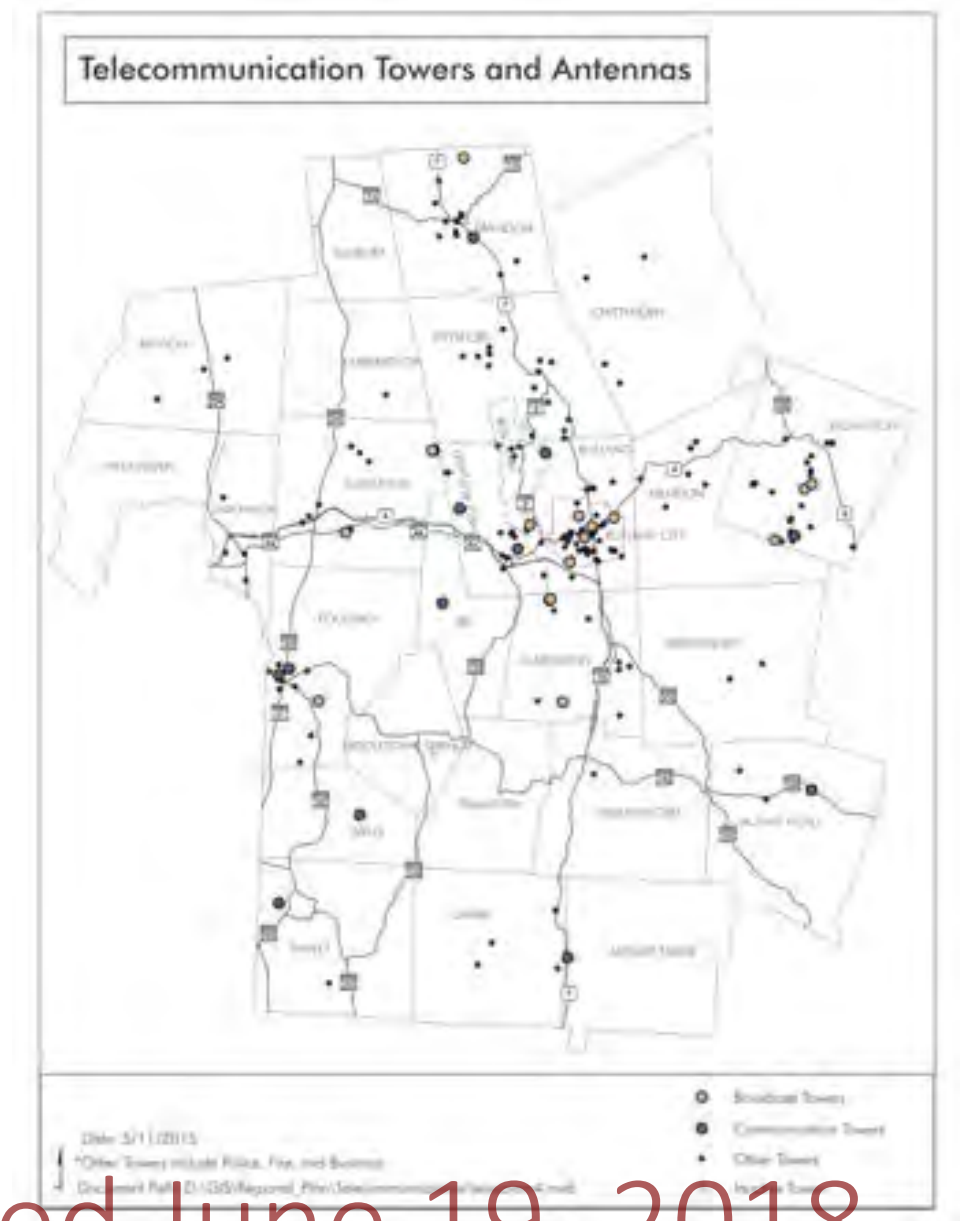
Siting and regulation of telecommunications infrastructure can be difficult, as some residents object to towers for aesthetic or health reasons. Because of this conflict, the Vermont Statutes put forth the following "The regulation of a telecommunications facility...shall be exempt from municipal approval under this chapter when and to the extent jurisdiction is assumed by the Public Service Board..." Municipal development plans must also contain a section on utilities and facilities, including telecommunications infrastructure.

UNMET NEEDS

Needs in the field of telecommunications are constantly in flux. Needs identified today will likely be surpassed by others within a 5-10 year

CONNECTING THE PLAN

Telecommunications and public safety are intricately linked, and poor telecommunications may result in public safety hazards. See the Emergency Management chapter of the *Plan* for more detail.



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CONNECTING THE PLAN

Promoting a robust telecommunications network in Rutland County is vital for economic development, emergency services, and education. See each of these sections for details.

period. It appears clear, however, that users will continue to seek faster data-access speeds, increased mobility, and increased service area.

The main unmet needs in the Region are as follows:

- **Wireless telephone service availability:** At present, service is available in many places but some rural areas, such as parts of Middletown Springs and Pawlet, are still without reliable wireless telephone service.
- **Emergency radio service:** Service and redundancies are not present in all locations around the Region.
- **Unknown service areas:** Service areas for wireless telephone and emergency radios are not precisely known in all cases. Coverage can be unreliable in more rural areas, or areas with complex topographic features. This lack of knowledge can make communication more difficult for Rutland Region residents and can also make emergency service provision harder for emergency responders. Unknown service areas can become a severe public safety issue, particularly during disasters such as Hurricane Irene or extended power outages due to snow.
- **Access to broadband internet:** Service is available in most larger population centers, but remains difficult to access in some more rural areas.
- **High monthly service costs**: Broadband internet service costs can be prohibitive in areas served by a single provider.

FUTURE TRENDS

Convergence of Technologies

A key trend that we are presently beginning to witness is the convergence of technologies in telecommunications. Telephone and DSL use the same infrastructure, as do cable television and cable internet. Wireless telephones can now provide much of the same internet access and data processing speeds as a computer might, enabling video watching, real-time video chatting, and even check depositing and bill paying all from a handheld device.

Increased Demand for Telecommunications Services

There has been a rapid increase in demand for more telecommunication services in the Region over the past ten years. There is no reason to believe that the pattern of increased use of technology will slow in years to come. Instead, all users in Rutland County are likely to demand more and faster access to information in various forms, particular over the internet and on smart phones.

This is particularly true of more rural areas, as these areas are the most difficult to get telephone and internet services to, and therefore also the more expensive (Vermont Telecommunications Plan). This is a serious concern, as the world has entered a stage where lacking internet access is very detrimental in obtaining information. Finding jobs, conducting research, purchasing items, and even paying bills are all activities frequently conducted over the internet, and without regular, reliable access, residents could have a much more difficult time conducting daily business.

Obsolescence of Current Facilities

Technology advancements will continue to drive the telecommunications industry and, as a result, present new opportunities and challenges in the Rutland Region. Over time, most current facilities (especially towers) will become obsolete and will need to be retrofitted or replaced by new structures. Communities throughout the Region should be aware of this cycle to ensure that the landscape is not dotted with unused or abandoned telecommunications facilities. Some towns have already taken steps to avoid this. For example, the Tinmouth zoning requires that old towers be disassembled and

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CASE STUDY:
VERMONT TELEPHONE COMPANY

"World-Class Technology with Down-Home Service"

A small, family owned telephone company, the Vermont Telephone Company (VTel) has been around since 1890. VTel, based in Springfield Vermont, provides landline services to 14 villages within the southern part of the state. They also offer internet, and television in addition to landline services. VTel was the first company in Vermont to accomplish many things, including offering internet, building fiber to homes, and 100 gigabyte data paths.

VTel also operates a 1,400 mile fiber optic network in Vermont, New York City, Cambridge MA, Boston, and Montreal, serving the internet needs of universities and intensive data users.

In 2010, VTel was the recipient of Rural Utilities Service and National Telecommunications Information Administrations grants for $92 million to assist in their work.

For 2015, VTel is working towards building:

- GigE billion-bits-per-second Internet over fiber to every VTel farm, home, and office, in all of 14 rural villages
- 4G/LTE mobile wireless broadband statewide, using their 12 Meg of FCC 700 MHz licenses and 20 Meg of FCC AWS licenses
- 100 Gig data paths on our 1,400 mile 4-state fiber network
- 500 channel video
- Integrate all with statewide Smart Grid

(Source: VTel website)

removed within a certain period of time.

Education and the Internet

Education is becoming more and more dependent on internet access. From elementary school students with online research project requirements to those who complete their entire college degree online, there is clearly an increasing demand for more and faster internet access.

There is also room for some inequality here. As most standardized testing now takes place online, those who do not have access to high speed internet may be at a disadvantage to those who do. Students who do not have early and reliable internet access may also be at a learning disadvantage later in life as they compete with other, more proficient internet users.

MEETING CURRENT AND FUTURE NEEDS

In order to meet current and future needs, communities must remain flexible and, to the extent desired, active in their pursuit of telecommunications services. Regulations concerning towers are in many cases desirable, but communities must be aware that these cannot remain static for long periods of time and should be regularly reexamined due to the evolving nature of telecommunications.

Communities and residents without adequate telecommunications services can take steps to attract them. Several avenues for assistance currently exist, including the

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Vermont Rural Broadband Project, an organization under the Vermont Council on Rural Development's umbrella that provides technical assistance to communities and groups of potential users trying to gain access to high speed internet services.

It is equally important for those in the business, planning, and telecommunications communities to develop a common strategy for deployment of services in the Region.

RUTLAND RPC GOALS

- Determine if and where telecommunications and public safety intersect, and if necessary, advocate for protecting public safety.
- Help communities to assess demand for broadband internet services to attract providers.
- Assist communities in identifying desirable telecommunication infrastructure sites.
- Advocate infrastructure sharing by telecommunications facilities in lieu of new towers and other structures, and for the removal of unused towers if not activated or in use for a certain period of time.
- Provide model telecommunications regulations and information on federal and state laws to interested communities.
- Initiate an inventory of wireless telephone and emergency radio service areas.
- Promote a common strategy for deployment of services in the Region with the business and telecommunications industries.
- Encourage developers to work with towns early in the process of adding or altering telecommunications infrastructure

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

ADDITIONAL RESOURCES

- Vermont Telecommunications Authority website
- Vermont Public Service Department website



The current RRPC website

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Chapter 20: Resource Extraction

INTRODUCTION

Mineral extraction – marble, slate, and gravel in particular – has a long history in the Rutland Region. The industry was a major component of the Region's economy in the late 19th and early 20th centuries. Today, mining and quarrying operations continue but they employ significantly fewer people.

This chapter examines mineral and groundwater resources in the Region and how they relate to opportunities and challenges presented elsewhere in the *Regional Plan.* It also addresses the balance between the benefits and impacts of the removal of resources from the Rutland Region, some of which have a limited recharge ability and some of which are finite.

CURRENT CONDITIONS

Mineral Extraction

Mineral deposits commonly extracted in the Region include sand, gravel, slate, marble, and crushed rock. According to the 2010 US Census, there are thirteen working mines in Rutland County that provide full time jobs to 107 people. These resources are used for road construction, home construction and other purposes.

Slate quarrying has a long history along the Taconic Mountains valley in the Region's New York border towns. Significant deposits exist in Fair Haven, Poultney, Castleton, Wells, and Pawlet. Quarries have operated in each of these communities, at times sporadically, for well over a hundred years.

In the 1990's the slate industry was exempted from Act 250 and has grown rapidly. But it has done this growth without much regulation or oversight. This has led to community complaints about noise, air, and water pollution.

Sand and gravel pits are dotted throughout the Region and generally operate on a small scale. They proved their local benefits during Tropical Storm Irene when they were able to quickly and cheaply provide the state with the necessary materials to construct makeshift roads immediately after the storm.

Florence is the home to a production plant of Omya Inc., the world's largest producer of fine ground calcium carbonate. This product is used for food, medicines, paper, paint, and plastic production. The bulk of the marble supplied to the Florence plant is trucked



FAST FACT

Vermont stone, especially Danby quarry white marble, has been used the construction of the US Supreme Court, Arlington National Cemetery, Jefferson Memorial, and other institutional and private buildings across the state, nation, and world.



RRPC Staff

Entrance to the Danby marble quarry on Dorset Mountain

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CONNECTING THE PLAN

Resource Extraction has implications on several issues addressed elsewhere in this *Plan*. Notably:

- Land Use;
- Water Quality, for potential impacts of mineral and water extraction;
- Economic Activity, for the jobs and taxes generated from operations;
- Transportation, for challenges to economic growth.

daily from East Middlebury.

Danby has the largest underground quarry in the world, over a mile long with a footprint of twenty-five acres and reaching six levels deep within Dorset Mountain. Previously, marble stone produced at this quarry was shipped in blocks to Italy for fabrication, but it is now processed on site for better selection, lower cost and quicker scheduling. Joel Blumenthal, a geologist working for Omya Inc., has told the RRPC that there is more than enough marble left in the Danby Quarry to "last well past any of our lifetimes.

Water Extraction

Industrial extraction of groundwater had been on the upswing in Vermont at the turn of the millennium. But since the last *Regional Plan* most commercial extractors have downgraded their operations or left the state. Vermont Pure discontinued its single serve bottles and efforts by Rutland Town to market their water have failed. This is most likely because of the downturned economy, the growing unpopularity of bottled water, and the increasing price of transportation. While extraction continues, it is well within the refresh rate of our aquifers for now.

CASE STUDY:

MINING THE DANBY QUARRY

Although Carrara, Italy, the region where marble has been worked the classical era, is considered the traditional capital of marble production, the Rutland Region can also claim a long history with this invaluable resource. Marble tends to follow the aptly named "marble belt" in the Vermont Valley: the area between the Taconic Mountains (which lie approximately between Brandon and Bennington) and the Green Mountains.

The Danby Quarry, opened in 1903, is believed to be the largest underground marble quarry in the world, over a mile long with a footprint of twenty-five acres and reaching six levels deep. Through six levels dug into Dorset Mountain, access is gained to every layer of the geologic formation that formed Vermont's Marble Valley, thereby approximating material from almost any historic quarry in the Region. Five varieties of marble are produced at Danby Quarry.

Envision endless dimly lit galleries with thirty foot ceilings supported by massive roof pillars, ten-foot marble chainsaws, massive loaders traversing winding roads throughout the quarry and a gang saw big enough to park a small car inside. In the early years of its operation, marble blocks were finished in the Region. Later, blocks were shipped to Italy for fabrication. Today, those operations have returned to the Region, with a full scale processing facility which includes state-of-the-art Italian technology for cutting and polishing slabs and for producing any kind size of custom cut slab located within the Quarry itself.

The facility is operated by Vermont Quarries Corp., founded in 1992 by R.E.D. Graniti Group and another Italian firm, which own a 99-year lease on the 30 acres inside Dorset Mountain. Quarried by the Vermont Marble Co. for 150 years, Danby marble has been used in prestigious buildings across the world, including the Jefferson Memorial, Supreme Court building and U.S. Senate Office Building in Washington, D.C. and the United Nations building in New York and others.

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Other, Less Common, Resources

- Kaolinite, a type of clay, is found along the Green Mountain front in western Vermont used in making china.
- Gold is found in Vermont, but not in quantities that would support a profitable mining operation.
- Ultramafic rocks are minerals that can convert gaseous carbon dioxide into a solid, thus removing it from the atmosphere. These minerals, such as asbestos, soapstone, and talc, can be found in the Rutland Region. However they are only available in economic quantities in other parts of the state.

Permitting

Act 250: A permit will be granted for the extraction or processing of mineral and earth resources when it is demonstrated that the disposal of waste from the site will not have an unduly harmful impact and a site rehabilitation plan is created. Key areas of focus include hours of operation, blasting plans, impacts to groundwater from dewatering, impacts to surrounding wetlands, reclamation plans, topsoil, seeding, size, monitoring, isolation distance, and the slope and depth of the operation, and what that means for runoff.

Act 199: In 2008 Vermont passed Act 199, "An Act Relating to a Groundwater Withdrawal Permit Program". It declared that it was the policy of the state that groundwater resources of the state now be held in trust for the public.

Quarrying

Quarrying has a wide range of impacts on surrounding communities: Blasting, dust, air pollution, noise, trucking, intruding into groundwater, dewatering/ storm-water discharge, chemicals and fuels used on-site. It also impacts the community by helping it become more self sufficient by being able to repair after floods and providing employment and income for the area.

Many communities in our Region report an amicable relationship with their local quarries, but there are also a significant number of complaints that should be looked into.

Community needs include limits on noise, hours of operation, times of blasting, blasting loads — both the size of each explosion, and the total number of pounds of explosives used each day — and requirements for reclamations.

UNMET NEEDS

How to balance the economic benefit, employment and resource production, against the environmental costs, noise, air and water pollution of resource extraction remains a subject of debate in the Rutland Region. The environmental impacts of resource extraction are numerous, particularly if done improperly. While the majority of operators within the Rutland Region follow regulations and address key concerns, there remain environmental issues associated with mineral extraction:

- Improper management of sand and gravel pits can lead to poorly constructed extraction pits that increase soil erosion and make site restoration difficult or impossible. Further, the practice of undertaking proper site restoration following extraction of resources is not universal in the Region.
- The majority of communities in the Rutland Region do not have written guidelines regarding the extraction of mineral resources, giving rise to difficult debates at the local and state level over proposed operations. The challenge of undertaking such advanced planning however, may be beyond the resources of communities.
- Though GIS mapping suggests that there are abundant mineral resources in the Rutland Region, many are inaccessible because of existing



FOOD FOR THOUGHT

In 1970, Vermont passed Act 250 which protects land with high potential for the extraction of earth resources. It covers the actual impacts of a resource extraction project and also requires planning for future rehabilitation of the site. The goal is to protect important resources from being destroyed by development and to make sure that extraction does not impair water quality, visual resources and future alternate uses of the area. Noise, dust, and traffic impacts are addressed. Specific aspects of the act that apply to this section are addressed to the left.

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development above ground in those areas. It is important to recognize the actual limitations of resource extraction.

- In some parts of the Region conflicts have arisen between mineral extraction and residential land uses. This is because permitting for quarries in Vermont allows for sites to remain dormant for several years before re-initiating work. In the meantime, houses may be built in the area.
- There is a lack of reliable information about the costs and benefits to a community that host resource extraction activities. Lack of such information can further fuel debate over the operations.

FUTURE TRENDS

Resource extraction is, by definition, an activity based upon continued territorial expansion and impacts on the environment. It is not expected that the mineral extraction industry will undergo widespread growth over the next twenty years. It is possible, however, that operators will seek to begin extraction of minerals at individual sites.



FAST FACT

The national market for bottled spring water increased from an average of 23.9 gallons per person per year in 2004 to 29.2 gallons per person in 2011.

(Source: Beverage Marketing Corporation, cited in Charles Fishman, "U.S. Bottled water Sales Are Booming (Again) Despite Opposition," National Geographic water Currents, May 2012.)

MEETING CURRENT AND FUTURE NEEDS

Greater advance planning for issues related to resource extraction would be beneficial at the local and Regional level. A community could work with landowners to identify factors which might make those uses a priority, including having direct access to appropriate roads for transporting materials, employing technologically advanced extraction techniques that do not damage the quality of the site and surrounding land uses, and a requiring reclamation plan that serves to minimize adverse impacts on residents, wildlife, and existing or future land uses. Another important need is to ensure that all mining operations have reclamation plans, as leaving sites of resource extraction open after use is discontinued is harmful to the people and environment around that site.

Though resources are plentiful at this point, it would be appropriate to plan with the understanding that natural non-renewable resources can be subject to depletion if not managed properly.

RUTLAND RPC GOALS

- Assist towns with the identification of groundwater protection areas and ensure municipal plans and local use bylaws protect them with compatible set backs and land uses laws.
- Assist towns with the identification of transportation routes for transporting materials.
- Educate towns on best management practices to minimize pollution in areas of mineral extraction.
- Assist with the development of plans and standards for reclamation of mineral resource sites to minimize impacts on residents, wildlife, and existing and proposed land uses.
- Formulate regional policies on how to react to permit applications for industrial, large scale water withdrawing operations.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

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Chapter 21: Water and Wastewater Systems

INTRODUCTION

The efficient construction, operation and maintenance of water and wastewater facilities is essential to public health and a safe environment. Water and wastewater systems in the Rutland Region include systems serving individual homes, schools or businesses and systems serving groups of homes or entire communities. Water and wastewater system locations are both a result of and a determinant in an area's character and development patterns. This chapter of the *Plan* addresses public water supply and wastewater treatment systems, private wells, and on-site septic systems, and their relationships with land use.

CURRENT CONDITIONS

The Vermont Agency of Natural Resources (ANR) regulates the construction, replacement, modification, and operation of potable community water supplies and wastewater systems. The ANR regulations include plan reviews, construction permits, operational requirements and permits, sampling and reporting requirements and certified operators for community systems. State regulations require all new and replacement water and wastewater facilities and modifications to receive permits from the state, unless the town decides to administer the rules. Additionally, the Vermont Public Service Board has jurisdiction over private water companies (currently 24 statewide) and regulates their rates.

At the federal level, the 1996 amendments to the Safe Drinking Water Act (SDWA) affect many of the rules made at the state level which apply to local water systems. In 2013, the SDWA's Total Coliform Rule was revised to better address the legal limits for E. coli in drinking water; public water systems will be required to comply with these revisions by April 1, 2016.

Public Water Systems

Public water utilities are located in 12 municipalities throughout the Rutland Region, though they are not found in every densely populated village. The Region has approximately 180 active public water systems, which includes 55 community water systems, 100 transient non-community water systems (TNCs), and 25 non-transient non-community water systems (NTNCs) (see water system definitions in the sidebar). The table on public community water systems shows further information on municipal water systems in the Region. Most of these water systems rely on groundwater as their source of water, although the largest system (Rutland City) is supplied by surface waters. Most public water systems in the state and the Region are relatively small, with only 6 systems statewide that serve more than 10,000 customers; in the Rutland Region public water systems serve populations from as little as 29 customers up to 18,500 in Rutland City.

According to the 2013 Annual Report on Public Water System Violations, "Many of Vermont's smaller systems lack a



FAST FACT

Title 10 chapter 56 of state statute authorizes the Secretary of the Agency of Natural Resources to regulate the purity of drinking water, the adequacy, construction and operation of public water systems, public water sources and public water source protection areas.



FOOD FOR THOUGHT

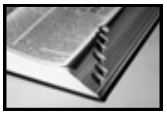
System Capacity:
The "capacity" of a water system involves much more than simply the amount of water a system can supply. Other factors affecting capacity include the size of storage tanks, capacity for fire protection services, water treatment capacity, and the size and pressure of water lines.



RRPC Staff

A municipal water supply serves the Village of Poultney.

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DEFINITIONS

"Public water system" means any system, or combination of systems owned or controlled by a person, which provides drinking water through pipes or other constructed conveyances to the public and which:

- has at least 15 service connections; or
- serves an average of at least 25 individuals for at least 60 days a year.

Public water system shall also mean any part of a piped system which does not provide drinking water, if use of such a part could affect the quality or quantity of the drinking water supplied by the system. Public water system shall also mean a system which bottles drinking water for public distribution and sale.

"Community water system" means a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

"Noncommunity water system" means a public water system that is not a community water system.

- "Nontransient" systems are systems which serve 25 or more of the same people daily for more than six months in any year.
- "Transient" systems are all other noncommunity public water systems, such as a system serving a restaurant.

sufficient customer base among which to spread costs, and cannot find volunteers to track regulatory compliance. The smaller systems typically serve rural communities, often composed of residential customers that are less able to pay substantial amounts for their water (compared to industrial and commercial customers), or afford consultants. Several public water systems in the Rutland Region have experienced recent violations, which include contaminant level violations, treatment technique violations, and monitoring and reporting violations. Limited financial support for community water and wastewater facility improvements is available through the Vermont Department of Environmental Conservation, the U.S. Department of Agriculture, and the Vermont Agency of Commerce and Community Development.

Private Wells

There are two categories of non-public water systems: those requiring permits and those not requiring permits. Private systems that do not require permits include single family homes on lots not subject to state subdivision rules, which are regulated indirectly by the standards in Part 12 of Appendix A and the Well Driller Licensing Rule in Chapter 15 of the Environmental Protection Rules. Private water systems requiring permits include 9 lot-or-fewer subdivisions, and public buildings serving fewer than 25 people; systems with 10 or more subdivisions and those that serve greater than 25 people would be regulated as public systems. (VT ANR DEC DWGPD website: drinkingwater.vt.gov/drinkingwatersystems.htm

Public Wastewater Systems

Municipal wastewater treatment and disposal systems are operated and maintained in 12 of the Region's larger communities (in addition to a collection only system in Rutland Town). In the more rural areas, on-site waste disposal is the accepted alternative (see below). The collection of stormwater is a related issue; most communities in the Region have achieved the state's goals of separate stormwater systems to avoid overflowing wastewater treatment facilities during heavy rains, however a handful of municipalities in the Region still have combined sewer-storm basins. See the Water Quality chapter for more on stormwater management.

With recent tightening of the Lake Champlain Total Maximum Daily Load (TMDL) standards for phosphorous levels, the 11 wastewater facilities in the region that discharge into the Lake Champlain watershed will need to comply.

On-Site Septic

Improved on-site septic system technology, regulation, and monitoring have had a beneficial impact on our environment. Wastewater permitting, including septic systems, is handled at the state level unless a municipality chooses to administer this. The state permit process was reformed so that all septic systems and water supplies are treated consistently under one statute, advanced technologies can be used, the exemption for lots greater than ten acres ended, and failed systems are entitled to a "best fix" permit for replacement.

UNMET NEEDS

Water Supply

- Upgrades and improvements to existing public water supply facilities to meet current state and federal regulations for public health protection are unaffordable and politically unfavorable, particularly for small systems that lack a sizable funding base. These problems in the Rutland Region are primarily related to aged and inadequately sized infrastructure. Small water mains often result in

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inadequate pressure under peak flow and fire flow conditions.

- Threats to the quality of the groundwater and wells include runoff from agriculture, roads and salt storage areas, contaminated runoff from paved areas, and failing septic systems. Unlike source protection areas for public water supplies, private wells are not protected aside from minimum setbacks from structures.
- Reliable groundwater mapping in the Rutland Region and the state is a challenge, due to the small scale of aquifers and the presence of bedrock. Without accurate mapping it is difficult to predict areas in need of protection from potential contamination. It is also difficult to assess the impacts that each additional well, public water system, or private water system will have upon existing water systems, and to plan for future development.
- There is a continuing need for additional certified public water system operators.
- Data is lacking but it is likely that many water systems serving individual homes do not meet current construction standards and most have never been tested as recommended by the State Health Department.
- Vermont identifies needed public water system improvements through the State Sanitary Survey program. There are not enough federal and state funds available to meet the identified needs.

Wastewater

Community sewer systems require proper operation and maintenance by certified operators and ongoing upgrading and replacement of facility components. There are not adequate funds available to meet these needs, and thus they will likely have to be met by raising rates for customers.

- While state and local planning goals promote compact settlement patterns, it is a challenge in many communities to create infill development (e.g. in historic villages) due to septic requirements, particularly isolation distances. There are also high costs associated with new community wastewater systems or retrofits to existing systems.
- There are a significant number of existing on-site systems that do not meet standards and many of these systems discharge directly to streams or the surface without adequate treatment.
- As is the need for water system operators, there is a lack of qualified trained operators for community wastewater systems.
- In a small number of communities, combined sewer and storm water systems are still releasing raw sewage into receiving waters during heavy rains.
- Not all towns have located and mapped their sewer lines. Sewer systems need to be inspected regularly to identify sources of storm and runoff waters and eliminate excess flow. In order to minimize the probability of exceeding the capacity of sewer facilities, inflow and infiltration of storm and runoff waters into the piping system carrying wastes to the treatment

CONNECTING THE PLAN

For systems that attain their drinking water from lakes, reservoirs, or rivers, understanding the geology and land use of the watershed is important. Drinking water systems served by groundwater sources should identify the nature of the aquifer. Both surface water and groundwater systems should pay particular attention to soils, slope, hydrology, and land use. See the Water Quality chapter for more information.



RRPC Staff

Wastewater Treatment Facility for the City of Rutland

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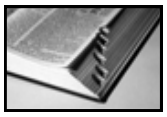


FOOD FOR THOUGHT

Source Protection Areas:

Source Protection Plans provide land use management tools which reduce the threats of contamination and foster drinking water protection by mapping the recharge area of a water source, recommending measures to control potential sources of contamination, and identifying alternative drinking water sources in the event of contamination.

Since 1992, the state has required source protection plans (SPPs) for all community and non-transient non-community water systems. The state also requires that SPPs be in place prior to the final permitting of new public community water systems.



DEFINITIONS

"Capacity development" is the process through which water systems acquire, maintain, and build upon their technical, managerial, and financial (TMF) capabilities which enable them to consistently provide safe drinking water to their customers in a reliable and cost-effective manner.

plant must be eliminated. Separate storm sewer facilities are needed in many areas.

- In some cases, old sewer lines made of clay and even wood may still exist and are in need of replacement.
- Construction of community or communal sewer systems to serve areas with septic system failures and areas with primarily clay soils may be necessary in the future.

FUTURE TRENDS

Multiple trends related to water and sewer infrastructure are worth noting and preparing for:

- State planning goals of maintaining open space and reducing sprawl may result in larger populations using existing water and wastewater infrastructure. This will require correcting deficiencies of these systems and expanding capacity in place as needed rather than constructing new systems.
- There has been some concern that as more people move in to certain areas, the long-range sustainability of the water supply is a concern. In some areas of the Region, homeowners have had to dig inordinately deep in order to find reliable water sources.
- The Region's aging water distribution and sewer systems will inevitably require increasing investments to maintain the existing level of service. Older pipes will need repair or replacement in future years. Federal and state funding for these improvements may not increase as rapidly as the need, requiring more funding by local municipalities.
- Aging sewer systems may increase system infiltration and main breaks resulting in more spills and stream contamination.
- Climate change is already causing increased precipitation and more severe storms, and flooding and ice events are likely to damage the infrastructure of water and wastewater systems which are often located in vulnerable areas such as floodplains. The increased chance of drought could also pose problems for shallow water systems.
- Wastewater treatment facilities that discharge into the Lake Champlain watershed will be required to conduct upgrades to comply with the new phosphorous TMDL, and operations and maintenance costs will inevitably increase as well. This will impact stormwater systems as well.
- The Region is experiencing an increase in the conversion of lakeside cottages to year-round houses, posing problems related to septic system capacities and their ability to meet current state standards.

RUTLAND RPC GOALS

A number of options are available for communities to address water and wastewater issues. They include:

- Identifying areas suitable for development and economic growth, and planning for build-out that includes the creative financing of water and wastewater infrastructure improvements.
- Work with communities in the local planning process to identify the physical limits and boundaries of water and wastewater infrastructure development.
- Development of local asset management programs in conjunction with capital budgets and programs to address water systems' aging infrastructure and inadequately sized facilities' needs. It is unlikely that sufficient federal and state funds will be available to make these improvements when required by the state.

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- Consolidation of small public systems to reduce operating costs and substantially improve public health protection may be effective.
- Protecting and mitigating water and wastewater infrastructure located in vulnerable areas (particularly floodplains), by ideally moving systems out the floodplain or making systems more redundant.
- Identifying, protecting from harmful development and pollution, and eventually acquiring potential municipal water sources. There is a continuing need for towns to take action to improve protection for water system sources and to identify and protect potential needed new water sources.
- Construction of additional water storage facilities at outlying areas to improve fire protection.
- Mapping of existing infrastructure, growth areas, source protection areas, septic suitability of lands, and groundwater in municipalities.
- Encouraging the siting of new wells in ways that avoid depletion of the groundwater supplies.
- Adoption and implementation of Source Water Protection Plans and overlay zoning districts. It is always less expensive to protect water quality *first*, rather than treating contaminated water later.
- Provision of training for water and wastewater system operators. Well trained operators are a critical component in protecting public health and the environment.
- Participate in free leak detection surveys for community water systems, through the Vermont Agency of Natural Resources. Repairing leaks in a timely fashion can minimize wasteful water withdrawals, reduce treatment costs, capture lost revenue, control disruption to the water system, and protect public health.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.



FOOD FOR THOUGHT

Relevant Vermont Statute

Vermont's planning and development goals (24 V.S.A. §4302) include the following

(c)(1)(C) Public investments, including the construction or expansion of infrastructure, should reinforce the general character and planned growth patterns of the area.

(c)(12) To plan for, finance and provide an efficient system of public facilities and services to meet future needs.

(A) Public facilities and services should include fire and police protection, emergency medical services, schools, water supply, and sewage and solid waste disposal.

(B) The rate of growth should not exceed the ability of the community and the area to provide facilities and services.

Municipal and regional plans in Vermont must include (in accordance with 24 V.S.A. §4382(a)(4)):

A utility and facility plan, consisting of a map and statement of present and prospective community facilities and public utilities showing existing and proposed educational, recreational and other public sites, buildings and facilities, including hospitals, libraries, power generating plants and transmission lines, water supply, sewage disposal, refuse disposal, storm drainage, and other similar facilities and activities, and recommendations to meet future needs for community facilities and services, with indications of priority of need, costs and method of financing.

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Public Community Water Systems

Community	Water System Name	Source Type*	Population Served
Brandon	Brandon Fire District 1	GW	3,865
Brandon	Brandon Fire District 2	GW	98
Castleton	Castleton Fire District 1	GW	1,940
Castleton	Castleton Fire District 3	GWP	493
Danby	Danby Mount Tabor FD 1	GW	385
Fair Haven	Fair Haven Water Dept	SW	3,076
Pittsford	Pittsford Florence Water Dept	GW	1,652
Poultney	Poultney Water Dept	GW	2,400
Proctor	Proctor Water Dept	SW	2,000
Rutland City	Rutland City Water Dept	SW	18,500
Rutland Town	Rutland Town Fire District 4	SWP	136
Rutland Town	Rutland Town Fire District 1	GW	401
Rutland Town	Rutland Town Fire District 6	GW	137
Rutland Town	Rutland Town Fire District 10	GW	84
Rutland Town	Rutland Town Fire District 5	GW	110
Rutland Town	Rutland Town Fire District 11	SWP	29
Shrewsbury	Cuttingsville Fire District	GW	108
Wallingford	South Wallingford Co	GW	63
Wallingford	Wallingford Fire District 1	GW & SW	956
West Rutland	West Rutland Town	GW	1,982

*GW= groundwater
*SW= surface water



FOOD FOR THOUGHT

Stormwater Systems:

In the early 1900s drainage and sewer systems were combined for engineering purposes, i.e. rain water washes wastes down the pipe to discharge into a body of water. When treatment facilities were added at the end of the pipe it became apparent that the volume of water was huge and it was not cost effective to treat rainwater like wastewater, so separate systems were designed or required. Because of the expense to separate especially in downtown areas there was some latitude in how much had to be separated if the end of the pipe discharge met a certain standard. Most towns have been able to achieve the state goal but not all. (Jim Pease, VT DEC)

Re-Adopted June 19, 2018

Community Wastewater Systems:

Permittee	Number of Connections	Average Daily Flow, 2010 - 2013 (MGD)*	Design Flow (MGD)*	Percentage of Design Flow	Year Built
Benson	61	0.014	0.0177	79.10%	1970
Brandon	1000	0.439	0.7	62.70%	1960
Castleton	714	0.319	0.48	66.50%	1970
Fair Haven	?	0.171	0.5	34.20%	1969
Killington (Sherburne F.D.)	782	0.0735	0.3	24.50%	1984
Pittsford	244	0.062	0.085	72.90%	2002
Poultney	578	0.222	0.5	44.40%	1971
Proctor	760	0.219	0.325	67.40%	1960
Rutland City	5667	5.097	8.1	62.90%	1860
Wallingford	400	0.055	0.12	45.80%	1970
West Pawlet	130	0.013	0.04	32.50%	1983
West Rutland	752	0.189	0.45	42.00%	2000

*MGD= Millions of gallons per day

Note: Rutland Town has a collection only wastewater system, which is pumped to Rutland City for treatment, thus Rutland Town is not included in this table.

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Chapter 22: Solid Waste and Recycling

INTRODUCTION

Managing waste is an ongoing challenge throughout the world. The US Environmental Protection Agency (EPA) estimated that, in 2012, an average of 4.38 pounds of municipal solid waste per person was produced each day in the United States. Of that waste generation, 1.51 pounds of it was recycled or composted. In the Rutland Region, additional costs associated with transporting, filtering, recycling, incinerating, and burying garbage are especially high, due to its rural nature.

Reducing the amount of waste, increasing recycling, and seeking cost-effective management solutions are three key components of planning for solid waste. This chapter of the *Regional Plan* addresses the structure for waste management in the Rutland Region and its relationship to other community interests.

CURRENT CONDITIONS

Vermont statutes require all municipalities, either individually, through a solid waste management district, or though an intermunicipal association, to adopt a solid waste implementation plan (SWIP) that conforms with the State Materials Management Plan.

These detail the goals, objectives, and implementation strategies to be used to meet the requirements of Vermont's Acts 78 and 148 — the Solid Waste Acts of 1987 and 2012.

In 2012 Act 148—Vermont's Universal Recycling Law—was passed. The intent of the law is to divert recyclable items, leaf and yard debris, and food scraps from landfills. By July 1, 2015 recyclables will be banned from landfills; by July 1, 2016 leaf and yard debris and clean wood waste will be banned from landfills; and by 2020 food scraps will be banned. Facility owners and trash haulers will need to collect and manage these wastes accordingly. Municipalities are also required to implement variable rate pricing (aka "pay as you throw") based on volume or weight by July 1, 2015.

The responsibility for the planning, administration, implementation, and management of solid waste in the Rutland Region lies with two entities: the Rutland County Solid Waste District (RCSWD or District), formed under state law permitting municipal compacts and the Solid Waste Alliance Communities (SWAC), formed under an interlocal contract. The communities will need to work with these two entities to ensure compliance with Act 148.

These organizations work to provide their member towns with collective bargaining agreements for a hauler to transport recyclables and garbage from transfer stations to their final destinations, prepare and maintain solid waste plans,

CONNECTING THE PLAN

Large-scale composting, if introduced, could serve not only to reduce waste generated in the Region but also provide compost to the local agricultural community. See the Agriculture and Forestry chapters for details.

Total Solid Waste and Recyclables Processed in Rutland County

	Trash Processed	Trash Processed Per Capita	Recyclables Processed	Recyclables Processed Per Capita
RCSWD	37,112 tons	4.22 lbs	9870 tons	1.20 lbs
SWAC	510 tons	1.55 lbs	1087 tons	0.08 lbs

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CASE STUDY: RUTLAND REGIONAL TRANSFER STATION

The City of Rutland is home to the Rutland County Solid Waste District Regional Transfer Station, also known as the Gleason Road Site.

The station is run by David Petty and was operated as a city dump until it closed in the 1990's. Since then, it has operated as a regional transfer station that serves the residents of Rutland County, as well as surrounding towns who may haul trash (that are en route to the landfill) to the regional station.

Organics Program

Leaf and yard waste are collected and chipped at the Gleason Road Site, and then sent to McNeil Generating Station in Burlington or to Finch paper, LLC in Glens Falls, NY, where it is used as a fuel for biomass energy production. In 2014 the transfer station processed 1,671 tons of leaf and yard waste.

Hazardous Waste Collection

The transfer station has household hazardous waste (HHW) collection facility and a conditional exempt small quantity hazardous waste generator (CESQG) collection facility for businesses. The HHW facility is operated three days per week year round. In the summer, spring, and fall, the HHW facility is also open on the first Saturday of each month. For the remaining Saturdays of April-October, the HHW Rover visits towns throughout the county. The Gleason Road Site has noticed an increase in the amount of hazardous materials that they process. They attribute this to:



The Household Hazardous Waste Rover. *Elysa Smigielski*

- Greater awareness by the public of hazardous materials that require special disposal
- New materials continually being added to the overall list of hazardous materials. For instance, alkaline batteries and latex paint were added to the list in recent years, and these two materials now comprise a large percentage now of the hazardous materials that are collected.
- Product Stewardship programs - manufacturers of some hazardous materials are responsible for managing the disposal of the leftover material.

More Good Ideas

The Gleason Road site has numerous special programs for the collection and management of materials that may be repurposed or that require special disposal. They have a row of large containers that are used to collect specialty materials.

One specialized and very important collection that the Gleason Road Site manages is of asbestos. Contractors and homeowners may bring materials containing asbestos to the station, and in return they will receive a certificate documenting its safe and proper disposal.

The station has a specific container for electronics. The state of Vermont is actually quite unique in hosting electronic recycling programs at its transfer stations, since few other states do so. The Gleason Road Site has collected 2.7 million pounds of electronics since 2004.



Free Electronics Recycling at Gleason Road. *Elysa Smigielski*

Another container is dedicated to a book collection for Big Hearted Books. Upon collection from the transfer station these books are sold on eBay for reuse.

Another reuse project involves roofing shingles. This material is mixed with construction and demolition waste, and the mixture is then used as a road fill at the landfill in Coventry. This program benefits the landfill, since they do not have to purchase material to use as road fill; and it also benefits the Gleason Road Site, since they are able to pay less for the hauling of this material to Coventry than they pay to haul regular trash.

Lastly, the Gleason Road Site still collects pharmaceuticals on special collection days, but it would like to soon operate the collection full time.

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provide community outreach and education, and manage hazardous waste collection days in all communities. The District also operates a transfer station local in Rutland City off Gleason Road.

In every town but one (Proctor), residents and businesses are responsible for getting their trash, yard waste, and recyclables to a local or regional transfer station or a private waste management facility. Individual households may choose to bring this solid waste to the transfer station themselves, have an agreement with an independent contractor, or have an agreement with one of the Region's two large-scale haulers. Proctor households have door-to-door pickup.

All communities currently contract to have the solid waste that is not recycled or reused hauled out of the county to either state certified landfills in Moretown and Coventry, Vermont, the Wheelabrator Incinerator in New Hampshire, or the Adirondack Incinerator in Hudson Falls, New York. Pawlet residents self-haul their trash to the Granville, New York transfer station where it is ultimately taken to the Hudson Falls Incinerator.

In the past, waste management occurred much more frequently at the local level. Changes to Vermont state laws, however, played a significant role in the closure of most community landfills in the 1990s.

Commercial waste is managed through private contracts with various haulers and local businesses, without the direct involvement of municipalities.

Variable Rate Pricing on Solid Waste

Per Act 148, all transfer stations will charge a variable rate for solid waste by July 1, 2015, as opposed to a flat fee. This system is more equitable, since residents who dispose of more waste will have to pay more to do so. It incentivizes residents to reduce the volume of their waste by recycling and composting. Twenty -one of the Region's municipalities already charge a variable rate, and the remaining six municipalities are reviewing plans to implement variable rate pricing by July 1, 2015.

Recycling and Composting

All transfer stations in the Rutland Region offer recycling services. Recycling, as with solid waste, is hauled by the selected contractors. The types of materials accepted at transfer stations is based on the capabilities of the hauler. Larger transfer stations typically have a wider range of products that can be accepted.

However, with the implementation of Act 148, the following recyclable materials will be banned from landfills and therefor will



RRPC Staff

Transfer stations throughout the Region offer recycling facilities. There remains room for improvement in encouraging greater use of these facilities and in increasing the types of products eligible for recycling.



FAST FACT

The Pay-As-You-Throw (PAYT) program is becoming more popular. Almost eighty percent of Rutland County towns use this form of generator-accountability.

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FOOD FOR THOUGHT

Vermont's solid waste law, Act 78, adopted in 1987, set goals of source and waste reduction, reuse, recycling, and when all other options have been exhausted, disposal. Much of the responsibility for solid waste management was left to local authorities.

be accepted at all transfer stations:

- Aluminum and steel cans
- Aluminum foil and aluminum pie pans
- Glass bottles and jars
- PET & HDPE plastic containers & bottles
- Corrugated cardboard
- White and mixed paper
- Newspaper, magazines, paper mail
- Envelopes
- Box board
- Paper bags

The RCSWD and SWAC both promote household composting of fruit, vegetables, grains, and yard waste by selling plastic composting units at discounted rates. At present, there are no municipal or Regional composting facilities. There may be future composting facilities to accommodate the composting requirement of Act 148, but there are not any plans yet for their construction. Current composting activity in the Region includes:

- Three grocery stores in the Rutland Region are collecting organic material and sending it to be composted at the TAM Organics program in Bennington, VT. They include the Hannaford's in Rutland Town and two Price Choppers: one in Rutland City and the other in West Rutland.
- Casella Resource Solutions is working on a composting program with the Rutland High School and has started collecting their organic waste. The organic material will be transported to the Foster Brothers Farm in Middlebury, VT where it will be composted in the farm's methane digester.

UNMET NEEDS

Recycling

The diversion of recyclable and compostable material from landfills is the most significant need in the Rutland Region. Though data relating to the proportion of recyclable or compostable materials sent away with trash is limited, indicators suggest that there is a great deal of room for improvement. Among the reasons for this:

- Convenience: Separation of each

Hazardous Waste Processed at the Gleason Road Site in Rutland City

Material	Amount Collected
DIY Oil	2340 gallons
Paint	21000 gallons
Freon Containers	650 units
Fluorescent Bulbs	54000 feet
Compact Fluorescent Bulbs	7000 bulbs

Recyclables and Organics Processed at the Gleason Road Site

Material	Amount Collected
Biomass	1671 tons
Construction and Demolition Waste	868.8 tons
Scrap Metal	107.25 tons
Tires	46.23 tons

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category of recyclables from one another at home and at the transfer station is more time-consuming and confusing than simply putting all solid waste into trash bags.

- **Cost**: Communities in the Rutland Region have slowly made a transition from tax-based trash handling fees to "pay-as-you-throw" systems that charge residents per bag of garbage and provide for free recycling. In many communities, however, the cost per bag remains low for fear that residents will choose illegal dumping.
- **Contracted agreements**: Individuals and businesses with contracts for on-site solid waste removal may pay a premium for services because of the separate pickup and handling time involved.
- **Education**: Waste generation in Vermont is not very visible to its residents because most of the waste is sent out of state and also because there is only one landfill in Vermont. As a result, the collective effects of solid waste generation are not on the minds of most residents.

Additional Unmet Needs

- Disposal costs in Vermont have been noted to be among the highest in the nation. This is largely due to the rural nature of the state and the associated transportation costs of hauling the waste to distant landfills.
- There are no large-scale composting facilities in the Rutland Region. As a result, unless residents choose the use a household-scale composter, all organic waste is thrown out instead of being used to rejuvenate farm fields or gardens.
- Items produced from recycled materials are increasingly available in today's market, however it seems that conventional goods maintain a stronghold on consumers, as the associated costs of recycled materials drives up the price for these 'green' alternatives.
- The number of materials that require disposal as hazardous waste is growing. Outreach to ensure that residents know what these materials are, and that residents dispose of them properly, is needed.
- Although there are fewer large scale occurrences of illegal burning or dumping of solid waste today than in the past, these activities still cause environmental and public health threats. Some towns lack ordinances prohibiting incineration, and enforcement is a perpetual problem.

FUTURE TRENDS

The nature of solid waste management is that waste or waste by-products accumulate. As landfills become filled, additional sites will need to be found and capped facilities will need to be maintained. The cost of new facilities, and the impacts of such facilities should they be located in the Rutland Region, are high and would be borne by residents and businesses.

Technological advances are allowing for single stream recycling, where sorting of recyclables becomes unnecessary. This type of recycling is recommended by Act 148, and is currently in practice at 16 transfer stations and with numerous private haulers within the Region. This convenience should encourage more recycling within the Region.

MEETING CURRENT AND FUTURE NEEDS

Several steps can be taken at the local and regional level and by the private sector to reduce the burden of solid waste in the Rutland Region.

- The challenge of trying to increase the proportion of recycled solid waste will

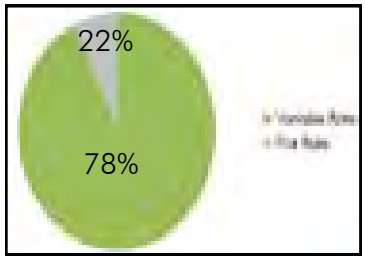


FOOD FOR THOUGHT

Household Hazardous Waste (HHW) should NOT be put out with the trash or dumped down the drain because water-bodies and septic systems can become contaminated and some hazardous waste materials have the potential to injure sanitation workers, children, pets, or wildlife.

For more information about the HHW disposal programs, visit the RCSWD and SWAC websites.

Pay-As-You-Throw Solid Waste Disposal Towns in Rutland County



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be met through a combination of greater public outreach and education, altered fees structures that provide incentives for recycling (while at the same time limiting illegal dumping), and the introduction of a single-stream recyclables system by area haulers.

- Increase education to businesses and residents about trash disposal options, and specifically hazardous waste.
- Large-scale composting may be addressed through creative solutions such as establishing an incubator farm site based loosely on Burlington's Intervale. Among Intervale's programs is a large-scale, local composting facility that collects scraps from residents and businesses and sells the resulting soil back to the community.

RUTLAND RPC GOALS

- Participate in the update and implementation of Solid Waste Implementation Plans developed by the Solid Waste Alternative Communities and Rutland County Solid Waste District.
- Work with local planning commission to address solid waste issues and solutions while undertaking town plan updates.
- Work with all levels of government, landowners and private operators to identify old waste sites, to urge and to assist as appropriate the evaluation of any potential health hazards, and determination of proper cleanup measures.
- Work with the Rutland Area Farm and Food Link to locate farmers, businesses, and residents to participate in food waste composting program.
- Assist municipalities in educating the local officials and the public about proper disposal of hazardous wastes and about source reduction, reuse recycling, and composting of waste.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

ADDITIONAL RESOURCES

- Solid Waste Alliance Communities website: http://www.rutlandcountyswac.org
- Rutland County Solid Waste District website: http://www.rcswd.com
- Mercury Education and Reduction Campaign: http://www.mercvt.org
- Association of Vermont Recyclers: http://www.vtrecyclers.org
- Vermont Agency of Natural Resources: http://www.anr.state.vt.us/students.htm
- Vermont Business Material Exchange: http://vbmx.org/index.php

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Chapter 23: Transportation Introduction

INTRODUCTION

Transportation planning has traditionally sought to project the magnitude and pattern of the growing demand and to design expansions in facilities and services which can meet that demand and support economic development.

Transportation systems greatly affect the types, intensity, and location of different land uses. Conversely, land use plays an equal role in the operation and effectiveness of those systems.

The systems must provide mobility through the Region while at the same time provide access to local destinations.

Balancing these seemingly conflicting roles is the focus of the *Regional Transportation Plan*.

More recently, recognizing the significant costs - financial, social, and environmental - associated with system expansion, transportation planning has shifted its focus to a more sustainable approach, making the existing system safer and more efficient, and integrating land use concerns.

The Rutland Region has many attributes - an attractive environment, a dedicated, educated workforce and other qualities associated with a desirable place to live, but faces challenges in the condition of its transportation systems.

While the use of transportation systems has increased significantly in recent decades, the supply of transportation facilities - the capacity of the system - has deteriorated due to lack of maintenance. Additional investment is critical to meet the needs.

Movement of goods and people is accomplished primarily by Federal, State and local roads. The Region does not have nearby access to an interstate highway, the airport only offers short haul commercial air service, and rail facilities are at capacity and in need of repair. The need for transportation services in many communities has changed and increased because of the Region's dispersed and aging population.

This *Plan* promotes safe, convenient, economical and energy efficient transportation systems in and through the Rutland Region; respects local character and the natural environment; serves multiple uses; and encourages the land use and activity patterns described in the Future Use of Land chapter of the *Regional Plan*.

An adequate transportation system that encompasses highways and bridges, air, and rail, public transit, bicycles and pedestrians, is essential for the vitality of the Region.



Vermont Railway / Jim Shaughnessy

Transportation systems converge along VT 103 in East Wallingford

CONNECTING THE PLAN

Transportation impacts all aspects of the Rutland Region, from land use and economic development to aesthetics and quality of life. It is a key feature of the landscape and is also influenced by that landscape. Decisions regarding development must consider effects on both transportation infrastructure and the town.



DEFINITIONS

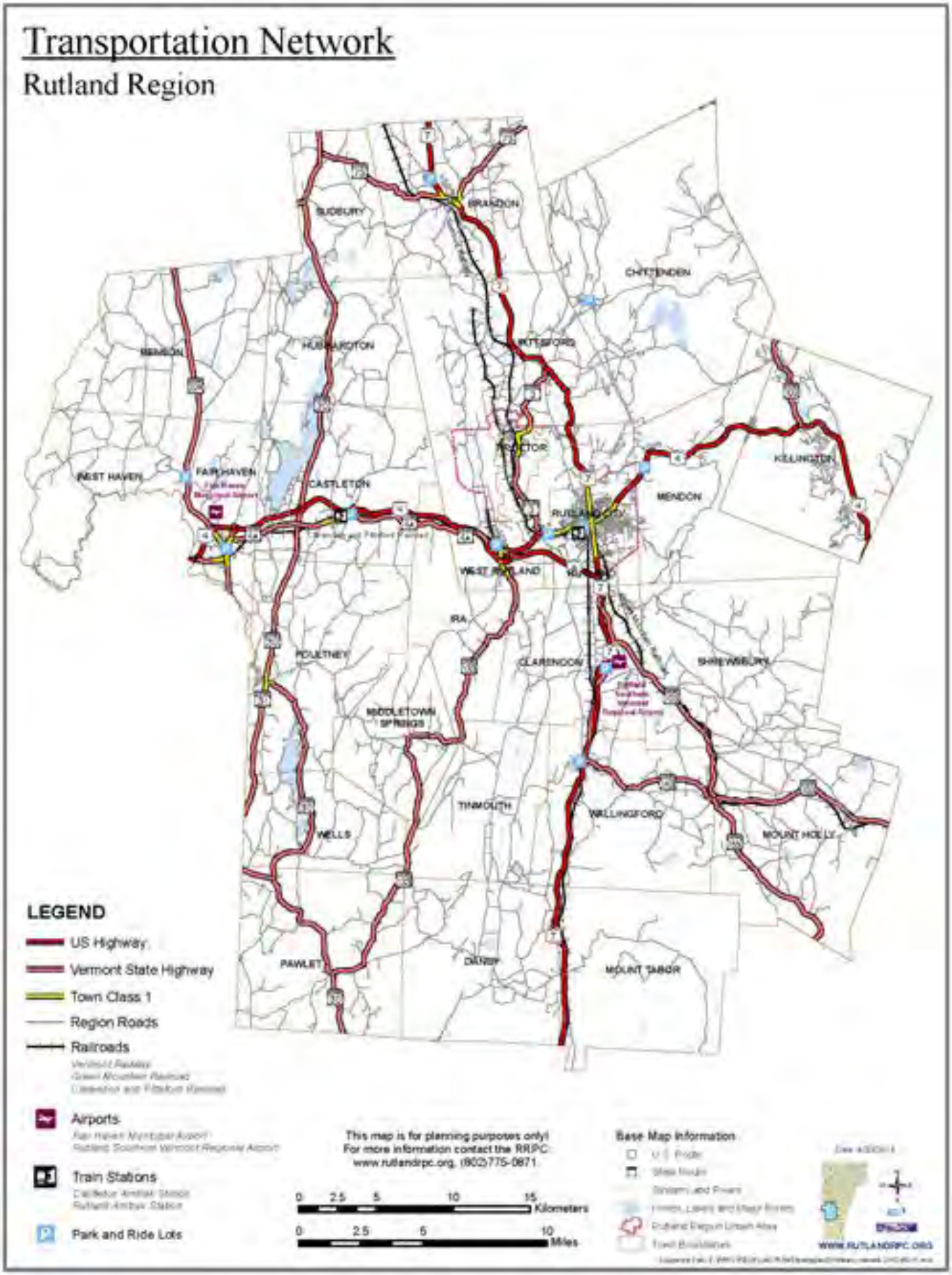
MODES OF TRANSPORTATION:

All of the different types of transportation used for travel in or through an area.

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Transportation Network

Rutland Region



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Chapter 24: Roads and Bridges

CURRENT CONDITIONS

The Region's Highway System

The Rutland Region, with its central urban area surrounded by more rural towns, is home to a clearly defined and functioning road hierarchy.

A trio of principal arterial routes (US 7, US 4, and Vermont 103) are included on the National Highway System for transportation within and to the Region. These routes carry relatively high traffic volumes and a high number of trucks. The importance of US 4 and US 7 in the network is reinforced by their crossing in Rutland City and their role as principal transportation routes for the central and western corridors of the state, respectively.

Conditions on US 4 & 7 have the most potential impact on traffic flow and safety and consequently, are of major concern. Vermont 103 connects the Region to southeastern Vermont and beyond, but carries a much lower volume of traffic than others in its functional class.

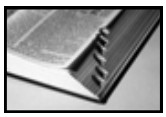
A web of minor arterials supplement the three principal arterials, providing through traffic and local accessibility by linking local roads to US 4 & 7, and VT 103. These include Vermont Routes 3, 22A, 30, and 100. Major collectors supplement the Region's roadway network, which includes VT 4A, 31, 73, 133, 140, 149, and 155. Most serve moderate traffic volumes traveling at moderate speeds between towns and communities, often passing through areas of concentrated development.

Local roads, which provide access to adjoining properties, tend to serve those traveling shorter distances at lower speeds. These roads are important at the community level.

Vermont law provides for permit-free travel for tractor-trailer combinations with trailers not longer than 53 feet. However, permits are required for combination vehicles longer than 75 feet. A permit is required if traveling Route 4 from the New Hampshire line to the junction of Vermont Route 100 south, provided the distance from the kingpin to the rearmost axle group is not greater than 41 feet. Trailers may not be longer than 53 feet except special use trailers.

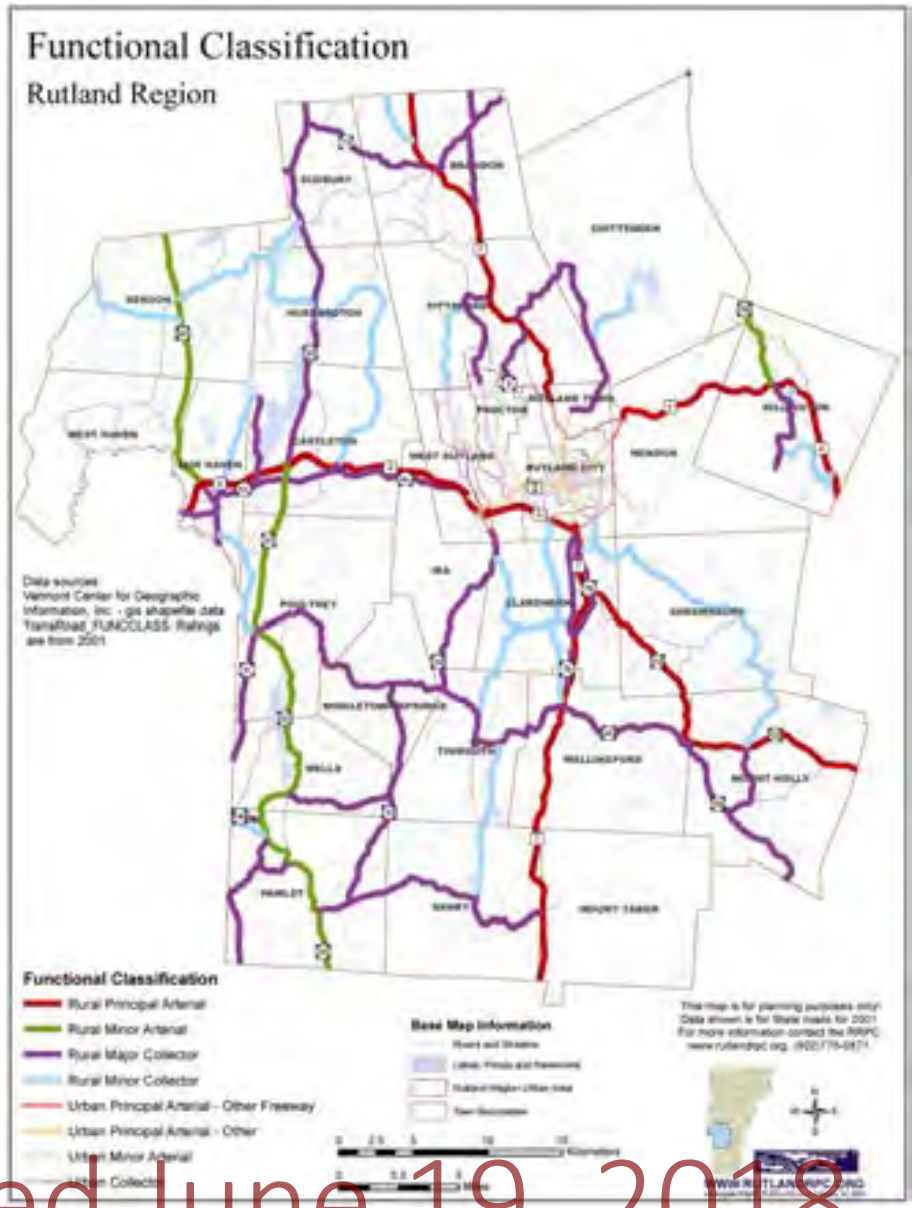
Roadway Sufficiency

In general, sufficiency ratings for the Rutland highways that serve as principal arterials in the region are not satisfactory. Many collectors also received poor ratings. The least sufficient highways in the Region based on 2008 sufficiency ratings were US 7 in Pittsford and, VT 30

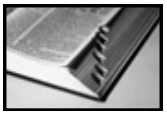


DEFINITIONS

FUNCTIONAL CLASSIFICATION encompasses the design and character of service of roads. It describes their hierarchy, ranging from those for travel mobility (arterials) to those that are primarily for access to property (local streets).



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DEFINITIONS

ROADWAY SUFFICIENCY is the combination of a highway's structural condition, level of safety and quality of service. Traffic volumes in relation to the capacity and classification of roads describe the congestion and level of service. Sufficiency ratings range from 1 (poor) to 100 (excellent).

LEVEL OF SERVICE: Describes operational conditions at a point in time by comparing capacity to demand. Delay, speed, and drivers' expectations are considered.

and VT 31 in Poultney, VT 73 in Brandon, VT 100 in Killington, VT 103 from Wallingford to Shrewsbury, and VT 140 in Wallingford.

Volumes

Traffic volumes in the Region vary widely, from a few vehicles on rural roads to the most heavily traveled roadway in the Region with 27,600 vehicles per day in 2012 traveling on the segment of Route 7 between Chaplin and Allen Street in Rutland City. Volumes on all , particularly US7 and US4 in Rutland Town have shown decreases in traffic in recent years, possibly due to the economic trends of recent years.

LEVEL OF SERVICE

Intersection	Delay (Sec.)	LOS
US Route 4/7 and Allen Street	35.2	C
US Route 4/7 and Park Street	22.4	C
US Route 4/7 and Strongs Avenue	23.7	C
US Route 4/7 and Crescent Street	13.0	B
US Route 4 and Gleason Road	48.1	E
US Route 4/7 and Town line Road	26.5	D

HIGH ACCIDENT LOCATIONS: RUTLAND CITY AND TOWN

Intersection	Accidents per Million Vehicles
US 4/7- Killington Ave to West Street	4.731
US 4/7 – Allen Street to Park Street	4.359
US 4- US 4/7 (Main St) to Stratton Rd	4.240
US 4/7- Park Street to Strongs Avenue	3.833
US 4/7- Strongs Ave to Madison Ave	3.245
US 7- Woodstock Ave to Crescent St	3.015
US 4/7- City/Town Line to Allen Street	2.757
US 4/7- West St to US 4 (Woodstock Ave.)	2.738
US Route 4/7 and Park/Allen Street	0.427
US Route 7 and East Pittsford Road	0.395

Source: Upgrades to US 4/7 in Rutland City and Town- McFarland-Johnson Inc. 2002

Level of Service

Level of service, described as a letter grade of "A" (Excellent) to "E" (Heavy Congestion), is most often used for intersections, and many in the Rutland urban core experience some level of congestion and poor levels of service.

High Crash Locations

The State Agency of Transportation collects crash data and rates both intersections and roadway sections on actual/critical ratio, sites of fatalities and also calculates equivalent property damage only (EPDO). The roadway sections in the Region that had the highest EPDO from 2009-2013 were - Strongs Avenue, Stratton Road, West Street, Allen Street in Rutland City, Killington Road in Killington, Walker Mountain and Creek Road in Clarendon, and VT140 in Wallingford and Tinmouth. The Region's intersections that were rated statewide include US7 at BR4in Rutland City, US 7 at Strongs Avenue, also in Rutland City, VT4A at VT30 in Castleton, US 4 at US7 in Rutland City and VT 30 at VT140 in Wells.

The counties of Chittenden (13.2%), Franklin (13.2%), and Rutland (13.2%) accounted for nearly half of young driver-involved fatalities during 2005-2009.

Five counties (Windham, Franklin, Chittenden, Rutland, and Washington) accounted for 47.8% of all fatalities in Vermont. For the years 2005 through 2009, Windham County accounted for 11.5%, Franklin for 9.9%, and Chittenden, Rutland, and Washington for 8.8% each, making Rutland one of the highest.

Bridges

Like roads, bridges are evaluated according to their structural integrity and their functional significance to the roadway network. VTrans has bridge inspection teams, who are charged with inspection of all state and local bridges on a two year cycle. Plans are prepared for minor repairs

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or rehabilitation to be done by local or state forces.

Of the Region's 263 bridges with spans of 20 feet or more (120 local bridges and 143 state bridges), 10 (9 local and 1 state bridges) are ranked in the top on the state's repair priority system. Another 12 (8 local and 4 state bridges) have already been listed on the state improvement program. The sufficiency rating for bridges incorporates structural adequacy and safety, serviceability and functional obsolescence and essentiality for public use. A large number of state and local bridges in the Rutland Region are in need of repair. A total of 79 bridges have sufficiency ratings of 70 or below, which makes them eligible for rehabilitation.

The Accelerated Bridge Program will enable projects to be implemented more efficiently, closing bridges for repairs rather than either keeping them partially open, negating the need for installing temporary bridges that require easements, environmental documentation etc. This process also lowers the overall cost and town's share. Towns will work with the VTrans on detour routes and outreach to towns and the public.

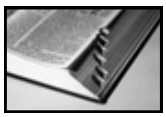
The Region also has a number of covered bridges, located in Brandon, Clarendon, Pittsford, Rutland Town and Shrewsbury. These are important cultural, economic, educational, aesthetic and historic resources. Most are owned by towns and continue to serve the transportation network.

UNMET NEEDS

Unmet roadway needs can be difficult to assess because of a lack of available information to identify roads based on the criteria listed earlier in this section. There are, however, a number of needs which have been identified using existing information and knowledge.

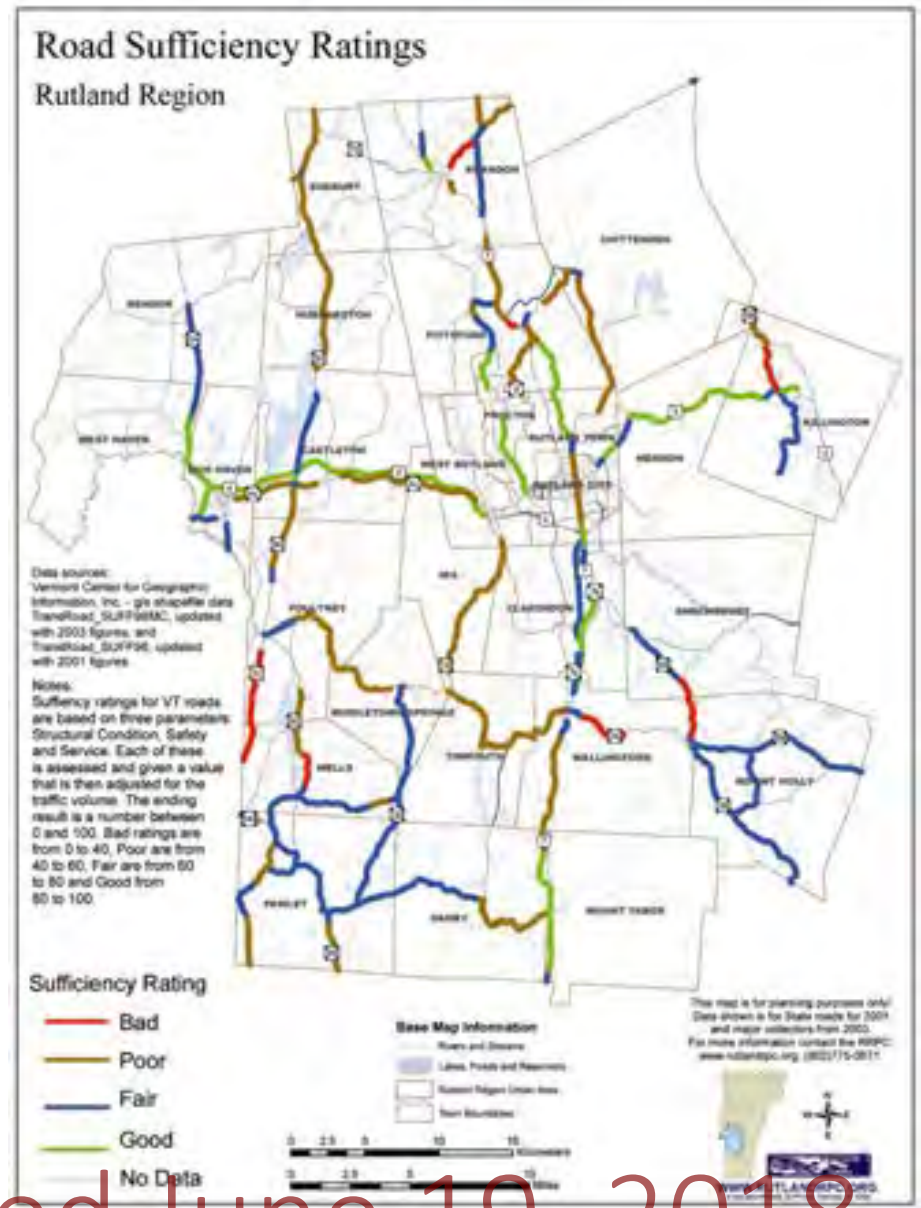
The Region's relatively poor highway accessibility to adjoining regions and major markets is considered a serious impediment to economic development by some area residents, business owners, and regional organizations. Rutland Region has no limited access or controlled accesses to either I-87 in New York, or I-89 and 91 in Vermont (although portions of routes 4 and 7 are limited access and controlled access).

Attempts have been made for decades, without success, to convince New York State to provide a limited access connection from I-87 to the Vermont border where it would connect with the limited access portion of Route 4. Political and environmental constraints have prevented a limited access



DEFINITIONS

HIGH ACCIDENT LOCATION: Intersections and highway road sections where the number and severity of accidents exceed what would normally be expected, given road conditions and traffic volumes, and are ranked statewide by the actual/critical ratio.



Re-Adopted June 19, 2018



FOOD FOR THOUGHT

Truck traffic has benefits and drawbacks for all communities. Communities, as well as the state, must balance the need for delivery of goods by trucks with the ramifications of large, heavy trucks passing through historic, compact, mixed use town centers.

connection to the existing Vermont Interstates.

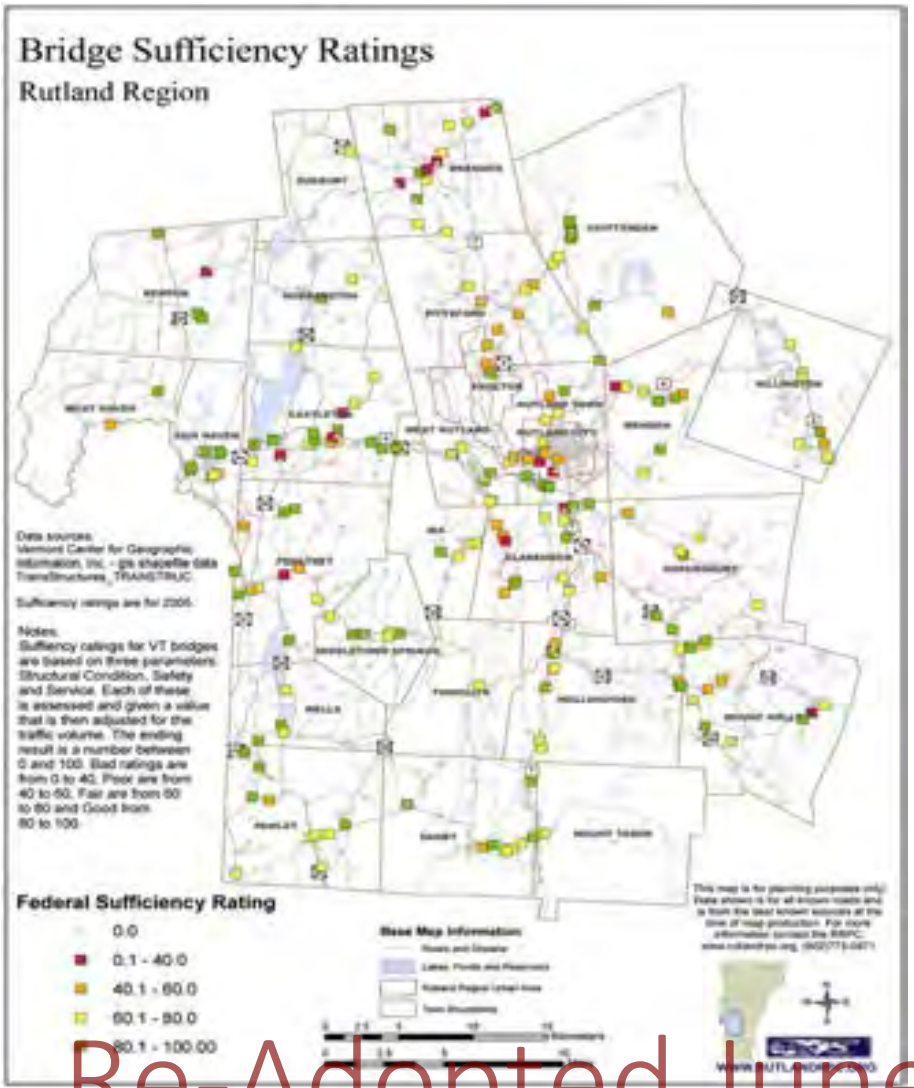
Deteriorating Highway And Bridge Facilities

Many roads in the Region have low sufficiency ratings and continue to deteriorate. With limited funding for improvements and a focus on the central core, many of the collector roads from outlying areas, which provide mobility throughout the Region, are neglected.

No Dedicated Funding for Repairs or Resiliency

Vermont has limited funding for maintenance and the repair of roads and bridges. Much of the maintenance for regionally important local roads is borne by the towns through the property tax. Funding for culvert and bridge replacement and repair depends on the towns' highway budgets, grants from the VTrans District 3 office or bonding. Local funding which requires voter approval can be less than what is needed to maintain the standard warranted by traffic volumes, safety concerns and erosion control measures.

Tropical Storm Irene brought to the forefront the need to plan and build for resiliency. Although towns adopted new codes and standards after 2012, the cost for implementing these is high.



Traffic Congestion

Within the central portion of the Region, traffic congestion is becoming an issue, especially at certain key intersections in Rutland City and Rutland Town. Traffic models predict a worsening situation in coming years.

Unsafe Intersections and Highway Segments

Many of the most serious safety problems have been identified by the Vermont Agency of Transportation. For the highway road sections within the state considered the worst 659 sections of 0.3 miles of roadway from 2006-2010, 63 were in the Rutland Region. Overall, there were 19 times that segments of US 7 in Brandon, Pittsford, Rutland Town, Rutland City, Wallingford and Clarendon appeared on the list. Ten segments of US 4 in Rutland City, Mendon and Killington were noted.

In 2006-2010 the top 125 intersections were ranked by the actual/critical ratio.

From 2006-2010 , there were 8 fatal accidents on federal-aid highways, two at US 7 & 4 in Rutland City and on US7 there were 2 in Clarendon, 1 in Pittsford, and 1 in Brandon.

Re-Adopted June 19, 2018

Pittsford and Brandon fatal crashes by type in 2002 had a per capita rate which was double that of the state and the second highest of all counties. Only Grand Isle County exceeded Rutland County's per capita fatality rate.

A general perception of unsafe routes in the Region include VT 22A, VT 30 and VT73 (Source: VTrans High Crash Locations 2006-2010. Poor Intermodal Connections).

The network's main function is accessibility to jobs and services. Virtually all airfreight is intermodal in the sense that pickup and delivery services are provided by trucks. Airfreight moves in special containers, as well as standard containers that are transferred to truck or rail. Integration of modes, such as freight transfer stations, bike and car parking, and park and ride lots, are lacking in the Region as it is simpler and not excessive in cost to travel by single-occupancy vehicle to one's destination or to ship by a single mode.

Multiple Uses and Users

The current road network is geared towards efficient use of automobiles and trucks. In this network, shared use of roads for other modes of transportation (bicycling, walking, and public transportation) are increasing in importance due to many factors, including the price of gasoline and the Complete Streets Law, passed by the Vermont Legislature in 2011 to ensure that all users are considered in all state and municipally managed transportation projects and project phases. Although this only applies to paved roads and exceptions exist for maintenance project, when implemented, all users will be safer and impacts the economy, health and livability of a community. Most roadways are designed and maintained without significant consideration of non-vehicular use. Further, roadway design seeks to maximize capacity for vehicles, often with the effect of perpetuating environments that discourage other modes because of traffic speed, width of roads, or timing of traffic lights.

Lack of and Inconsistent Flow of Funding for Maintenance

Local and state transportation funds are dependent on the federal transportation bill, which allocates funds for a six- year period, creating problems for long term planning and funding of major projects. Local projects depend on state funding, and in recent years the state fund has not kept pace with increased construction costs.

The state budget forecast for the transportation fund has not met targets, nor provided the anticipated funds. Consequently, a rollback or delay of projects or locating another source of funds is necessary. Over the years state transportation money has also been allocated to other budget areas.

Stormwater Runoff

Contaminants from vehicles and activities associated with road and highway construction and maintenance are washed from roads and roadsides when it rains or snow melts. A large amount of this

CONNECTING THE PLAN

Transportation infrastructure, particularly roads, are among the Region's leading causes of non-point source pollution. Runoff from gravel roads, salt and sand, and tire-wear contribute various forms of stream pollutants, affecting adjacent properties and communities downstream. Maintenance of roads and other transportation infrastructure should minimize run-off.



Lucas Somers

US Route 7 passes through Wallingford's village area

Re-Adopted June 19, 2018



FOOD FOR THOUGHT

"Complete Streets", a term coined in early 2003, describes streets designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities should be able to safely move along a complete street. Complete Streets are not limited to roads that are part of a designated bicycle or pedestrian network, but cover at least all major roads in the network. *

American Planning Association, Planning. May 2005

pollution is carried directly to water bodies.

FUTURE TRENDS

Scattered Development

Rutland Region's economy is expanding from manufacturing to agriculture and service industry. This fact, coupled with the development of housing and commercial uses located outside of town and village centers is increasing the demand for vehicular and often single occupancy travel on the network.

Congestion and Detouring

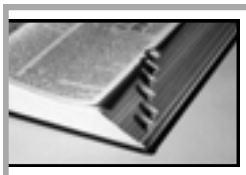
Overall vehicle use is increasing throughout the Region. Patterns are changing as local roads are being used as bypasses, increasing the burden on these roads which were not designed or intended for this use. The road hierarchy, not functioning as intended and not as clearly defined, is decreasing in efficiency.

According to the study for the upgrades to US Route 4 and 7 in Rutland City and Rutland Town, unacceptable levels of service will be reached on most major segments of the urban major highway network, including West Street, Woodstock Avenue, Strongs Avenue, South Main Street, Allen Street, Stratton Road, State Street, and US 4 from the Rutland Mall to Vermont 100. Modeling of the Route 7 corridor indicates that congestion will also intensify in some of the larger rural centers.

The most obvious consequence of traffic congestion is delay, resulting from reduced speeds. However, congestion also reduces drivers' freedom to maneuver, increases traffic accidents, increases driver discomfort and inconvenience, increases air pollution, and raises operating costs (Source: McFarland– Johnson, Inc. Report for VTrans. January 2002).

Healthier Lifestyles

There is an increasing awareness of health, encouraging people and communities to make healthy lifestyle choices and to take a more active role in their health. As a result, more communities are recognizing that people want facilities for walking and bicycling. The Complete Streets Law of 2011



DEFINITIONS

Nationally, roads are organized by what purpose and volume of traffic they serve, using performance measures. In rural areas, however, conventional measures are often not relevant.

Vermont's administrative classification describes the role that a road plays in serving the flow of trips through the network.

Average speed, convenience, access and the adjacent land use, and the types of travel a road carries all affect how the roads function and serve the needs of its diverse users.

National and State Highway System Roads

State-maintained roads with the following common characteristics: higher speed travel, restricted parking, controlled access, signals and/or stop signs at intersections with side streets.

Class 1 Town Highways

Those town highways which form an extension of a state highway route (usually in a downtown area) and which carry a state highway route number.

Class 2 Town Highways

Those town highways selected as the most important highways (after State roads) in each town. As far as practicable they are selected with the purpose of securing trunk lines from town to town and to places that by their nature have more than the normal amount of traffic.

Class 3 Town Highways

These make up the majority of local roads. The minimum standards for Class 3 highways are a highway negotiable, under normal considerations, all seasons of the year by a standard manufactured pleasure car. This would include, but not be limited to, sufficient surface and base, adequate drainage, sufficient width, and suitable for maintenance.

Class 4 Town Highways

Includes all other town highways. Selectboards determine which roads will be Class 4 town highways. These are often only minimally maintained by the town.

VERMONT ROAD CLASSIFICATIONS

Re-Adopted June 19, 2018

brought the philosophy and approach to planning, design, construction and maintenance of our roadway network to consider all users, including pedestrians, bicyclists and transit riders. Context and current or potential travel patterns need to be considered in determining the appropriate way to meet the needs of all modes of transportation. Not every street or road will be used by a wide variety of modes, but a complete streets approach considers all users, and seeks desirable, practical and affordable improvements that will be accepted by the community. A Complete Streets project does not need to be all non-incremental improvements, as anything can contribute meaningfully to a multi-modal system.

Increase in Trucks

As business and population expand, there is an increased need for goods and services, and consequently freight, carried by trucks. This trend increases concern about safety as well as wear on roads, some of which were not designed and built for this level of traffic.

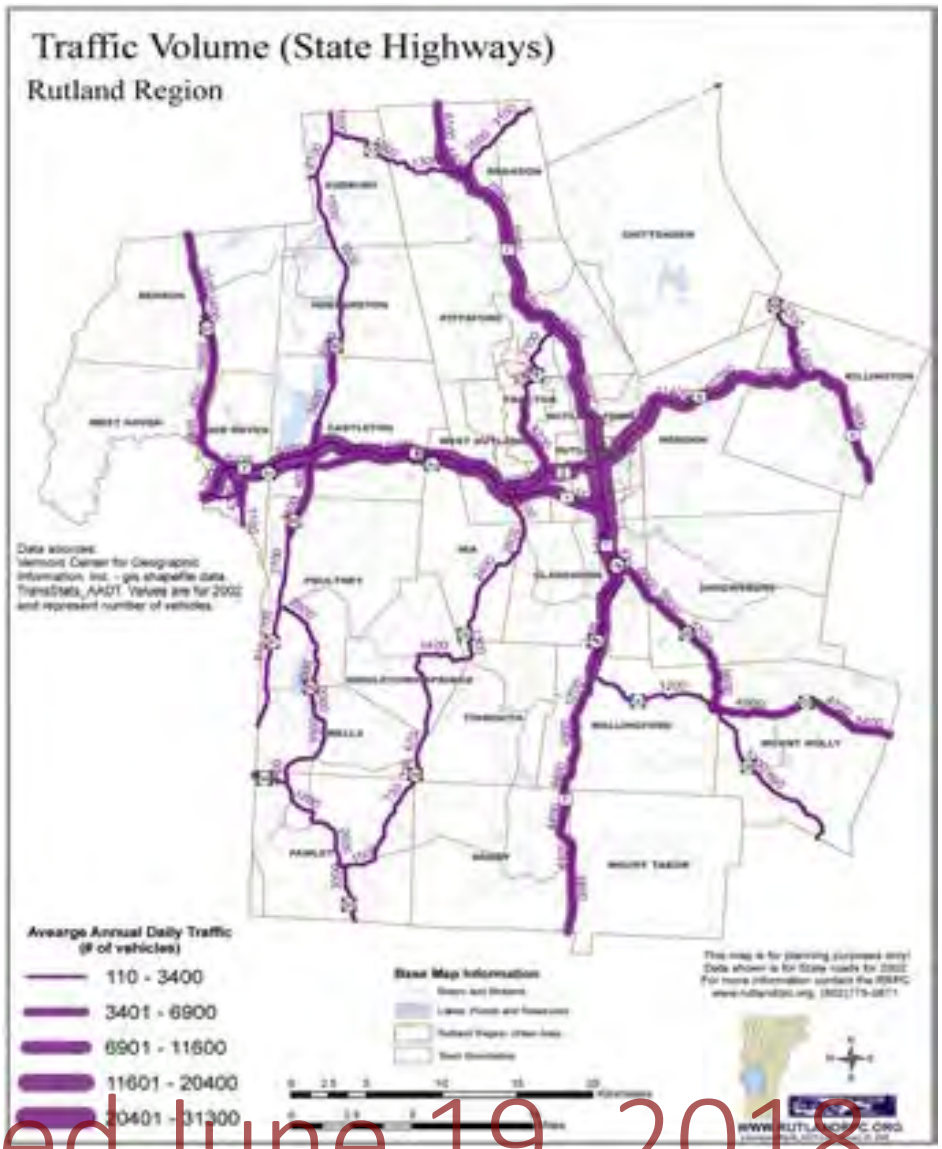
MEETING CURRENT AND FUTURE NEEDS

VTrans has worked hard to improve safety on its roadways through the High Risk Rural Road Program, Road Safety Audit Reviews and most recently with a Regional Safety Forum. Towns can request assistance on issues with the RPC and a Traffic Safety Engineer to study the problem and provide solutions to be implemented by the town, if a town road, or the state, on state routes.

Efforts to address congestion, associated with new development, include an Access Master Plan for the limited access section of US7 south and a local road network analysis study for local road connections west of this same area. Traffic impact studies and corridor plans can plan land use and transportation so that the transportation network functions efficiently.

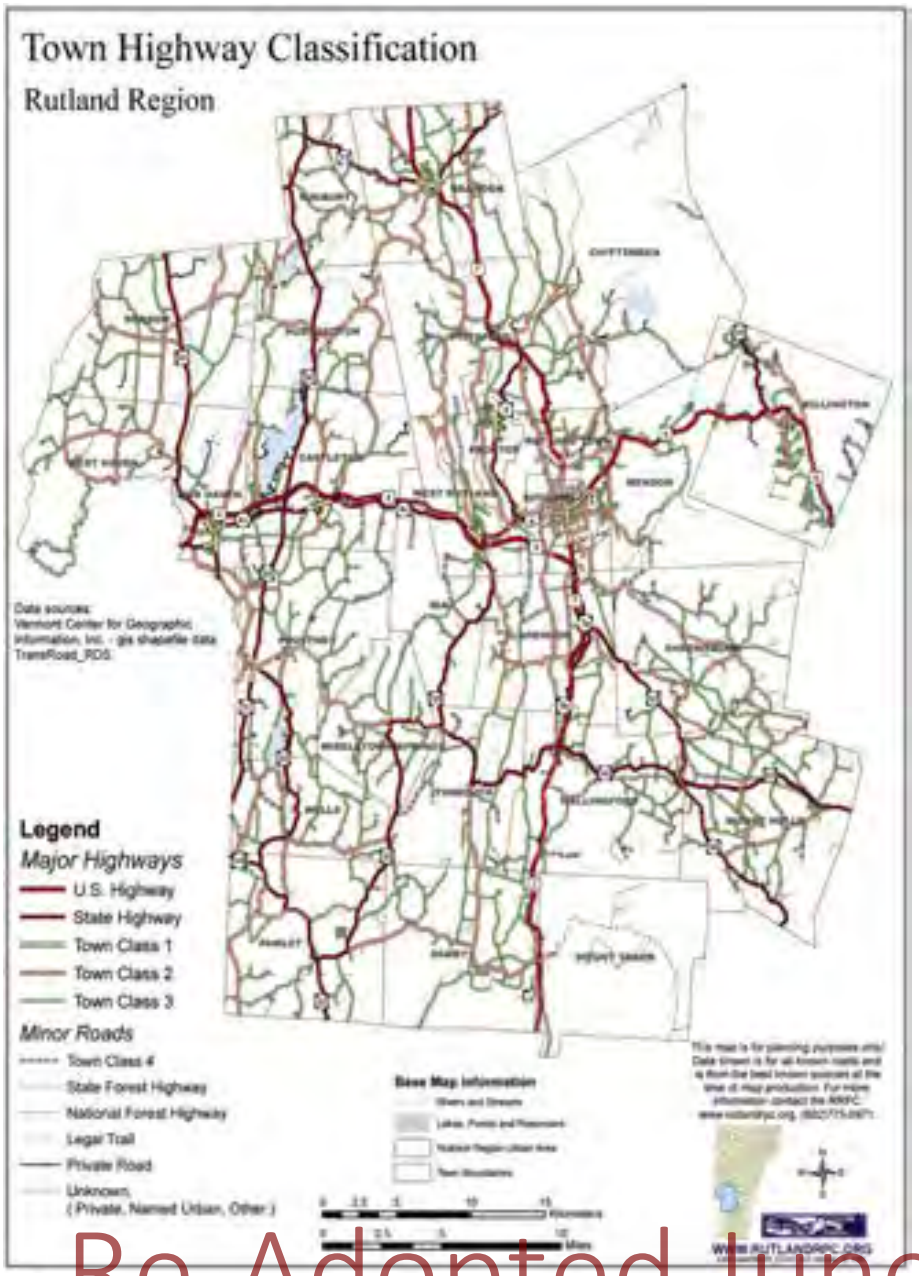
The Transportation Council annually prioritizes transportation projects in the Region that receive federal funding and these reflect the local understanding of needs. In addition to the projects in Table 1, it is critical that the following occur to keep the transportation network functioning:

- Fund maintenance of existing facilities and for new projects as the most basic and fundamental means to meet the needs.
- Reduce the demand on the roads and bridges by promoting means of travel such as transit, walking and bicycling, or carpooling and telecommuting.



Re-Adopted June 19, 2018

- Concentrate new development instead of encouraging low density, auto-oriented development so that people can access facilities without always having to travel by vehicles on the roads and bridges. Towns should implement land use regulations which address this.
- It is apparent that virtually no new major roads will be constructed in the future in the Region. Manage the existing facilities, with access management practices and intelligent transportation systems to help improve safety, and maintain the efficiency of the existing roads and bridge network.
- Through training and technological advances, encourage and educate road crews on maintenance procedures which incorporate pollution prevention controls to reduce pollutant loadings to surface runoff.



RUTLAND RPC GOALS

- Construct streets using "Complete Streets" principles in town centers, so that all roads serve all types of users.
- Widen shoulders, lanes, sidewalks and bus turn outs where appropriate.
- Pursue improvements to, and upgraded maintenance of major travel and freight routes.
- Annually review high crash locations in the Region, and include them in Road Safety Audit Reviews, and propose projects to address them.
- Assist communities in gathering information on road, bridge, and culvert conditions for inclusion in capital programs and work with them to develop capital plans. .
- Facilitate regular training workshops for local road commissioners and foremen.
- Review land uses and zoning adjacent to transportation projects; work with local decisions-makers to address conflicts, opportunities and interdependencies.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

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PIN	FY17 PRIORITY	FY16 PRIORITY	PROJECT STATUS	PROJECT NAME	PROJECT NUMBER	DESCRIPTION	VTRANS FY2016 PRIORITY	NOTES
Paving								
14V169	1	N/A	Front Of Book	ROCKINGHAM-CLARENDON	NH SURF (49)	RESURFACE VT 103 IN ROCKINGHAM, CHESTER, CAVENDISH, LUDLOW, MT. HOLLY, WALLINGFORD, SHREWSBURY, AND CLARENDON BEGINNING AT THE US 5/VT 103 INTERSECTION IN ROCKINGHAM AND EXTENDING NORTHERLY 42.036 MI. TO THE VT 103/US 7 INTERSECTION IN CLARENDON. OMIT CHESTER CLASS I (1.667 MI.) AND LUDLOW CLASS I (1.573 MI.).	28 out of 50	new to the list this year
	2	N/A	NEW	WEST RUTLAND_CLARENDON		RESURFACE VT133		
	3	N/A	NEW	POULTNEY		FURNACE STREET- COLD PLANE & PAVE		
Roadway Projects								
02B192	1	2 of 6	Front Of Book	PITTSFORD	NH 019-3 (491)	RECONSTRUCTION OF US7 IN PITTSFORD, SEGMENT 1: BEGINNING 2.203 KM NORTH OF THE RUTLAND PITTSFORD TOWN LINE AND EXTENDING NORTHERLY 2.205 KM. WORK INCLUDES GRADING AND DRAINAGE.	17 out of 24	same status as last year
02B196	2	4 of 6	Front Of Book	PITTSFORD	NH 019-3 (493)	RECONSTRUCTION OF US7 IN PITTSFORD, SEGMENT 3: BEGINNING APPROX. 2.395 KM NORTH OF THE VT3 INTERSECTION AND EXTENDING NORTHERLY 3.694 KM. WORK INCLUDES WIDENING, FULL SUBBASE RECONSTRUCTION, DRAINAGE, ETC.	8 out of 24	status was D & E last year
02B194	3	6 of 6	D & E	PITTSFORD	NH 019-3 (492)	RECONSTRUCTION OF US7 IN PITTSFORD, SEGMENT 2: BEGINNING 4.413 KM NORTH OF THERUTLAND-PITTSFORD TOWN LINE AND EXTENDING NORTHERLY 2.515 KM. WORK INCLUDES GRADING AND DRAINAGE.	2 out of 24	same status as last year
78D051	4	3 of 6	Candidate	BRANDON-LEICESTER	NHEGC F 019-3 (29)	RECONSTRUCTION OF US7, BEGINNING BY THE BRANDON TRAINING SCHOOL AND EXTENDING NORTHERLY 7.29 KM TO THE INTERSECTION OF TH5 IN LEICESTER. OMIT 484 METERS IN BRANDON AND 2.13 KM IN LEICESTER.	12 out of 24	same status as last year
07D136	5	N/A	Candidate	RUTLAND TOWN-RUTLAND CITY	NH 020-2( )	THIS PROJECT REPRESENTS THE NEXT SCHEDULED IMPROVEMENTS TO START AS IDENTIFIED IN THE NH 020-1(20)SC SCOPING REPORT, FOR US4 AND US7 IN RUTLAND.		was not on the list last year
	6	1 of 3	NEW	BENSON-WEST HAVEN		CONSTRUCT SHOULDERS ON 7.85 MILES OF VT 22A IN THE TOWNS OF BENSON AND WEST HAVEN		
	7	2 of 3	NEW	BENSON- ORWELL		IMPLEMENT SAFETY IMPROVEMENTS ON VT 22A @ INTERSECTIONS WITH LAKE RD, VT144, AND VT 73.		
	8	3 of 3	NEW	BRANDON		RECONSTRUCTION OF PARK ST FROM US7 TO MARBLE/HIGH ST		

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State Highway Bridges								
12B138	1	1 of 3	Front Of Book	CASTLETON	BRF 015-2 (10)	REPLACEMENT OF BRIDGE NO. 93 ON VT30 IN CASTLETON, OVER THE CLARENDON AND PITTSFORD RAILROAD.	5 out of 64	same status as last year
13B266	2	2 of 3	D & E	PITTSFORD	BF 019-3 (59)	SCOPING TO EVALUATE ALTERNATIVES FOR BRIDGE NO. 108 ON US7 IN PITTSFORD, OVER FURNACE BROOK.	20 out of 64	same status as last year
13B260	3	3 of 3	D & E	KILLINGTON	BF 020-2 (42)	SCOPING TO EVALUATE ALTERNATIVES FOR BRIDGE NO. 33 ON US4 IN KILLINGTON, OVER THE OTTAUQUECHEE RIVER.	21 out of 64	same status as last year
	4		NEW	WALLINGFORD		REPLACE BRIDGE NO. 15		
Town Highway Bridges								
10B358	1	3 of 9	Front Of Book	BRANDON	BHF 019-3 (58)	REHABILITATION OF BRIDGE NO. 114 ON US7 IN BRANDON, OVER THE NESHOBE RIVER.	23 out of 92	same status as last year
12J160	2	4 of 9	Front Of Book	CLARENDON	BRO 1443 (48)	REPLACEMENT OF BRIDGE NO. 11 ON TH3 IN CLARENDON, OVER THE CLARENDON RIVER.	57 out of 92	same status as last year
13J276	3	5 of 9	D & E	POULTNEY	BF 0138 (12)	SCOPING TO EVALUATE ALTERNATIVES FOR BRIDGE NO. 2 ON FAS 0138 IN POULTNEY, OVER FINEL HOLLOW BROOK.	11 out of 92	same status as last year
13J198	4	6 of 9	D & E	WEST HAVEN	BO 1443 (51)	SCOPING TO EVALUATE ALTERNATIVES FOR BRIDGE NO. 10 ON TH3 IN WEST HAVEN, OVER THE POULTNEY RIVER.	36 out of 92	same status as last year
13J304	5	7 of 9	D & E	DANBY	BF 0130 (3)	SCOPING TO EVALUATE ALTERNATIVES FOR BRIDGE NO. 9 ON FAS 0130 IN DANBY, OVER MILL BROOK.	32 out of 92	same status as last year
12J622	6	N/A	Candidate	FAIR HAVEN	BO 1443 ( )	SCOPING TO EVALUATE ALTERNATIVES FOR BRIDGE NO. 2 ON TH45 IN FAIR HAVEN, OVER THE CASTLETON RIVER.	22 out of 92	same status as last year
12J618	7	8 of 9	Candidate	DANBY	BF 0130 ( )	SCOPING TO EVALUATE ALTERNATIVES FOR BRIDGE NO. 7 ON FAS 0130 IN DANBY, OVER MILL BROOK.	44 out of 92	same status as last year
12J642	8	9 of 9	Candidate	MT. HOLLY	BO 1443 ( )	SCOPING TO EVALUATE ALTERNATIVES FOR BRIDGE NO. 64 ON TH17 IN MT. HOLLY, OVER A BRANCH OF THE MILL RIVER.	52 out of 92	same status as last year
	9		NEW	BRANDON		REPLACE BRIDGE NO. 23		
Pre Candidate Bridges								
	1	1 of 9	NEW	POULTNEY		REPLACE BR #7 OVER E POULTNEY GORGE		570 in 2008
	2	2 of 9	NEW	PITTSFORD		REPLACE BR #12 ON KENDALL HILL ROAD		1100 in 2011
	3	4 of 9	NEW	RUTLAND CITY		REPLACE BR # 23 ON CRESCENT ST		2400 in 2013
	4	7 of 9	NEW	POULTNEY		REPACE BR #4 ON VT31		1400 in 2012
	5	N/A	NEW	WALLINGFORD		REPLACE BR #59 ON CREEK RD		
	6	N/A	NEW	RUTLAND CITY		REPLACE BR # 25 ON GROVE ST		
	7	6 of 9	NEW	FAIR HAVEN		REPLACE BR #1 ON TH8 (RIVER STREET)		1700 in 2008
	8	N/A	NEW	W RUTLAND		REPLACE BR #13 ON WATER STREET		
	9	3 of 9	NEW	HUBBARDTON		REPLACE BR #7 ON TH2		290 in 2011

Re-Adopted June 19, 2018

Chapter 25: Public Transportation

CURRENT CONDITIONS

Service Providers

Transit in the Rutland Region is provided by several different entities. The largest of these is Marble Valley Regional Transit District (MVRTD), also known as The Bus, based in Rutland City. Others include local taxi companies and some social service agencies.

Fixed Route and Commuter Services

Fixed route and regional services all run to and from Rutland City based on a loose spoke-and-hub system of delivery. Fixed route services are provided by The Bus in Rutland City, Rutland Town, Proctor and the Killington area on six routes. As part of the complementary paratransit, deviations up to one-quarter mile off of the scheduled routes are provided.

Regional services are provided to Fair Haven, Killington, Manchester, Middlebury and Ludlow by The Bus. These routes also include stops in West Rutland, Castleton, Poultney en route to Fair Haven; Wallingford, Clarendon, Danby en route to Manchester; Pittsford and Brandon en route to Middlebury; Clarendon and Mount Holly en route to Ludlow. Connections to other transit providers in Manchester and Ludlow make connections to Bennington and Bellows Falls, respectively. All of these routes operate out of the Rutland Multi-modal Transit Center.

The Bus has created a UAP (Unlimited Access Program) with Castleton State College, College of St. Joseph, Community College of Vermont, Green Mountain College and Vermont Adult Learning to let anyone with an identification card from these learning institutions board The Bus for free. Students, faculty and staff just show their ID to the driver and go. Ridership on The Bus' system-wide service has increased in the past ten years, from 175,000 annual trips to 600,000 in 2012 thanks to expanded service on all routes [Source: MVRTD]. Services provided to employees and guests in the Killington area have contributed much to this increase.

InterCity Transit

Recently the availability of intercity bus service in Vermont has declined. A recent solicitation for services based on the 2013 Statewide Intercity Bus Update awarded contracts for service from Albany to Burlington, Rutland to White River Junction, and White River Junction to Springfield, Mass. This will expand options in the Region.

Paratransit

Paratransit services differ from traditional, "fixed-route" transit services because transportation is provided based on individual trip requests. Demand response service, is also known as paratransit or dial-a-ride services. This type of service is intended to serve areas with lower demand for service generally, as well as to meet the needs of individuals who require a higher level of service. Indeed, a portion of MVRTD's demand response service is required by the



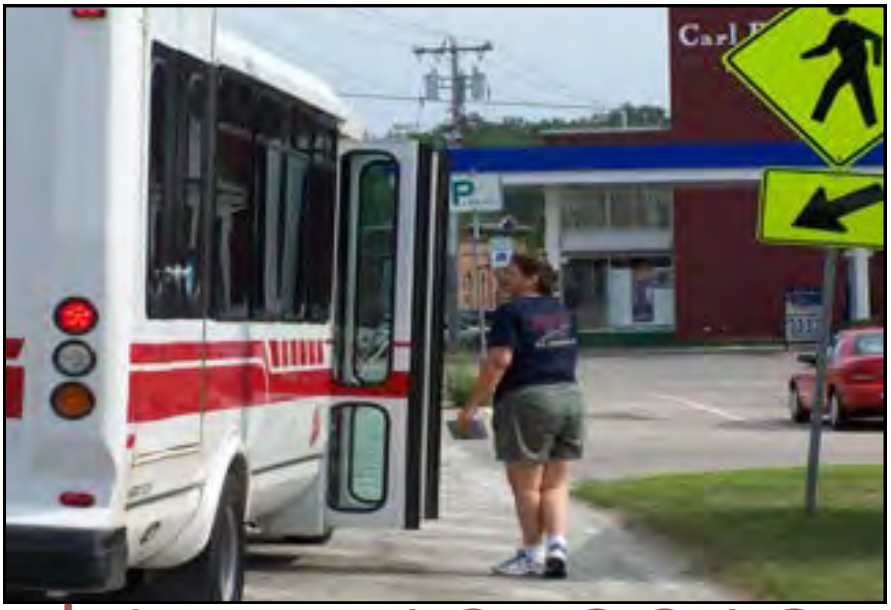
FAST FACT

Marble Valley Regional Transit District (The Bus) has a fleet of 54 vehicles:

- 27 coaches (28-39 persons)
- 21 mini-buses (16-20 pers.)
- 6 vans (9-10 persons).

The Bus employs approximately 65 people (90 at peak) in administration, maintenance, and driver positions, in addition to approximately 90 volunteer drivers.

Source: The Bus



Cindy Adams

The Bus picks up a passenger in Fair Haven on its Job Access Reverse Commute route

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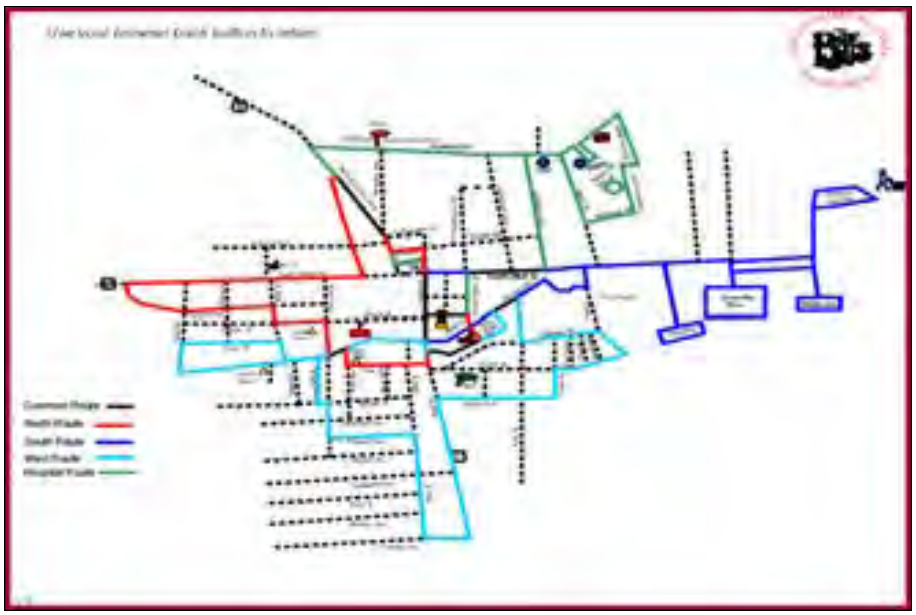
FAST FACT

Killington Resort currently employs 2,500 staff as well as the staff of other Killington-area facilities. 406,500 trips were provided to the resort area in 2005, with over 70,000 of those being commuter trips.

Source: The Bus

Americans with Disabilities Act (ADA). As a complementary service to the fixed-route services, MVRTD provides additional demand response based on local need. Door-to-door transportation is provided by a number of providers. The largest of these, The Bus, serves residents throughout the Region through individual user fees, contract services for area human service agencies, and Medicaid transportation services supplying over 32,000 medically necessary trips annually.

The Transportation Program for the Elderly and Persons with Disabilities provides transportation to medical appointments and other essential trips, such as shopping, to those who qualify. It is funded with Federal funds (80%) and local matching funds (20%). The Rutland Region has a large number of volunteer drivers whose time provides the local match. Several human service agencies, including the One-to-One , Southwestern VT Council on Aging, Bridges and Beyond, Vocational Opportunity Works, and VT Psychiatric Survivors contract with The Bus as part of the Transportation Program for Elderly and Persons with Disabilities. Castleton Community Seniors is a subcontractor in the program with a vehicle provided by VTrans through MVRTD as well as its own vehicle to transport clients. Other paratransit services consist of private taxicab and shuttle companies in the Rutland and Killington.



The Bus runs four fixed-route bus lines in Rutland (2006) - *Source: The Bus*

Funding

Funding for transit in the Region comes from a mix of Federal, State, local, corporate, and individual sources.

The Bus's services are the most heavily subsidized; they receive funding from various sources, largely federal and state funds. Fixed route service, receives support from host municipal budgets and private commercial ventures.

Currently, MVRTD's fare structure reflects the service network. Among the year round services, the local city fixed-routes have a one-way adult cash fare of $0.50. Adult cash fares on the commuter services range from $2.00, while on the Proctor Route, which is a significantly shorter route adult cash fares are $1.00.

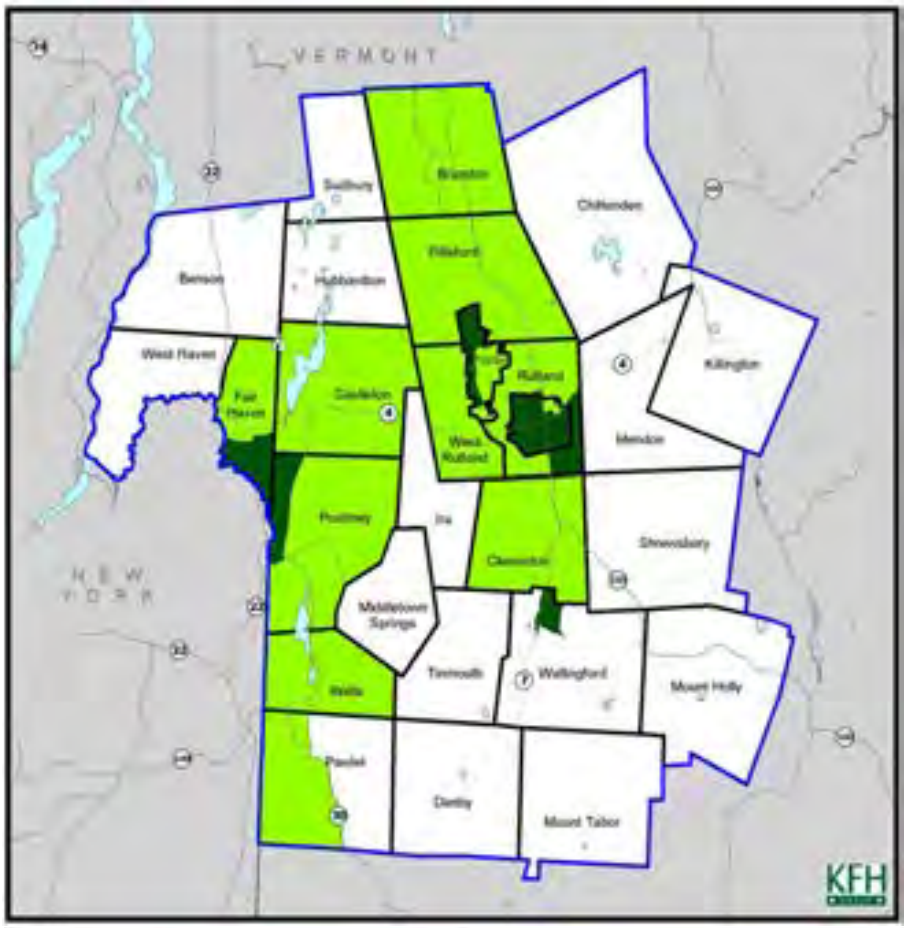
MVRTD also offers reduced fares for bulk purchases through the monthly passes and ten-ride coupon books. Subscription services cost $6.00 for a one-way trip within Rutland City and $12.00 for a one-way trip within Rutland Town or between Rutland City and Rutland Town. Fares on the ADA complementary paratransit services are $1.00 for a one-way. Passengers traveling on MVRTD vehicles for trips arranged by other public agencies and organizations are not charged. The cost for these trips is paid by the individual agency arranging the trip and is based on the actual cost to provide the trip.

Seasonal routes, however, have a somewhat different fare structure. These services are designed to support the seasonal ski industry and are largely funded through donations from private institutions. As a result, MVRTD seasonal services operate a fare-free zone that includes all of service area associated with the Killington Village Routes and lodging properties along the East Mountain Road. Outside of this area, rides on the seasonal routes are $2.00 for a one-way trip.

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Performance

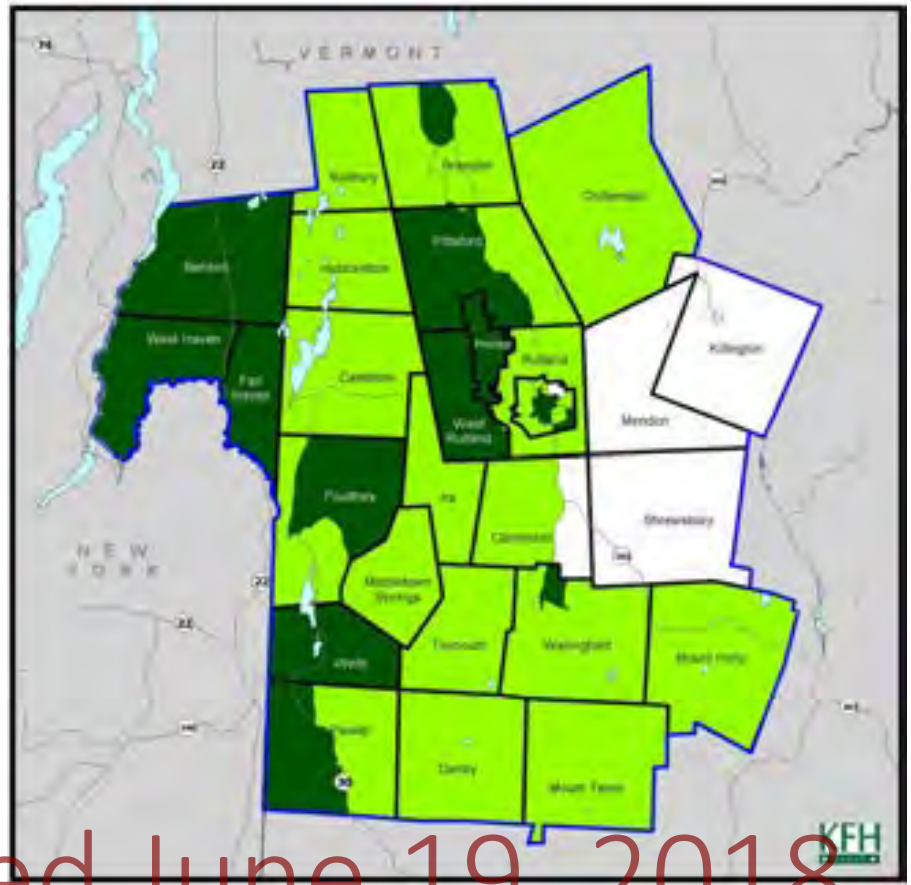
Annually VTrans applies performance measures to assess the productivity of the routes in terms of ridership and cost effectiveness in terms of cost per ride provided, redirecting funding or working with the provider to make other adjustments. Routes are categorized by service type and category, thereby ensuring fair comparisons of similar-type routes. The Ludlow route has underperformed in productivity for the past three consecutive years, however it has improved since FY11. It faced higher standards as a rural commuter service this year compared to its categorization as rural last year. The Manchester route did not meet the acceptable threshold in SFY 2011, but improved over the year to meet at least the acceptable standards in SFY 2012. The remainder of MVRTD's routes either meet or exceed the accessible or successful levels.



UNMET NEEDS

A number of factors play a role in





Re-Adopted June 19, 2018

CONNECTING THE PLAN

Public Transportation infrastructure and the need for services has a direct link to Housing. For more information, turn to Chapter 4: Housing.

identifying the Region's unmet needs for public transportation. Traditionally the potentially transit-dependent population segments are generally defined as auto-less households, youth (persons ages 12 to 17), elderly (persons age 60 and above) mobility limited and persons living below the poverty level. This has expanded to those who currently have vehicles but would potentially choose an alternative mode of transportation.

Demand for transit service exceeds supply throughout the Region. The most pronounced potential for growth is in unserved or underserved communities outside of the Rutland City area. Those communities with the largest total population and greatest number and percent of persons with disabilities, low income, and elderly persons exhibit the greatest potential demand for future service. Communities with the lowest and most rural populations are among those least served by transit.

Among the Region's key unmet needs:

- Rutland, Fair Haven, and Wallingford were identified as communities with the greatest transit need in the 2003 Short Range Public Transportation Plan. This analysis is based on density and percentage of transit dependent populations. Killington was also included, based on its winter densities. Some of these needs have been addressed with the institution of The Bus's new commuter routes.
- The population most commonly defined as transit-dependent are the elderly and persons with disabilities. The 2010 US Census (American Fact Finder) reported Rutland County's percentage of persons 65 years and older represented 17% of the total population; 15.6% of the total civilian non-institutionalized population were persons with disabilities.
- The five fixed routes within Rutland City do not extend to all neighborhoods or destinations. Rutland High School, the Dorr Drive area, and parts of Rutland Town have been identified as key areas in need of service.
- Limited hours of operation restrict potential users.
- Service to the south - Albany and Bennington - from the Rutland area is non-existent. With the discontinuation of Vermont Transit service to these communities, and to the Albany Airport, only The Bus's four daily trips to Manchester remains.
- Service to the east - White River Junction and Dartmouth Hospital in Hannover, NH - became non-existent when VT Transit discontinued service.
- The more rural areas of Rutland County continue to be a challenge to serve. MVRTD provides Medicaid transportation throughout the County and many elderly and persons with disabilities are served on a limited basis by demand-responsive services specifically for that population. County and many elderly and persons with disabilities are served on a limited basis with Transportation in the rural areas is crucial for the elderly to remain in their homes, and allow the low income population access to jobs and to medical and social services.
- State and Federal funding is lacking for public transit throughout the State, limiting the ability to meet the demands outlined in this Plan and in other studies.
- Publicity of transit services and schedules is limited. Many residents and visitors to the Region are unsure of the exact services provided and are therefore discouraged from using public transit as an alternative to passenger cars for daily or occasional trips.

FUTURE TRENDS

Transit ridership increased in the past

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few years, in part due to increased fuel costs. In the coming years, fuel costs will likely continue to rise. This may lead to increased demand for ridership throughout the Region and the State. As Rutland County continues to age, its large and increasing elderly population will rely increasingly on transit providers for all of their transportation needs: medical, shopping and social. Killington's planned expansion and development of a vacation village will increase the number of employees and visitors demanding transportation within and to the area. Increased levels of transit in the Region are seen as essential if the Killington area is to become a four-season, world-class destination.

On May 1, 2013 a new tax on gasoline was passed, representing an increase of 5.9 cents per gallon. Tied to inflation, the figure includes a new 2 percent assessment on the price of gas, while the per-gallon tax decreases by just under a penny. The tax changed from a per-gallon to a percentage amount because declining use of gas has led to a decrease in revenues used to maintain roads and bridges. The price of diesel fuel will increase by 2 cents. Permitting is underway for a natural gas pipeline from Hinesburg to Middlebury and Ft. Ticonderoga with an intent to expand it to Rutland, which would open up opportunities for cleaner and cheaper fuel for the MVRTD's fleet of buses.

MEETING CURRENT AND FUTURE NEEDS

Funding is the largest challenge to meeting the various public transportation needs throughout Rutland County. One of the major, on-going, focuses of statewide organizations dealing with transit issues is finding creative and sustainable funding for public transit in an atmosphere highly competitive for transportation and other social services. Transit providers, human service agencies, businesses, and representatives of the general public can work together to identify additional unmet needs and seek funding for expansion of service. Expanded hours of operation by The Bus in Rutland City would alleviate some of the unmet needs in the area. Increased publicity of transit service availability could increase ridership among visitors, and residents without vehicles, and those with vehicles looking for alternatives to driving. Efforts need to continue to develop service and ridership. Proposed are expanded commuter services throughout the western portion of the Region and between Rutland and Proctor.

RUTLAND RPC GOALS

- Increase transit ridership.
- Coordinate services and conserve resources of human service agencies, clients and transit providers.
- Provide accessible and convenient transit service.
- Provide transit service to new developments and redevelopment in the Region.
- Conveniently locate park and ride lots throughout the Region to be served by transit.
- Increase funding for the expansion of transit service.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.



FAST FACT

Demand for public transportation is expected to continue to rise due to increased fuel costs, the Region's aging population, and the Region's proposed development into a four-season, world-class destination.



FOOD FOR THOUGHT

Public transportation is critical for serving the medical, shopping and social needs of the Rutland Region's older citizens. According to the 2012 U.S. Census, the Region has a relatively high number of senior citizens. The number of persons over age 65 in Rutland County was 18% of the population; 15.7% of the State population; and just 13.7% of the National population.

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Chapter 26: Bicycles and Pedestrians

INTRODUCTION

Bicycling and pedestrian facilities serve a number of functions within the Rutland Region. They serve transportation, recreation, and health needs. They also serve distinct land use patterns: localized facilities move users within a site or small area, like a village, while longer-distance connectors link localized facilities, towns, or villages to one another. Different facilities serve diverse users, from children traveling to school and persons with disabilities accessing a transit stop to elderly getting exercise and athletes training or participating in a bike race.

Formal pedestrian and bicycle facilities have played an insignificant role in the Region's transportation network. This is a result of the Region's choice over the past half century to focus time and funding on road networks for automobile and truck traffic, the disparate rural settlement and work patterns, perceived inconvenience of this mode for inter-town travel, and the Region's weather. This chapter is focused on the bicycling and walking modes in the transportation network as a whole in the Rutland Region, recognizing that bicycling and walking are energy-efficient, healthy, and environmentally-friendly modes of transportation that can support economic development in compact villages and downtowns, and the Region as a whole.

CURRENT CONDITIONS

Bicycle and pedestrian facilities provide key support in the Region's transportation infrastructure. While they serve as the primary means of travel to work for only a small percentage of people - 5.4 percent of Rutland County residents reported walking to work in the American Fact Finder 2007-2011- walking makes up a segment of most trips. Walking is used by people who live near to work or school, work in villages or downtowns, visit the Region, or are shopping, running errands, visiting friends, or making other short-distance trips.

Facilities for pedestrians and bicyclists in the Rutland Region are scattered and generally offer little connectivity between towns. Facilities are limited for the most part to the downtowns of the Region's largest communities and on-road facilities for bicycling.

Another advantage of traveling by bicycle or on foot is the physical activity. Limited physical activity has helped to create a population of overweight people with significant implications to their health and the health care system in general. The health benefits of regular physical activity are far-reaching. It can help to control diseases such as coronary heart disease, stroke, diabetes, high blood pressure and other chronic diseases, which are associated with higher health care costs and lower quality of life for people of all ages. Regular exercise provides health benefits for older adults such as a stronger heart, a more positive mental outlook and an increased chance of remaining independent—a benefit that will become increasingly important as our population ages in the coming years.



FOOD FOR THOUGHT

Pedestrian travel within communities reduces the parking demand, turning movements and the parking maneuvers which can result in accidents.

CONNECTING THE PLAN

Transportation by bicycle and walking reduces energy use. For more information on the impact of transportation use on fossil fuels and greenhouse gases., turn to Chapter 16: Energy.

Pedestrian Facilities

Most walking and pedestrian facilities are concentrated in the Region's



Courtesy: Killington Pico Cycling Club website

Roads can be designed to accommodate bicyclists, such as this one in Middlebury Gap

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CONNECTING THE PLAN

Traveling by bicycle or on foot can lead to health benefits and is linked to the Region's recreational assets. See the chapters on Health and Wellness and/or Recreation and Open Space for more information.

downtown and village areas, notably in Rutland City, Brandon, Fair Haven, Poultney, West Rutland, Killington, Castleton, Pittsford, Proctor and Wallingford. All have extensive sidewalk networks throughout the center connecting the higher density residential areas. Recent grants for Transportation Enhancements (now Transportation Alternatives), Safe Routes to School and the VTrans Bicycle and Pedestrian Programs have buoyed efforts to improve sidewalks.

Sidewalks in these areas are in varying states of repair, depending upon the quality of construction and maintenance they have received over the years. Several communities have made concerted efforts to maintain and clean sidewalks in business areas.

Limited sidewalks and pedestrian access have been provided alongside commercial and industrial buildings outside of village and downtown areas around the Region. Infrastructure in these places has focused almost entirely on efficient circulation between parking areas and retail and employment centers.



FAST FACT

A number of towns around the Region have recently added to their sidewalk networks. Castleton, Poultney, Rutland City, and West Rutland have led the way, adding and upgrading significant stretches for use by walkers.

State/ Federal Transportation Alternatives grants have been a major source of funding for these improvements.

Bicycle Facilities

Bicycle facilities in the Region are in short supply. The only delineated lanes and separated paths for bicycle use are behind the downtown Rutland shopping plaza, Rutland Creek Path from the end of Earle Street to West Street (.48 miles), along the former Delaware and Hudson Railroad between Poultney and Castleton, on Clarendon Ave. (VT 133) and the path connecting the recreation center to Vermont Route 133 in West Rutland.

Signed bicycle routes, which share travel lanes with vehicles, are posted in each quadrant of Rutland City. Local, State, and Federal roads, designed primarily for vehicular traffic but legally permissive of bicycles, make up the remainder of the bicycle network. Few of these roads were built or are regularly maintained with cyclists in mind. In many communities, limited vehicular traffic allows cyclists to use rural roads in relative safety.

Trees, road signs, parking meters, and a handful of dedicated racks in downtown Rutland, Fair Haven, Chittenden and Killington provide lockable locations as parking facilities for bicycles in the Region. No public sheltered or protected bicycle parking facilities are present.

UNMET NEEDS

Lack of Dedicated Bicycle Facilities

Studies have demonstrated that many people prefer to bicycle on paths separated from motorized traffic because of concerns for safety. In the Region, there are only two paved paths dedicated to use by cyclists and pedestrians.

Bicycle commuters are forced to share narrow travel lanes in an environment suitable only for experienced riders. Even for them, there is considerable risk.

Lack of Safe Links Between Communities and Destinations.

Bicycle-friendly links between residential and commercial areas are poor throughout much of the Region. In most communities, cyclists are forced to share busy State and U.S. Routes with automotive vehicles, using travel lanes or narrow shoulders to travel between major points. Inter-municipal links, especially in areas that have high numbers of potential users, because of population densities and terrain, such as the Business Route 4 corridor between West Rutland and Rutland City, have not fostered bicycle use. In some areas, using bicycles to get to popular retail and employment centers is discouraged by prohibitions on use of roads by bicycles. Marble Valley Regional Transit District has installed bike rack on all buses, facilitating multi-modal travel.

Missing Links to Schools

Several communities around the Region

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offer no suitable means for children to walk or bicycle to school in a safe environment. Schools located outside historic village centers are especially prone to these missing links. With few alternatives, parents choose to drive or have their children bussed to schools. This incurs financial burdens, has adverse environmental impact in terms of air quality and energy use, and limits the amount of exercise children get.

Lack of Sidewalk and Shoulder Maintenance

Sidewalk and shoulder maintenance is not consistent throughout the Region. In many communities, sections of sidewalks are missing or have suffered from deferred maintenance that make them unpredictable and unsafe for pedestrians. This is especially true in neighborhoods immediately outside of village and city centers. Debris in shoulders or deteriorated pavement on shoulders, can force bicyclists into the travel lane to avoid potentially dangerous situations. Winter snow and ice removal is also a challenge in most communities. Confusion over who is responsible for upkeep and maintenance — property owners or municipalities — exacerbates both problems.

Development that Discourages Walking and Cycling

Residential and commercial developments over the past several decades have been designed in such a way as to discourage people from using any form of transportation other than the motor vehicle. Among the chief obstacles facing pedestrians and bicyclists are :

- Wide parking areas between streets and retail storefronts that make for unpleasant and potentially unsafe environments for pedestrians traveling through rows of vehicles.
- Individual commercial buildings on their own lots, which make for long travel distances between stores, employment areas, and homes.
- Homes built on cul-de-sacs far away from services that make bicycle and pedestrian trips longer and less convenient.
- New developments where sidewalks and or wide shoulders are not required.
- Housing developments that are not interconnected, forcing pedestrians and cyclists onto busy roads to travel from one neighborhood to the next.

Limited Local Funds

Towns have limited funds for transportation infrastructure maintenance and enhancement. Expenditures for bicycle and pedestrian facilities are often low priorities when roads are deteriorating and equipment needs replacing. As a result, these facilities continue to have missing links and limited or no maintenance.

Lack of Education of Motorists and Other Transportation Users

Pedestrians, bicyclists, and motorists often are unaware of the rules, rights, and responsibilities of various modes of travel. There are major differences in the walking capabilities, behavioral patterns, and learning capacities of different groups of pedestrians, bicyclists and motorists.



FAST FACT

Safe Routes to School is a comprehensive program based on a simple premise: our kids should be able to safely walk and bike to school. The Safe Routes to School movement is taking hold across the country, as communities are helping kids and families walk and bike to school. Safe Routes to School programs combine education, engineering, enforcement, evaluation and encouragement to get more kids walking and biking to school and make conditions safer and more convenient. Several kindergarten– 8th grade schools in our Region participate.



The newly completed segment 1 of Rutland Creek Path

Courtesy: Bennington County Regional Commission

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FOOD FOR THOUGHT

Pedestrian facilities are vitally important for children, the elderly and others who do not drive. Providing pedestrian access for these groups can improve their health, quality of life and the community. Facilities include not only sidewalks but also other amenities such as benches and landscaping, to help pedestrians feel welcomed, comfortable and safe.

FUTURE TRENDS

Increased bicycling and walking

The link of physical activity to health has received much publicity of late. The number of programs, such as Vermont League of Cities and Towns "Walk across Vermont," and the common presence of pedometers on people's belts all confirm this trend. Bike Vermont and other bike touring companies have expanded. Funded in part by the Bowse Trust and VTrans, the Rutland Area Physical Activity Coalition has been involved in a number of programs such as Bike Smart, a four point bike safety presentation for fourth and fifth graders, and One Hundred Day Challenge Program, designed to help people get walking, especially those who are at risk for diabetes.

Centers for Disease Control and VT Department of health have funded grants for Building Healthy Communities, which review town plans and regulations for walkability/bikeability.

Increased Municipal Attention to Pedestrian Infrastructure

Recent history suggests that a growing number of communities in the Rutland Region are actively seeking State, Federal, and other funds to improve their sidewalk networks, partly as a result of the renewed interest in villages and downtown areas.

Rising Gasoline Prices

Increasing worldwide demand for oil and uncertain long-term supply will continue to affect gasoline prices for the foreseeable future. Spikes in prices may force individuals and families to seek alternative forms of transportation for the majority of their trips. As this trend develops, the usefulness of good sidewalk and bicycle networks will become increasingly apparent.

MEETING CURRENT AND FUTURE NEEDS

Better Identify Needs

It is important to identify bike and pedestrian user groups, to recognize the range of possible bike and pedestrian facilities, and understand current levels and types of activity. With an understanding of these issues, it is possible to develop a clear set of goals and measurable objectives toward which the Region can work. Planning so that pedestrians, bicyclists, and motorists alike can travel safely and harmoniously is sometimes a difficult balancing act, but the positive benefits reaped by a comprehensive transportation plan are undeniable.

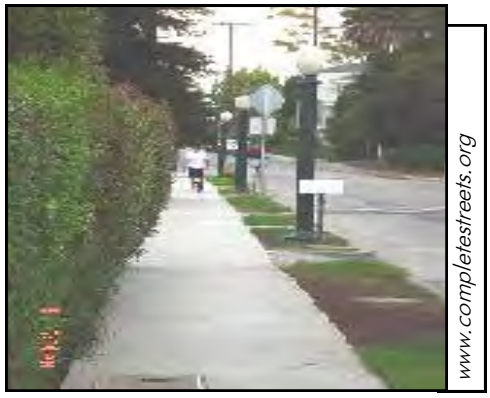
Existing Funding for Facilities

A series of Federal and State grants are available for communities to develop and improve pedestrian and bicycle facilities.

RENOVATING PEDESTRIAN FACILITIES



Before



After

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Federal transportation budgets of the past ten years have demonstrated a commitment to improve this type of infrastructure. Local communities must present a match of between ten percent and twenty percent. In many cases, planning, coupled with the willingness to commit resources, either dollars or in-kind, can leverage additional funds to develop infrastructure. Efforts should be made to minimize the amount of Federal and State strings attached to aid dollars. Many towns opt to forgo such assistance because relatively straightforward projects become overly complex and expensive once these funds and accompanying regulations get involved.

Secure, convenient and visible bicycle racks, placed at locations which meet the needs of potential uses, such as libraries, schools and commercial centers, make bicycle travel a more viable mode for certain types of trips.

Reviewing Local Regulations

Local zoning and subdivision regulations can encourage or require bicycle and pedestrian facilities to be included through forms of development review. This approach can be especially effective in areas where the community has identified a particular corridor that pedestrians and bicyclists frequently travel. New developments, both residential and commercial, should be required to accommodate bicyclists and pedestrians, safely assuring all modes accessibility.

Inclusion of Bicycle/Pedestrian Facilities in Roadway Projects

The Federal requirement, instituted with Intermodal Surface Transportation Efficiency Act, encouraged the integration of modes in projects. This was carried out in the Complete Streets Law, passed in 2011, that ensures that the needs of all users of the transportation system are considered in all transportation projects involving unpaved roads. The context zone– from rural to urban– is linked to the design considerations and roadway treatment. Roadway projects such as reconstruction, widening or paving should provide bicycle and pedestrian access. Greater continuity for bicycle and pedestrian travel will be achieved by removing barriers and missing links.

The regional bicycle network requires consistent and paved shoulders, a minimum of four- feet wide. Specifically this includes Routes 4A, 30, 100, 103, 133 and 140. Incorporating pedestrian facilities into new development projects, such as sidewalks, crosswalks, landscaping and traffic calming, is less costly than retrofitting.

The City of Rutland has many missing links in the network, and efforts should be made to complete sidewalks in these areas.

Maintenance of Existing Facilities

The maintenance of shoulders and sidewalks is a constant need. When maintenance is neglected, their usefulness diminishes.

Education and Law Enforcement

Educational programs about the economic, transportation performance, environmental, health and social benefits of biking and walking can and should be directed at bicyclists, pedestrians and motorists of all ages and experience levels. Educational programs can also be targeted at the general public and public officials.

Smart biking and walking skills will create safer conditions for all road



FOOD FOR THOUGHT

The Towns of Fair Haven, Rutland City and Rutland Town are working on feasibility/scoping studies which provide planning and engineering services for a sidewalk or alternate path between the two destinations. This is the first phase in developing infrastructure.



The former D & H Railway in Castleton and Poultney has become a multi-use trail

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DEFINITIONS

Complete Streets **are streets for everyone**. They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Complete Streets make it easier to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from train stations.

users. Bicyclists need to know how to ride safely. Safety includes obeying the rules of the road and wearing helmets. Motorists need to know how to safely share the road with bicyclists. Pedestrians need to be educated about walking facing traffic and crossing roads. Enforcing laws that apply to motorists, bicyclists and pedestrians will increase safety.

Connecting Modes

The easier it is to switch between modes, the more likely it is that people will utilize different modes. Bike racks have been installed on The Bus to encourage travel by these two modes Amtrak should also accommodate bicycles. Safe facilities, such as racks and lockers, placed at transfer sites, also encourage use.

RUTLAND RPC GOALS

- Include Complete Streets as part of town transportation projects, to accommodate all users.
- Educate local officials about the economic, health and transportation benefits of bike/pedestrian facilities.
- Fund communities' planning and implementation of bike/pedestrian facilities.
- Educate bicyclists, pedestrians and motorists about safe riding, walking and driving.
- Provide bicycle and pedestrian accessibility to new developments and redevelopment projects.
- Increase participation of schools in the Safe Routes to School Program.

RUTLAND RPC ACTIONS

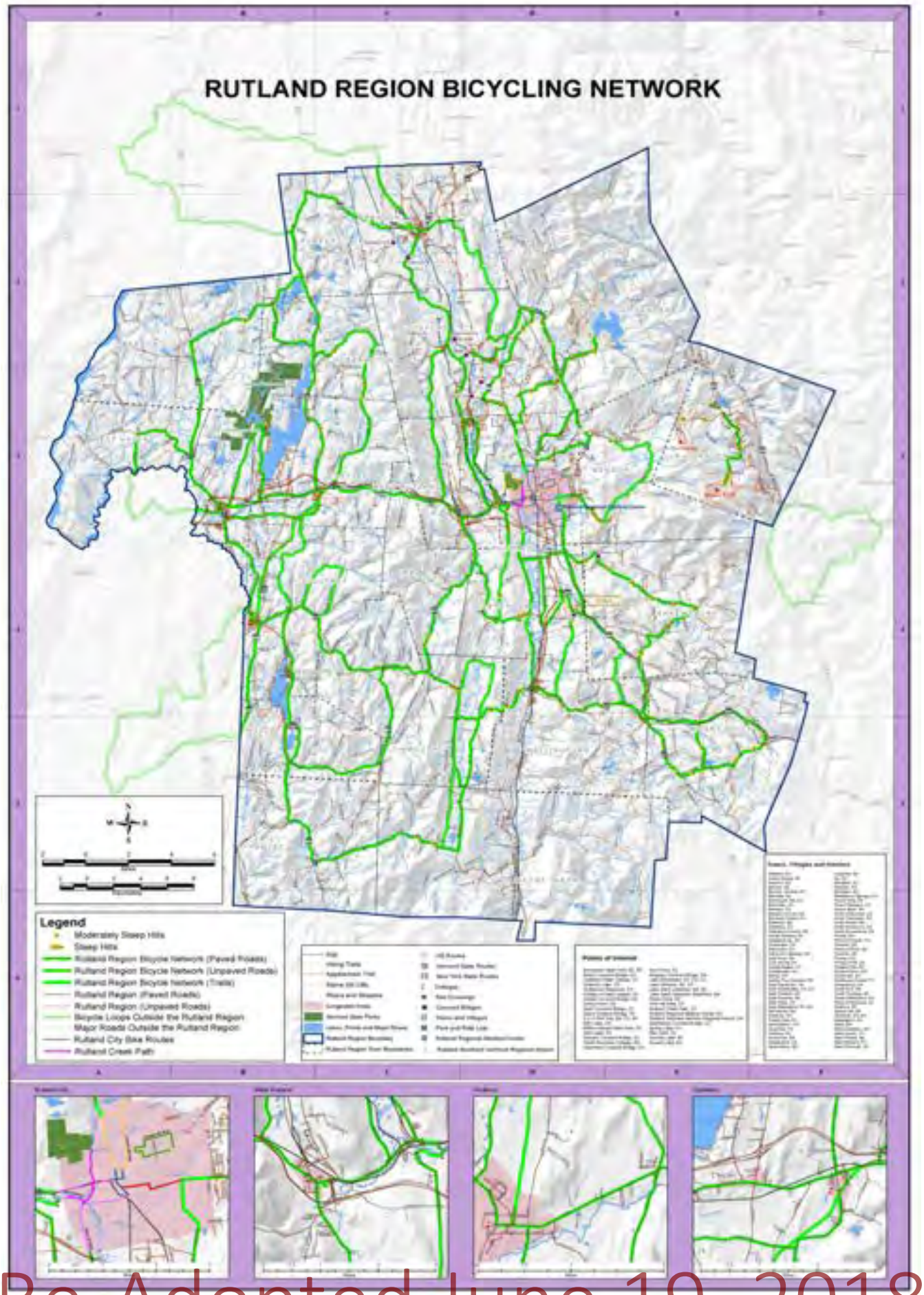
The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.



Rutland Creek Path: a two mile long pedestrian/bicycle path across Rutland City.

Courtesy: Rutland Recreation: A Creative Economy Initiative

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Chapter 27: Rail

INTRODUCTION

Rail transportation – both freight and passenger - continues to be vital to the economy of the State and the Region. It is the most efficient mode for transporting bulk commodities and can be a competitive option for other merchandise and passengers. An integrated rail and transportation network would promote energy efficiency and improved environmental quality by diverting cars from highways while further enhancing movement of passengers and freight throughout the Region.

Rail infrastructure in the Region is widespread but outdated; service is available but limited in scope. Increasing interest in multi-modal transportation, coupled with grants to study passenger rail service has generated increasing activity in the area of passenger rail.

This chapter of the *Regional Plan* considers the services and constraints of the Region's freight and passenger rail facilities recognizing that some rail issues are national in scope. It also examines rail's relationships with other modes of transportation and its impact on economic development.

CURRENT CONDITIONS

Network

Three rail companies serve the Rutland area. All are part of the Vermont Railway System, operating on tracks and rights-of-way owned by the State of Vermont except for the Clarendon and Pittsford which owns all of its facilities. All are considered "local" railroads.

Rutland is one of the primary nodes in the Vermont Railway, Inc. network. Lines extend north, south, west, and southeast from Rutland to serve the entire southern section of Vermont. Virtually all rail traffic in the Region comes through this central node.

- Clarendon and Pittsford Railroad (CLP) – The Clarendon and Pittsford Railroad operates 18 miles of track between Rutland and Fairhaven. This route operates as a "bridge line" for commodities coming from the Canadian Pacific Railway Champlain line, which generally runs along the I-87 corridor in New York, and moving to the Vermont Railway and/or Green Mountain Railroad. CLP also directly serves Vermont's largest rail shipper, Omya, Inc., at Florence by a branch line off the Vermont Railway.
- Green Mountain Railroad (GMRC) – The GMRC operates the 50 miles of state-owned track between Rutland and Bellows Falls. It connects with Vermont Railway and CLP in Rutland and with the New England Central in Bellows Falls.
- Vermont Railway (VTR) – The VTR runs along the state-owned track from Burlington through Rutland to North Bennington, where a spur goes to Bennington, and then continues on to Hoosick Junction, New York, where it connects to Pan



FAST FACT

The trail from Whitehall, owned by the Clarendon & Pittsford, serves as a gateway for rail traffic entering the State of Vermont from the west. To the north, Vermont Railway serves Burlington and communities in between. To the south, the Vermont Railway serves Manchester and Bennington. To the southeast, the Green Mountain Railway serves Ludlow and Chester and connects in Bellows Falls with the Central Vermont and Boston and Maine Railroads.



Cpurtesy: Vermont Railway—Shaun McGinnis

Vermont Railway runs daily freight services like this one in Center Rutland

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FAST FACT

All rail lines in the Region are classified by the Association of American Railroads as "local" or "short-line" railroads. These are line haul railroads operating less than 350 miles of road and/or earning annual revenue less than $40 million [source: Draft State Rail Plan, chapter 2, page 10 – R.L. Banks and Associates, inc.



DEFINITIONS

Bridge and Local Traffic:

Bridge rail traffic passes through the State without any loading or unloading of goods.

Local Rail traffic has its origin or destination within the State.



www.rutlanddowndown.com

Amrtak offers daily service on the Ethan Allen line bewteen Rutland and New York City

American Southern Rail. VTR operates 127 miles of track within Vermont.

With the exception of the CLP, bridge capacities for railroads are limited to railcars with a gross weight of 263,000 lbs. The CLP is rated for the minimum national standard, 286,000 lbs.

Freight Service

Freight traffic in the Region falls into two categories: "bridge" traffic moves through the Region without stopping, most often running to and from intermodal facilities in Albany, NY, Springfield, MA and Montreal; local traffic originates from or is destined to Vermont businesses. The Organization for Economic Cooperation and Development (OECD) lists rail as the least environmental damaging method of shipping goods. Freight rail produces significantly less air pollution than freight trucks, as well as less noise due to rail's intermittent nature.

Freight Network

Vermont's rail freight network is a major driver of economic activity. Over $8.6 billion worth of goods such as fuel, food, grain, minerals, and wood products are shipped annually. Rail freight accounts for approximately 17% of all the freight moving into, out of, within, and through the State by weight, providing cost-effective shipping options for Vermont businesses.

Freight services are currently provided daily on most routes. Vermont Railway operates two through freight trains per day with four locals and a switcher from Rutland to Burlington six days per week; the Green Mountain line operates two through freight trains six days a week between Rutland and Bellows Falls; CLP line from Rutland to Whitehall, New York, operates two through freight trains daily. Vermont Railway operates through freight four days a week on its line extending south from Rutland to Bennington and Hoosick Falls.

VT Freight Rail Statistics

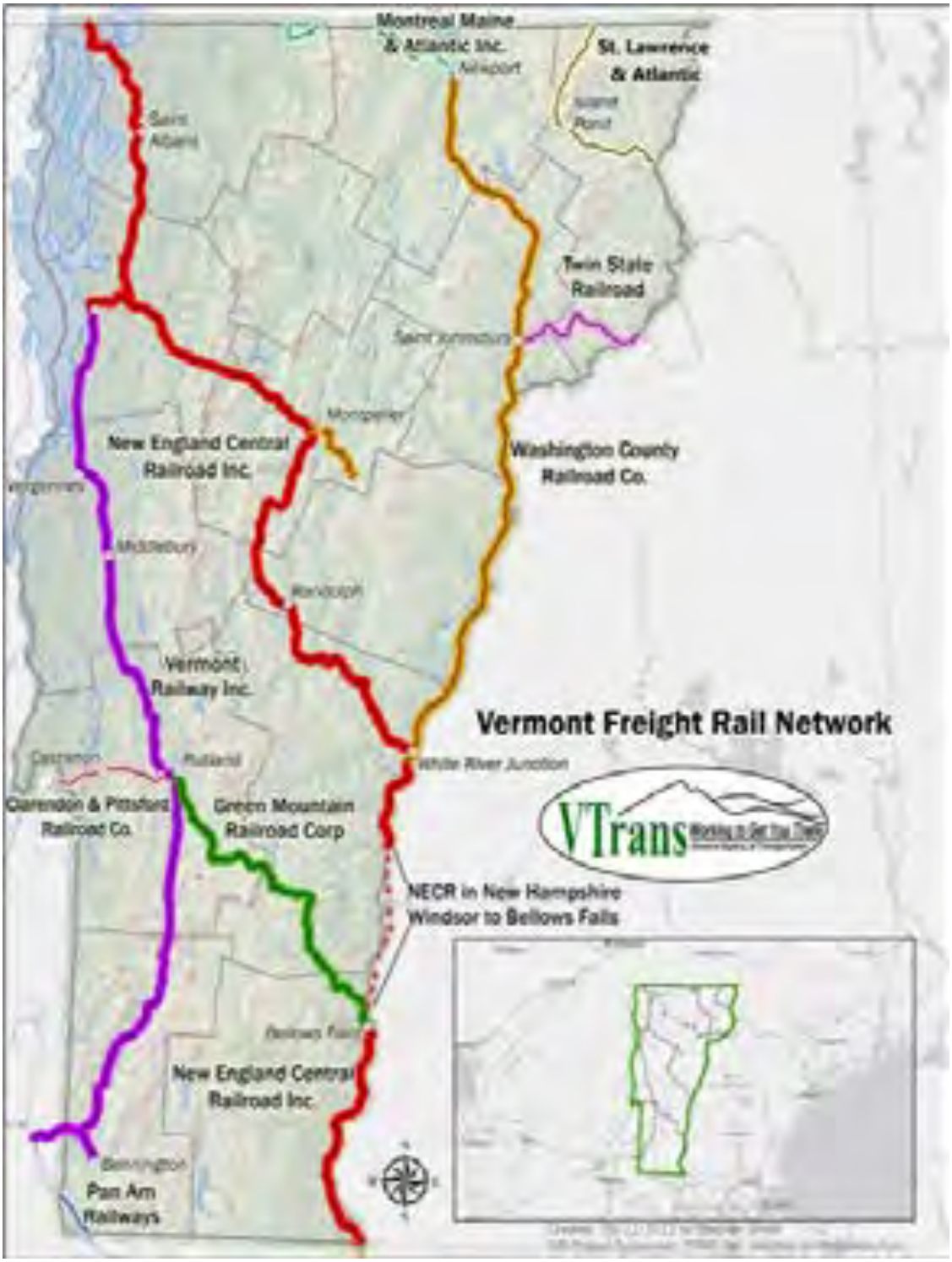
Number of Freight Lines	8
Freight Moved - Total (tons)	6,100,000
Freight Originated (tons)	600,000
Freight Terminated (tons)	1,100,000
Freight Miles	590
Employees	173
Average Wages	$81,080
Number of Trucks Eliminated	337,000

Source: American Association of Railroads Report, 2010

Intermodal/Transload Facilities

An important component of the rail freight network are the facilities where commodities can be transferred between rail cars or from rail to truck. These facilities, which provide the necessary infrastructure and services to receive, store, and ship of products by rail, are divided into two categories: (1) transload, where goods are physically transferred between rail cars and over-the-road vehicles; and, (2) trailer- or container on flat car (TOFC/COFC), where an entire freight carrying container is switched

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FAST FACT

Freight densities. All lines in the Region [CLP, GMR, and VTR – north from Rutland] carry between one and three mgt [million gross tons] per year; the VTR south of Rutland carries less than one mgt per year.

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FAST FACT

TRACK MILEAGE:

The Rutland Region is home to a total of 97 miles of track.

- Clarendon and Pittsford- 19 miles
- Green Mountain- 19.5 miles
- Vermont Railway - 45.6 miles
- Other - 12.9 miles



FAST FACT

Intercity passenger rail ridership on the Ethan Allen Express declined 12 percent from June of 2000 to June of 2004 [42, 992 passengers vs. 37,966 passengers]. The State, continues to make some financial contribution to the operation of Amtrak trains.

between modes. Typically, transload terminals handle bulk goods such as petroleum products, chemicals, fertilizers, animal feeds and lumber that can effectively utilize the high capacity of rail cars with little risk of damage or product loss from the transloading process.

Vermont does not have any TOFC/ COFC terminals, but some form of transload facility is located in many communities throughout the State. Rutland is included as one of the primary locations of transload facilities.

The Rutland Rail Yard

Historically, Rutland was the hub of rail activity for the Region and the State. Until the mid-1950s, its active rail yard and station were the bulwark of the local economy. While most of the rail activity is gone, the yard remains in the center of the City.

The Rutland Rail Yard, presently functioning at capacity, is technically a re-classifying and holding yard for rail cars. It does not handle transloading and the only commodity that is unloaded is road salt for VTrans and towns.

The four rail lines serving Western Vermont converge on the Rutland switching yard, and it is here that trains are made up to move goods to multiple destinations across the Region and nation. The configuration of the yard makes it difficult to conduct efficient switching operations. Additionally, all trains serving the Region must pass through this yard – even those coming in from the east and going north as there is no connecting link outside of the City to accommodate the east-north or south-west movement.

FRA Track Classification/Speed

The Federal Railroad Administration (FRA) in Title 49 Code of Federal Regulations, Part 213 (49 CFR 213) has established minimum track safety standards requirements and maintenance levels for railroad operations. The track safety standards identify the minimum track conditions that are allowable for operation at a particular speed for a given class of track, and establish maximum passenger and freight train speeds. The standards identify minimum frequencies required for track inspection and define the minimum level of experience needed by rail inspectors.

The FRA track class provides a proxy for the condition of a line segment. Higher levels of maintenance and better track conditions are required for successively higher FRA track classes. If a line is not maintained sufficiently for trains to be operated at the class of track associated with the published timetable speeds of the line, then speed reductions ("slow orders") must be placed on the tracks. Slow orders are typically temporary, and are removed once the track defects have been corrected. However, it is not uncommon, particularly among low-density railroads, for slow orders to take on a more permanent and extensive nature, with the result that typical actual conditions for a given segment may be below the stated FRA track class. Over the years, this has been the case with several of Vermont's rail lines. The locations of these track classes are shown in the map below.

Rail movements statewide accounted for 9.3 million tons valued at $8.6 billion, representing approximately 17 percent of all the freight moving into, out of, within, and through the State by weight. Nonmetallic minerals, hazardous materials, and food are the top commodities transported by rail. (Source: VT Freight Plan).

Passenger Rail Service

Amtrak provides daily passenger service between Rutland City and Penn Station in

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New York City, via Castleton and Albany using the CLP line. Tourist-oriented excursion passenger service is occasionally offered along the Green Mountain line, as well as along the Vermont Railway line north of Rutland.

Vermont received $500,000 to conduct a rail planning study regarding how passenger train service can be established south of Rutland, running through the Vermont towns of Manchester and Bennington, with connections to the Capital City District of New York. Both Vermont and New York contributed additional funds to provide a total of $1 million towards this study. The goal of the New York-Vermont Bi-State Intercity Passenger Rail study is to provide intercity passenger rail services to parts of Vermont and New York that are currently underserved or unserved by examining various service concepts along the rail corridor, and developing the necessary preliminary engineering and environmental documents needed to render the project eligible for federal funding. The project is anticipated to take two years to complete.

UNMET NEEDS

Rail Facilities

Rail lines in the Region and throughout Vermont have physical constraints, including poor track condition, limited interchange track, sidings or yard tracks and limited overhead or side clearances. The consequence of these are inadequate speeds, restrictions on bridge and track load rating capacities and the lack of efficient intermodal transfer points.

The lack and condition of passenger rail -related facilities resembles the lack and condition of freight rail facilities, with added need for stations as well as levels and types of service that meet the need of commuters, vacationers, and others likely to use such facilities.

Financing Issues

Even with State ownership of most of the rail infrastructure in the Region, there has not been a consistent, sufficient source of funds to bring rail beds, bridges, and other infrastructure up to the level needed to effectively compete in today's markets. "By their very nature," said the Vermont State *Rail Plan Update,* "short line railroads do not have the resources to make significant upgrades in their infrastructure".

Rail Yard

By virtue of its location, a slice of land snaking along the edge of downtown Rutland behind the shopping center, there are conflicts between trains passing through the yards and/or coupling or uncoupling cars and vehicles. There are many safety issues related to the location of an active rail yard in this location.

Rail Crossings

There are 89 public crossings in the Region, 72 at-grade, nine above grade and seven below grade. Of the at-grade crossings, 33 have passive warning devices- 2 have no signs or signals, 17 have crossbucks and 14 have stop signs. A total of 39 have active warning devices - 35 with flashing lights and 4 with gates. The condition of crossings range from good(38), fair (15) and poor (18). Their maintenance and condition is of concern.

Clearance Restrictions

The following are a listing of clearance restrictions identified as part of the 2005 Draft Vermont State Rail Plan:

VTR – The 1997 Railway Clearance Survey shows that VTR had nine clearance restrictions.

CLP – The 1997 Railway Clearance Survey shows that CLP had no clearance restrictions.

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GMRC – In the 1997 Railway Clearance Survey GMRC had two clearance restrictions.

FUTURE TRENDS

While the U.S. has not embraced rail travel as a primary means of transportation for several decades, a resurgence is occurring. Passengers frustrated with airline delays and rising costs, the high cost of gasoline and road construction are beginning to give train travel another look. Most recently, in July of 2013, Amtrak conducted a series of bicycle tests on trains in New York and Vermont. Bicyclists were recruited to participate in tests on the Vermonter and Ethan Allen train routes. Each volunteer bicyclist was asked to board at a particular stop with a carry-on bicycle and detrain at the next stop.

Courtesy: Christopher Parker of Vermont Rail Action Network, www.railvermont.org



Amtrak has also been making small improvements. While capacity and routes have actually decreased since 1985, today's passenger trains tout high-speed wireless access on the Ethan Allen, no baggage fees for up to three checked bags and the ability to bring golf clubs, bicycles and ski equipment. Some business class seats also have electrical outlets, conference tables and complimentary newspapers.

Rail Infrastructure Improvements

Improvements to rail infrastructure will continue to be an issue to the vitality of this mode in the Region and State. The Gateway Rural Improvement Pilot Project addressed many of these, particularly track and bridge rehabilitation necessary to achieve the desired operating speeds for future passenger service and the necessary improvements to upgrade the mainline and sidings to FRA Class III standards and 286,000 lb. axle loadings.

The bridge program includes the necessary structural repairs and upgrades to support 286,000 lb. loads now the current standard for the freight railroad industry. The grade crossing program includes the installation of new automatic warning signals or the upgrade of the existing systems at each grade crossing on the corridor, as well as the reconstruction of the highway grade crossing surfaces at critical locations.

MEETING CURRENT AND FUTURE NEEDS

Governance

The Vermont Rail Council was originally created by executive order in 1993 to provide advice to the Governor and the Agency of Transportation on rail issues. By new Executive Order #13-03 dated August 5, 2003, Governor James Douglas established the Vermont Rail Advisory Council and designated its membership and

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duties anew. This new executive order supersedes Executive Order #08-01. Membership is drawn from owners of private rail industry, operators on state-owned railroads, freight shippers, environmental and economic development organizations, regional chambers of commerce, regional planning commissions, the House and Senate transportation committees and travel and recreation organizations. The Council meets quarterly or as needs dictate.

Cooperation and Collaboration

Rail issues will only be resolved with a variety of partnerships, starting at the regional level and extending up to the Agency of Transportation and beyond, including the private sector. Recent federal funding provides resources to begin to implement the pilot's strategies. To insure that these funds are used in the most appropriate places the regional planning organizations in the corridor must work with others to insure the prioritization of projects in the most efficient manner.

Of major importance are improvements to facilities, specifically the upgrading of bridges to handle fully loaded 286,000-lb. railcars and resolving clearance issues, bringing tunnels and highway bridges over railroads into conformance with modern railroad standards. All major public roads not equipped with active warning devices should be upgraded to include automatic gates.

Vermont is too small a market to support containerized cargo moving through large intermodal facilities. Instead, smaller transloading facilities, such as the TransLink operation proposed for Fair Haven, will provide the appropriate access to connect Vermont businesses to larger intermodal facilities in neighboring states. In addition, alternative routing from Albany through Bennington and Manchester and extending up to Burlington is suggested.

Communities need to plan for land uses adjacent to rail lines and develop policies that will encourage, where appropriate, the use of these lands for rail-related development activities.

Recently Completed and Planned Rail Improvements

Recent ongoing rail infrastructure initiatives in Vermont include:

- **Western Corridor Improvements** The State has had a long-standing initiative to improve the infrastructure along the Western Corridor route between Burlington, Rutland, Bennington and Hoosick Junction. Funded primarily by state funding and federal grants, installation of heavier welded rail, extensive tie replacement, crossings upgrades and bridge strengthening will eventually permit increased weights and higher speeds throughout the corridor.

- **Upgraded Weight Standards** VTrans manages an ongoing program to upgrade state-owned rail lines to meet current national weight standards of 286,000 lbs., with the intent of reducing the need for Vermont rail shippers or customers to partially load rail cars in order to not exceed the lower weight limits on Vermont railroads. In addition, VTrans' Rail Policy Plan calls for all new construction to achieve the 286,000 lb. standard and, in cases of major civil structures with a long design life, to a 315,000 lb. standard.

RUTLAND RPC GOALS

- Improve rail infrastructure in the Region, as identified in the State Rail Plan and Western Corridor Study.
- Increase funding for rail service - both freight and passenger.
- Identify parcels along the rail line and when appropriate preserve them as sites for rail-related development.

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- Expand passenger rail service.
- Upgrade and improve safety of rail crossings.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

FAST FACT

The Vermont Rail Advisory Council advises the Agency of Transportation on statewide rail issues, including enhancing freight railway service, examining existing rail passenger services, and the availability of passenger station facilities. The Council also serves as a forum for those interested in rail-related issues.

CONNECTING THE PLAN

Transportation infrastructure and services are integrally tied to the Rutland Region's economic activity. For more information on the Region's economy, turn to Chapter 5: Economic Activity.



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Chapter 28: Air Services

INTRODUCTION

Aviation represents one of the three legs of the transportation system in the Region - Air, Rail and Road. The State-owned and operated Rutland Southern Vermont Regional Airport (RSVRA) improves mobility, generates tax revenue, annually transports air cargo and generates tourist dollars, which in turn improves our economy and quality-of-life.

The best way to preserve and improve the airport and its associated economic and quality-of-life benefits is to take timely proactive measures. Strong and effective local, regional and state policies minimize adverse impacts arising from the encroachment of incompatible land uses around the airports, and any potential adverse impacts on the community near the airport.

This section is focused on planning and developing the potential that air transportation holds in the Rutland Region, its economic implications and interface with other modes.

CURRENT CONDITIONS

Rutland Southern Vermont Regional Airport

Previously called the Rutland Airport, the name of the airport was changed in 2007 to Rutland Southern Vermont Regional Airport (RSVRA) to more accurately reflect the service area that the airport encompasses. Commercial airline and general aviation customers are drawn from as far south as Stratton and Arlington, east to Ludlow and Chester, north to Middlebury and west into New York State. It is located approximately 7 miles south of Rutland close to the intersection of US 7 and VT 103 in the Town of Clarendon. Access is off Airport Road just south of VT103 and a recently realigned T intersection helps to make it safer from all directions.

The airport is classified as a short haul commercial service airport and certified by the Federal Aviation Administration (FAA) for Part 139 operations. RSVRA is one of ten State owned airports and management and administrative functions are served by the Vermont Agency of Transportation (VTrans). 'Transient' flights operating at the airport typically originate from or depart to airports within 500 miles, with frequent private flights to as far away as Houston, Texas and the west coast of the United States.

Other activities include two events sponsored by the local Experimental Aircraft Association, and an open house for the community. A Civil Air Patrol Squadron is active at Rutland and provides youth-oriented programs, as well as support for emergency services.

According to an economic study prepared in 2010, the Rutland Southern Vermont Regional Airport generates a total local economic impact of $8, 411, 200, with an even larger statewide impact.

CONNECTING THE PLAN

The Rutland Region's airports have a direct impact on businesses and tourism in the Region. At the same time, airports can be sources of land use conflicts; decisions about development immediately adjacent to the Fair Haven and Rutland State airports should be made with careful consideration to future compatibility.



Courtesy: www.vermontairports.com/rutland

Aerial view of the Rutland-Southern Vermont Regional Airport in Clarendon

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FAST FACT

Enplanements at the Rutland State Airport vary by month, as well as by year.

Early spring, mid summer, and the holiday season in December mark annual high points for air travel in the Region. Mud season and January are the low points.

Recent marketing efforts include a website– www.flyrutland.com

(*Source: McFarland Johnson Aviation Program Wide Business Plan January).* Vermont uses State funds to match FAA grants at State airports. Passenger service is dependent upon the Essential Air Subsidy for sustainability.

Two runways serve the airport. The primary runway (1-19) is 5000 feet in length and the crosswind runway (13-31) is 3170 feet long. On–airport facilities include a terminal building with airline check-in and lounge, restaurant space, car rental desk and Transportation Security Agency screening area and offices. Other buildings include two aircraft maintenance hangars, Civil Air Patrol Operations building and hangar, fixed base operator facility and a flight school office. Aircraft storage and parking is provided by 12 'T' hangar units, 14 conventional hangars and 40 tie-downs on the ramps.

The fixed base operator (FBO), Columbia Air Services, provides fuel sales, management of hangar space, both short and long term and a variety of ramp services. S.D. Air Service provides aircraft maintenance and repair services for customers on the airport and the Region. The Green Mountain Flight School is the pilot training center on the airport.

There are approximately 43 aircraft based at RSVRA ranging from basic hobby planes to sophisticated multi- engine aircraft. The airport provides full time employment for about 25 people including airline staff, Transportation Security Agency screeners, aircraft mechanics, Vermont Agency of Transportation staff, Fixed Base Operator and flight school employees.

The airport serves a large number of area businesses, some of whom depend heavily on the airport. Flight activity has been slightly degraded by the economic downturn with around 25,000 operations per year comprised of a mix of missions ranging from recreational flying, the three daily scheduled airline flights to Boston's Logan International Airport and daily express freight flights for FEDEX and UPS. Private and corporate aircraft bring business, recreational and second home owner travelers to the area. Those flights number several thousand, and include a wide range of aircraft from single engine piston driven airplanes to intercontinental jets.

Scheduled airline service to and from Boston is provided by Cape Air that operates under the Essential Air Service program of the US Department of Transportation. Cape Air features a code-sharing agreement with Jet Blue so that 'seamless' connections through Boston provide one stop service throughout the United States and to international destinations. Since the introduction of Cape Air flights in 2009 passenger loads have steadily increased to the point that during the summer of 2012, a fourth daily round trip to Boston was initiated.

Cargo is mostly from Manchester NH six times per week and two days per week come from Albany, NY. Both are handled by Wiggins Airways, who flies for both FedEx and UPS. All air cargo destined for Southern Vermont comes through Rutland.

(Refer to boarding and cargo load tables on next page).

General Aviation

The bulk of airport activity falls within the context of 'general aviation'. This category includes personal and business flights, flight school, agricultural flying and recreational flying. RSVRA hosts flights from virtually all of the United States and Canada often in 'corporate' turbo jet aircraft capable of flying thousands of miles nonstop. Routinely flights arrive and depart from as far away as Texas, Colorado and California.

Airport Infrastructure

Recent upgrades to the approach and landing aids for the primary runway should result in a steady increase in airport operations. The MALSR approach lighting

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system became operational in 2010 making the final approach to runway 19 more visible in limited visibility conditions. In late summer 2012 a precision instrument approach (ILS) to that runway was added. The ILS gives pilots a precision 'glide path' to the runway, increasing their confidence for safe and consistent arrivals to the airport. (Source: Cape Air)

In addition to the above activities, the Civil Air Patrol provides emergency support and services for the community. The local chapter of the Experimental Aircraft Association brings recreational flyers from the Region and held its second annual 'fly-in breakfast' and maintains a small fly-in camp ground.

Financial Summary

According to The Vermont Agency of Transportation the net operating cost is about $525,000 per year with an estimated $12 million in economic activity being generated for the Region and state on an annual basis. Funding for airport projects is primarily sourced from Federal sources with a State match.

Fair Haven Airpark

The Fair Haven Airpark, now closed, is located 1.7 miles north of Fair Haven, is an unmaintained strip. It is unattended with no commercial services. It was used as an emergency facility for helicopters during Tropical Storm Irene. Radio-controlled flyers use it in the summer.

UNMET NEEDS

The rules for operating an airport capable of hosting air carrier operations place ongoing infrastructure demands on the airport and on the airport sponsor for personnel and financial support. Unstable funding of the Essential Air Service Program, dependent on the U.S. Dept. of Transportation subsidy, makes commercial service viable but subject to change.

RSVRA Boardings and Cargo Loads

	Boarding	Absolute Change	% Change
2012	6,027	30	0.05%
2011	5,997	647	8.44%
2010	5,530	1,072	24.05%
2009	4,458	-580	-11.51%
2008	5,038	2,767	121.84%
2007	2,271	26	1.2%
2006	2,245	27	1.2%
2005	2,218	-471	-17.52%
2004	2,689	831	44.73%
2003	1,858	-484	-20.66%
2002	2,342	-364	-13.5%
2001	2,706		

Year	Cargo in Pounds	Absolute Change	% Change
2012	477,266	-56,201	-10.6%
2011	533,467		

Source: VTrans

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CONNECTING THE PLAN

The growth of both passenger and freight air service is a key component of the Rutland Region's future economic growth.

In addition, RSVRA is considered by some to be a suitable location for renewable energy projects, such as wind towers and solar farms.

For more information, turn to Chapters 5: Economic Activity and 16: Energy.

Significant continued growth in corporate and high-end personal air travel is expected. Fractional (time-share) ownership of jet aircraft and the introduction of the Very Light Jet aircraft provide fast and economical point to point air transportation, making Rutland Airport an important destination and origin for business and personal travel. Scheduled airline and freight service provide a backbone for economic development and the hospitality industry throughout southern Vermont.

Seasonally variable weather conditions and the surrounding area's topography can limit the airport's operational capabilities and the potential for cancelled or delayed scheduled flights. There are many natural hazards surrounding the airport so the addition of man-made ones would only aggravate the situation. Proposals for developments on ridgelines in the vicinity and any increase in the height of obstacles that would cause additional constraints may adversely affect instrument approaches to the airport, and counter any improvements.

The airport's infrastructure impacts its potential use. Limited hangar space available to aircraft affects the overnight parking situation, prohibiting some planes from being based in Rutland. The terminal building is small and cannot accommodate large passenger flows.

FUTURE TRENDS

RSVRA will play an increasingly important role in the Region's transportation infrastructure as it offers the only modern high speed access to the area. As the economy recovers from the Great Recession, increased travel by business and leisure visitors in concert with national trends is anticipated. The 2009 Airport Master Plan update predicts slow to moderate growth (about 5 % per annum) of that sector.

There are also opportunities in new market areas including charter flights, bringing winter visitors to the Region's ski areas. Currently turboprop aircraft with seating capacity of 60- 75 can use the airport but larger airplanes must go elsewhere. Commercial airline customers continue to ask for scheduled service to the New York City area. Local and State level aviation staff have been monitoring the issue to meet that demand. As business and industry grow and prosper in the Region, additional demand for all airport services will follow. Flight training, airplane maintenance and repair, hangar and ramp space will all become high demand products and bring with them new private and public investment in the airport asset.

Future planning and development must balance the need for peak capacity against periods of inactivity. To accomplish this effectively will call for expansion that makes timely investments, air service that can flex with the travel season, and a serviceable, economically feasible year-round airport that generates revenue and serves businesses, residents and tourists.

Energy issues are becoming a major focus, not only with regard to transportation but also for locations for renewable energy sources, which may impact the airport and its viability. Recently there have been proposals for both wind towers and solar farms on or near the airport. VTrans' Aviation Program has completed has funds for a 48 kw solar array to be constructed on airport property. This will reduce the airport's electrical operating expenses by 80%.

In addition to the economic impact that airport and airport-related industry has in the Region, air access ranks high as a required transportation mode for regional

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growth and stability. The types of businesses that are likely to be attracted to the Region, as well as our current growth in the recreational industry, underscore its importance in regional development. Without diminishing the importance of General Aviation, commercial, scheduled and unscheduled (charter) freight and passenger services provide the best opportunity for growth based on the expanded use of resort and industry in the Region.

The U.S. Congress has mandated the FAA to construct Runway Safety Areas (RSA) at all commercial service airports by the year 2015. Preliminary engineering has been completed in 2012 for the RSA at the south end of the primary Rutland runway and final engineering is also completed for the north end. Construction for the north end RSA is slated for completion in 2013. Both projects are targeted for completion before the 2015 deadline.

MEETING CURRENT AND FUTURE NEEDS

Future scheduled airliners serving Rutland will be bigger, faster and heavier putting increased demands for facilities, particularly hangars and the terminal building, as well as maintenance and manpower on the airport. Unless operational and regulatory standards are met, the airport will not remain viable.

The major recommendation of the 2009 Airport Master Plan Update was a minimum facility requirement for a 6000-foot runway. In 2014-2015 the State plans to conduct a feasibility study to identify alternatives and recommendations for the north end. Such a runway could open the door to entirely new business segments, especially the aircraft/vacation charter market. While still marginal, a 6000- foot runway could attract aircraft of a size that would make 125-150 passenger loads possible. The major immediate benefit of a 6000- foot runway will be to make current operations safer and more flexible, allowing jet airplanes to land and depart KRUT at higher gross weights, extending their range considerably.

The Master Plan also calls for construction of parallel taxiways the full length of runway 01/19, and also the cross wind runway 13/31 to improve safe operations of both. The full length taxiway is slated for construction in 2017. As the higher end traffic continues to grow, increasing demand for short term hangar space will take place. A FAA grant for development of hangars will be completed in 2013. A new or expanded terminal for charter operations and all appropriate support facilities is scheduled for design in 2018. It is possible that space for international arrival and departure formalities will become a requirement as well. With business growth, the infrastructure of the entire airport area will be impacted. Marketing of services is also necessary to help realize its full potential, and a marketing plan is scheduled for 2015.

Preservation of the approaches as identified the Approach Airspace diagram, is crucial to the airport's viability and zoning overlays would ensure that these remain clear of obstacles. (See diagrams on opposite page).

The Town of Clarendon and Regional leaders need to stay collectively engaged to advocate for healthy development of the airport and its surrounding community.

Capital investment for Rutland Southern Vermont Regional Airport comes mainly from a combination of Federal and State dollars with the federal portion generally 90% dependent on the type of project. The major issue is unstable funding, particularly the subsidy for essential air service, which makes commercial operation feasible for residents and visitors to the Region. If passenger service is not cost-effective, the flexibility to change to



FOOD FOR THOUGHT

The economic viability of the RSVRA is dependent on the continued cooperation of leaders from the Town of Clarendon and the region, as well as business interests.

One of the ongoing concerns for the airport's growth is the preservation of its flight paths – on approaching and departure.

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more business-oriented operation is essential.

RUTLAND RPC GOALS

- Increase funding for aviation projects from Local, Regional, State and National organizations.
- Maximize aviation potential in the Region.
- Improve aviation facilities in the Region as identified in the Airport Master Plan and Vermont's Airport Capital Plan. Identify parcels along the rail line and when appropriate preserve as sites for rail-related development.
- Expand passenger air service.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.



FAST FACT

For more information about the Rutland-Southern Vermont Regional Airport go to: http://www.flyrutlandvt.com/links.php

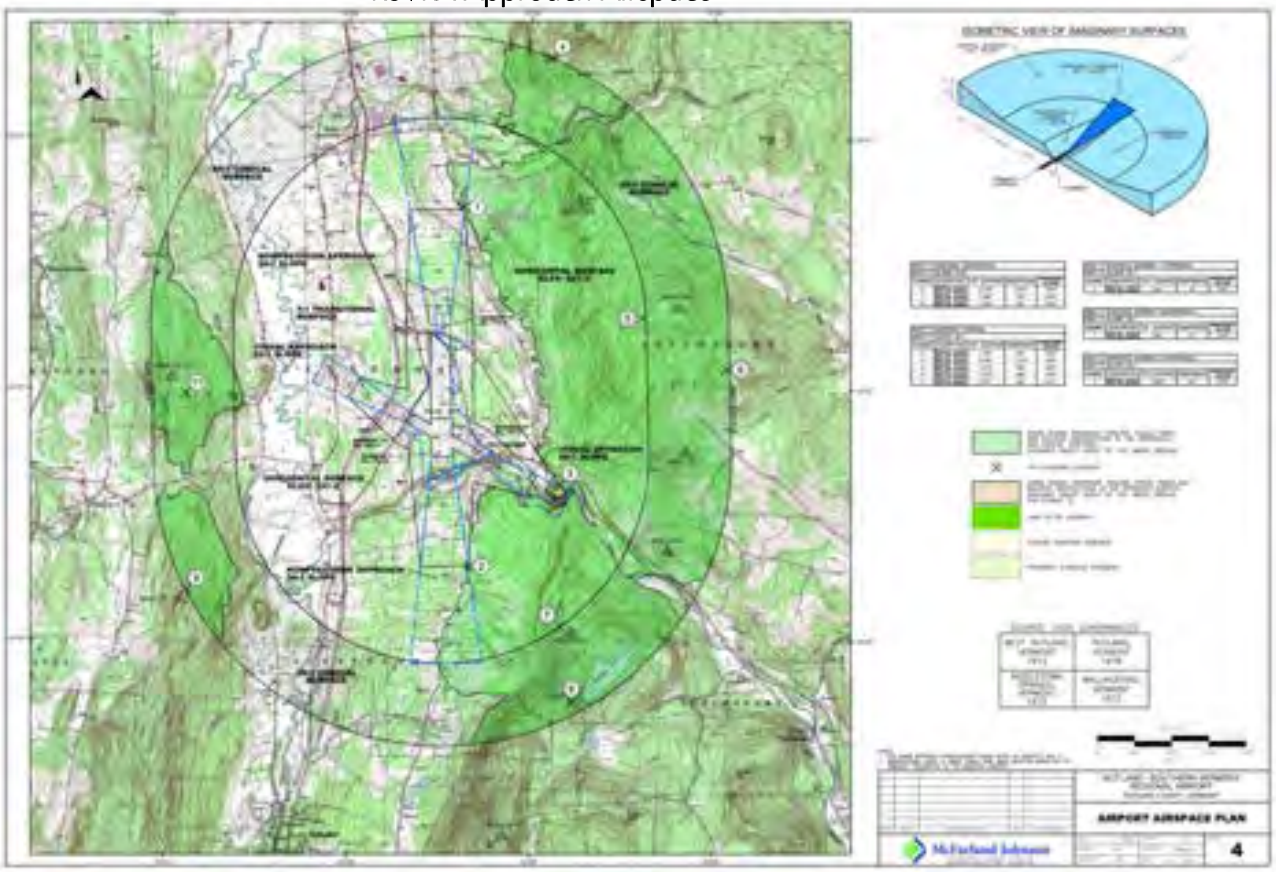


RRPC GIS—NAIP 2003 data

Rutland–Southern Vermont Regional Airport, US Route 7 and VT Route 103, and Green Mountain Rail

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RSVRA Approach Airspace



Runway 1 Approach



Runway 19 Approach



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Chapter 29: Corridor Planning

INTRODUCTION

By definition, a corridor encompasses several interacting transportation facilities serving many travel modes and functions, including statewide connectors, intra-regional corridors, regional and local roadways, rail lines, and pedestrian and bicycle routes, airports, transit routes and freight facilities.

Adequate integrated transportation facilities within these corridors are necessary to meet the needs of a region and multiple regions, as the case may be. The Rutland Region's transportation corridors are generally oriented in a north-south, east-west direction.

Effective transportation planning addresses the function and vision for each corridor, as no single piece of infrastructure operates independently. This concept of corridor planning helps guide the definition, prioritization and design attributes of future transportation projects by identifying the mix of transportation improvements that would be most effective in moving people and goods.

The transportation improvements must be balanced with available funding, and neighborhood and community concerns. For all corridors, adequate maintenance of existing transportation facilities is the first priority and the overall elimination of design deficiencies and maintaining or improving the facilities to optimal condition is also recommended.

PRIMARY CORRIDORS

The following describes the major corridors and the transportation improvements and strategies that should be used to help define future projects.

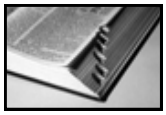
US Route 4/Vermont Route 4A/ Clarendon and Pittsford Railroad

US 4 bisects the Region, comprised of a limited access portion connecting New York to Rutland and extending easterly from Rutland to the New Hampshire border as a two or three- lane road. It presently functions as a rural principal arterial, facilitating longer distance trips. It also provides access to many diverse land uses, particularly auto-oriented retail and service (hotel and restaurant) operations in the most densely developed areas.

East of Rutland City, US 4 is generally limited to a two-lane road, with various wider sections containing left turn lanes. It provides access to two of the Region's key tourist destinations- Pico and Killington ski areas, connects the Region to a major medical center at Dartmouth Hitchcock and other major markets for permit-free truck traffic. It is served by public transit as far east as Killington and intercity public transit service.

To the west of Rutland City within the corridor, Vermont Route 4A, a major collector paralleling US 4 and the Clarendon & Pittsford Railroad, runs for roughly 11 miles between Fair Haven and West Rutland. Given its close proximity to US4, much of the traffic carried on Route 4A is local. Land use patterns along this roadway range from rural to low density commercial to village centers in Castleton and Fair Haven.

The privately-owned Clarendon and Pittsford Railroad is a key link to the Class 1 railroads through a connection in Whitehall, New York to the

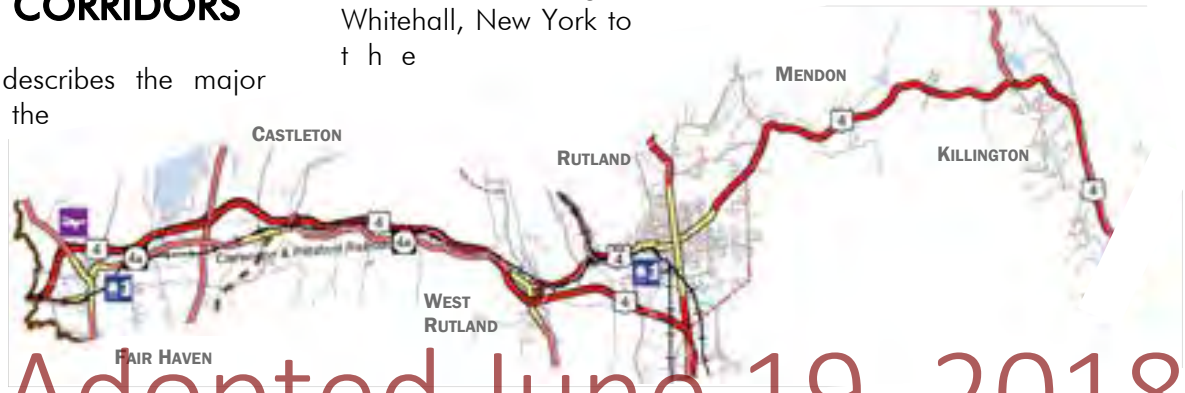


DEFINITIONS

CORRIDOR PLANNING:

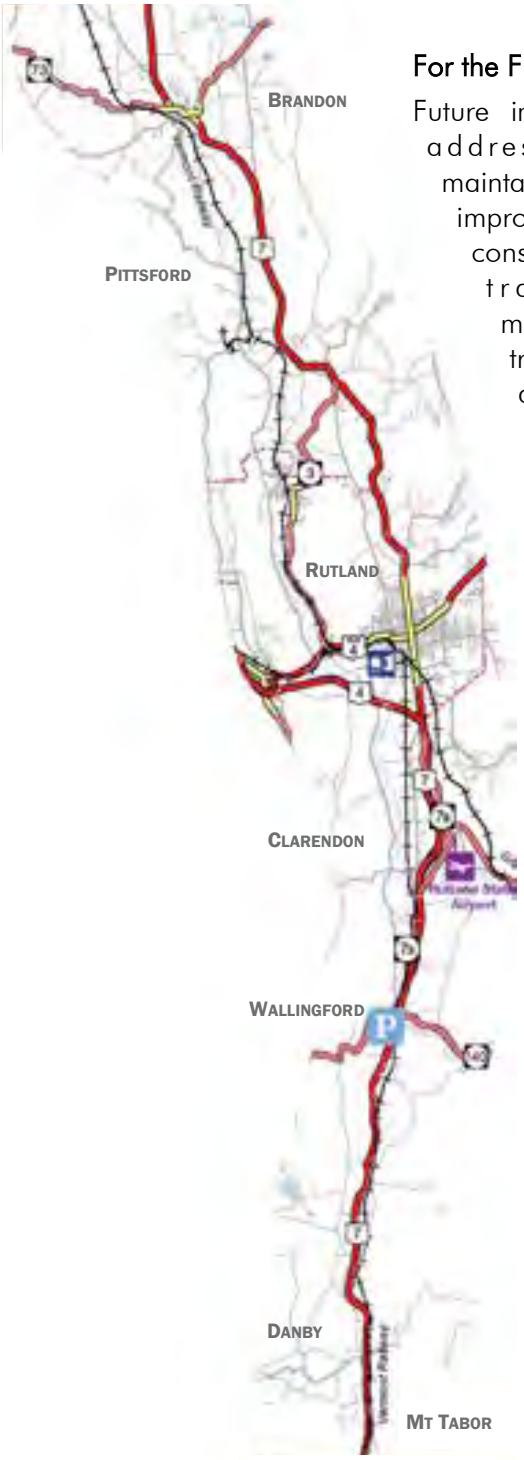
A process which examines the existing transportation systems within the corridor and identifies improvements to meet long-term needs. It includes reviewing existing and projected travel patterns and social, environmental, and economic issues, infrastructure improvements in combination with wise land use and systems-management actions. Corridor plans are the nexus between the long-range plan and project development.

US 4/VT 4A
CLARENDON AND PITTSFORD RAILWAY



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US Route 7 / Vermont Railway



Canadian-Pacific Railroad. It serves intercity passenger travel and a large percentage of freight coming into and leaving Vermont. Currently this segment meets the standard for modern railcar shipments and there are no restrictions for doublestacking cars. Challenges are due to the unstable land, specifically marshes and wetlands, over which it traverses.

For the Future:

Future improvements should primarily address increased mobility, maintaining the system's quality and improving safety. Needs and issues consist of pull-offs for public transportation, access management, improved public transportation, and maintaining and improving the rail trackbed. Wider and clean shoulders will allow for safer multi-modal pedestrian and bicycle travel.

US Route 7/ VT Railway/ Rutland State Airport

As part of the designated National Highway System traversing Vermont from the southern to northern borders, US 7 is centrally located in the Region, passing through villages in the towns of Wallingford, Rutland, Pittsford, and Brandon. It also functions as a rural principal arterial, facilitating longer distance trips as well as access to adjacent land uses in the most densely developed areas. The entire corridor encompasses the Vermont Railway line, the intersection of freight and passenger rail lines from all directions, the site for major rail transfers (Rutland Railyard), Rutland Southern Vermont Regional Airport, and public transportation fixed routes.

For the Future:

Future improvements should consist of important highway surface and safety improvements at grade crossings, improved management of existing facilities to include access management practices and shoulder improvements, consistent shoulder and lane widths, synchronization of signals beyond the existing network in Rutland City, traffic calming and bicycle and pedestrian facilities in the densely developed areas.

In addition, improvements are necessary to increase and improve the rail system for freight movement and for the expansion of public transportation service to potentially reduce vehicle travel on Route 7. These will also benefit the commercial activities in the corridor.



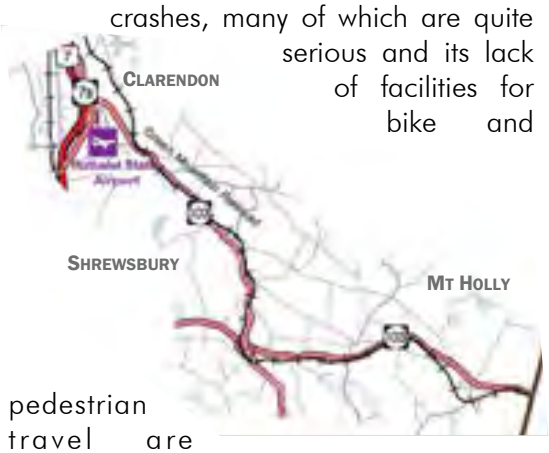
Vermont Route 22A

Vermont Route 22A is classified as a rural minor arterial, extending from Vergennes to the north, through the western edge of the Rutland Region, southerly into New York State.

The two-lane roadway crosses through Fair Haven, West Haven, and Benson, totaling 12 miles on the Rutland Region's western edge. Traffic using the route is mixed, with a relatively high percentage of long haul truck traffic resulting from its role as a connection between upstate New York and northern Vermont. Passing through one of the areas in the Region devoted to agricultural use, land use along the corridor is of very low density except for the Fair Haven village area. Significant population and employment

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centers are not located along this corridor, nor anticipated. The perception of an unsafe road, with a high volume of trucks, traffic traveling at high speeds and subsequently a relatively high number of crashes, many of which are quite serious and its lack of facilities for bike and pedestrian travel are issues which should be addressed.



For the Future:

Future improvements should increase the mobility, maintain the system quality and improve safety. Wider and consistent shoulder widths, which could accommodate other modes more safely, and reduced speed limits at major intersections, while maintaining safer vehicular traffic flow.

Vermont Route 103/ Green Mountain Railroad

Vermont 103 is a principal arterial connecting the center of the Rutland Region (Clarendon, south of Rutland) with southeastern Vermont and points beyond. It shares its corridor with the Green Mountain Railroad. An undivided two-lane highway, Vermont 103 travels for roughly ten miles through mostly rural countryside, except for the village of Cuttingsville. Though used as an alternative east-west corridor by some travelers wishing to avoid delays on eastern portions of US 4 (including an increasing number of trucks), the volume of traffic is relatively light for a highway of its functional class.

Green Mountain Railroad, extending from Rutland to Bellows Falls, where it connects to the New England Central Railroad, operates on right-of-way owned by the state. Limited overhead clearances at the tunnel in Bellows Falls constrain its potential for freight operations.

For the Future:

Rail improvements include upgrades at the crossings, most of which are unsignalized and structural repairs and upgrades as necessary to achieve desired operating speeds. Wider shoulders to safely accommodate non-vehicular travel is recommended.

Vermont Route 30

Located near the western border of Vermont, VT 30 lies in a valley between ranges of the Taconic Mountains. It traverses three counties in western Vermont, extending from Manchester in Bennington County to Middlebury in Addison County.

In the Rutland Region it is a two-lane rural highway traveling north-south for more than 40 miles from Pawlet to Sudbury. Land use patterns along the route are rural and recreational, reflecting its location in the southwestern Vermont's lakes region, and built up villages in Poultney and Castleton.

Prevailing traffic patterns reflect these land uses. A mixture of land uses generates a comparable mix of vehicles, with travel types ranging from tourism-related to commercial and industrial. From Hubbardton to Manchester it is designated as the Stone Valley Byway. A rail-trail is located parallel to Route 30 in Poultney but otherwise the corridor is solely defined by this rural major arterial/ collector. Individual bicyclists and bike tour groups frequent this scenic roadway corridor, which lacks wide shoulders.

For the Future:

Physical improvements include maintaining the roadway and safety

VT ROUTE 30



Re-Adopted June 19, 2018

VT Route 133



improvements such as pull-offs at scenic locations, sound access management practices, and widening shoulders for bike and pedestrian travel.

Vermont Route 133

Vermont 133, rural major collector, connects the center of the Rutland Region (Business Route 4) with the southwest corner (Route 30 in the center of Pawlet) and northwest Bennington County. The corridor is comprised of the roadway and a bike lane in West Rutland, and otherwise limited shoulders for bicyclists and pedestrians. Also within the village area of Pawlet and West Rutland, there are sidewalks.

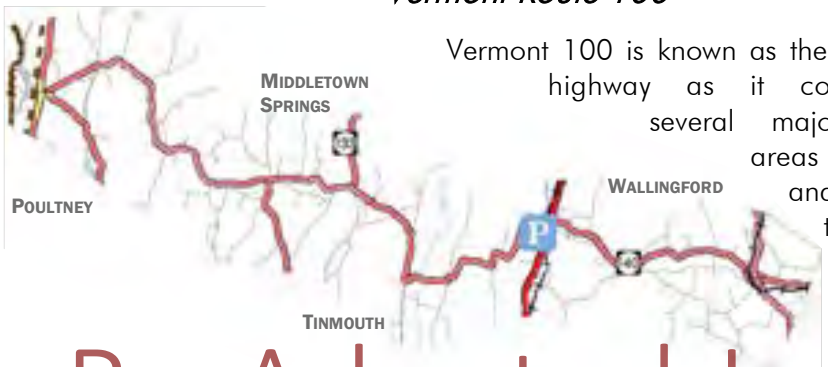


At the request of local officials, it was added to the state highway system in the late 1980's. Use of the two-lane rural highway, which winds through rural and village areas, is predominately for local and commuting purposes.

For the Future:

The goal for this roadway is to expand the shoulders to allow for safer travel of all modes.

VT Route 140



Vermont Route 100

Vermont 100 is known as the skiers' highway as it connects several major ski areas up and down the spine of the Green Mountains. It is also used as the Region's main



connection to Montpelier.

Within the Rutland Region, Vermont 100 is co-labeled with US 4 for several miles in Killington before striking north toward Pittsfield for roughly four miles through a mostly rural and commercial recreational area. This minor arterial carries a mix of traffic. Particularly noteworthy is the significant volume of non-motorized recreational travel (primarily bicycle tours) using the route in summer and fall and automobile recreational travel in other seasons.

For the Future:

Visions for this corridor include safety improvements as needed due to the mixture of modes on curving roads with high speed vehicular travel, such as wider shoulders.

Vermont Route 73

Vermont 73 is a two lane major collector passing through Sudbury and Brandon. Oriented east-west, ten miles of roadway cross the Region (excluding a section coterminous with Vermont Route 30). Many different types of traffic use the highway, and many different types of land uses are found along it. With the exception of the villages of Brandon and Forestdale, much of the area is rural. Like many other highways in the Region, Vermont 73 is picturesque.

The western section is plagued by flooding of the Otter Creek and is often closed for periods of time in the spring.

For the Future:

Recently, upgades were made to the road to alleviate the flooding problem and

Re-Adopted June 19, 2018

realignment of some dangerous curves in Sudbury. These safety improvements served to upgrade the road to meet current standards.

Vermont Route 140

Vermont 140 is an east-west highway connecting Vermont 103 to the villages of East Wallingford and Wallingford and west of US 7; it connects Wallingford village with Poultney via Tinmouth and Middletown Springs. The roadway is primarily rural and used for local/ commuting purposes.

For the Future:

The goal for this roadway is to expand the shoulders to allow for safe travel of other modes.

RUTLAND RPC GOALS

- Incorporate corridor planning approach to transportation planning throughout the Region.
- Implement the recommendations identified in the corridor plans

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.

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Chapter 30: Multi-Modal Issues

INTRODUCTION

Many transportation issues are not mode-specific, but instead are applicable to many modes and other issues. Land use, transportation, and energy are inherently connected and policies, either local, state, or federal, impact these.

Transportation is the largest sector of energy consumption and accounts for 34% of Vermont's energy usage (United States Department of Energy, Clean Energy In My State: Vermont, 2013), while the greenhouse gas emissions it produces makes up 47% of the state's total. Vermont's Comprehensive Energy Plan highlights the importance of smart transportation and land use planning to both reduce demand for single-occupancy vehicle (SOV) travel and provide more efficient and convenient options. It states that in order to "achieve the transformation in transportation we envision we must reshape our transportation system with better, more efficient programs and infrastructure" (Vermont Department of Public Service, 2011). Maximizing return on investments in the system requires integration of modes, sound land use management, travel choices, demand management or reduction, and information technologies.

Asset management, an approach to managing transportation infrastructure, should also be considered for all transportation investment decisions. This recognizes the need to focus attention on maintaining the overall system. An asset management and performance management perspective takes a system-wide view of transportation problems, needs, and opportunities. The rationale is to ensure the maximum benefit per dollar of investment, while at the same time achieving system-wide performance goals.

CONNECTING THE PLAN

Transportation issues are closely connected to energy issues. See the energy chapter for more details.



A LOT OF FOOD FOR THOUGHT

In basic terms, access management is a group of strategies, tools, and techniques that work to optimize the safety and efficiency of our roads.

For example, take a commercial strip that has developed over several decades along both sides of a two lane road. Without access management, the 100 businesses with frontage on the strip would each have individual curb cuts for their driveways that let you get into their often small parking lot. People trying to get into a businesses would slow traffic behind them, and if turning left across the oncoming traffic lane, a number of risks arise:

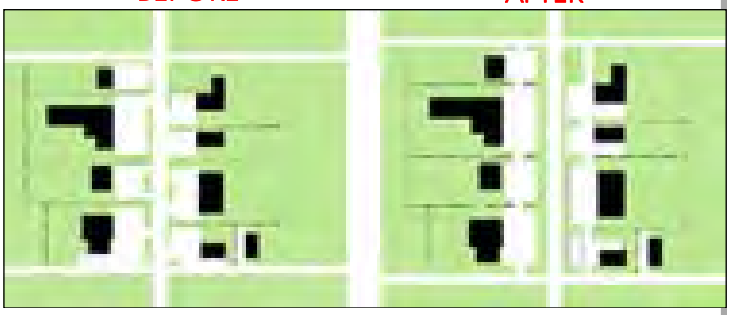
- To cars in the oncoming lane, or cars slowing behind the turning vehicle, who risk accidents;
- To pedestrians trying to walk along the road, at risk when they cross a driveway, and;
- To bicyclists riding along the shoulder, facing risk as traffic behind the turning vehicle try to use the shoulder to get around the bottleneck.

Multiply this times 100 businesses all day long, and you have a real mess. Strip development would be rampant and uncontrolled, safety would be highly compromised, the resulting traffic snarls frustrate shoppers and travelers alike. Everyone loses: businesses, residents, and travelers.

WHAT IS ACCESS MANAGEMENT?

Access management is the solution to these very real problems. It helps residential developers build safer neighborhoods. It offers ways to group businesses, their customer access, and their parking lots together, reducing costs and maximizing efficiency. It facilitates left turning without slowing traffic or compromising safety. It makes roadways safer and more inviting for customers, pedestrians, and bicyclists.

BEFORE AFTER



Text: www.aot.state.vt.us/vam/AM_WhatIs.htm;
Image: Access Management Guidebook, Humstone & Campoli, 1996

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CONNECTING THE PLAN

Effective travel demand management strategies will affect population, housing and employment centers.

It frames the capital plan, and towns and the Region should be working towards its development for the transportation network.

LAND USE

Land use and transportation are interdependently linked, each affecting how the other functions. The role of transportation can facilitate the desired future land use patterns for the Region. To move toward a more sustainable future, we need a transportation system that increases options, reduces vehicle miles traveled and promotes more efficiency. This must be achieved with a corresponding change in land use.

Future land use goals maintain the historic development pattern of compact villages, surrounded by a rural working landscape, respecting the natural environment. Implementing context sensitive transportation designs incorporates sound land use and considers all users. Deteriorating facilities, unsafe conditions and poor quality connections to adjoining regions and major markets underline the importance of integrating transportation planning with land use, and employing travel demand management strategies and tools.



The Vermont Agency of Transportation hosts a rideshare website

www.vermontrideshare.org

TRAVEL DEMAND MANAGEMENT

Travel demand management (TDM) seeks to address the demand aspect of transportation, with the goal of decreasing the need to travel. Rather than increasing the capacity of the infrastructure or improving its efficiency, TDM includes a variety of strategies to influence travel behavior by mode, cost, time, or route in order to reduce the number of single occupancy vehicles.

The ultimate objectives for the Region are reduced traffic congestion, improved air quality, and decreased energy consumption. TDM strategies are also used by employers to reduce overhead costs, enhance productivity, and address other business problems such as employee turnover. Typical TDM programs include ridesharing and carpools, park and ride lots, preferential parking for carpools, alternative or flexible work hours so workers travel less and/or at less congested times, and telecommuting, which allows people to work at home.

ACCESS MANAGEMENT

Sound access management policies and standards, and concurrent good land use planning which promotes compact development that supports historic development patterns and preserves the natural environment, provide opportunities to achieve two fundamental goals- sound land use development and enhanced mobility and safety.

Access management focuses on the

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connection between transportation and land use, manages traffic flow and safety, and preserves the functionality and capacity of roads through design and spacing of access points. While local control of access to state roads is limited, land use regulations can include supporting language. Towns can encourage shared driveways, and appropriate placement of driveways and continue to create a logical road network through ordinances, subdivision and zoning regulations and site plan reviews.

FUNDING

Funding for the Rutland Region transportation system's operation, maintenance and infrastructure improvements comes from federal, state and local sources. Transportation needs exceed and will continue to exceed available funds for the foreseeable future. Over time, the funding shortfall may increase deficiency levels previously described. The sustained decline in gasoline consumption has significant implications for transportation funding, as it compounds the problem of inflation and insufficient funding. Even small changes in fuel consumption have a direct impact on transportation revenues.

The rise in the cost of gasoline over time has mirrored declines in vehicle miles travelled (VMT) and fuel efficient vehicles, while preserving energy. This reduces potential funding for the system. Funding has been identified throughout this section as an unmet need.

The Region supports the following concepts relative to funding

- Continue support of state funding for maintenance of local roads at current or higher levels.
- Give priority to maintenance of existing infrastructure over new projects.
- Decrease the amount of transportation related tax receipts and user fees used for other purposes
- Use a fair and equitable priority system that gives some preference for smaller projects.
- Support funding for projects outside the Region that enhance transportation and economic development of the Region.

COMMUTING TRAVEL PATTERNS

Based on commuting patterns from U.S. Census Longitudinal Employer-Household Dynamics (LEHD) dataset to commuter sheds, last updated in 2011, showed that with the exception of Rutland, West Rutland, Killington, and Brandon Townships, very few of the towns within the Rutland Region showed significant in-flows of commuters. Rutland Town was consistently a top destination for commuters, as would be expected. However, Killington was a surprisingly important commuter destination also, for nearly all of the towns. In particular, Benson, Brandon, Castleton, Fair Haven, and Poultney, showed heavier flows of



FOOD FOR THOUGHT

The Vermont Agency of Transportation has categorized state highways and Class One town highways into a six level access control hierarchy, with design standards within each category to ensure that highways will continue to function as intended. Roads are not continuously classified in a single category, but vary depending on the sections' context. In the urban area and most centers of villages and towns roads are classified as Category 6. Outside these areas, US Routes 4, 7 and 103 are Category 3, and the remaining roads, Routes 4A, 22AS, 30, 73, 133, 140, all Category 4.

Source: VTrans, Access Management Program Guidelines, Utilities and Permits, Program Development Division July 2005.



RRPC Staff

The Marble Valley Regional Transit Center in Rutland City is The Bus's primary transfer center, a Vermont Transit hub, and provides three levels of parking.

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Case Study: A Multi-Modal Transporation Network Builds a Healthier Community

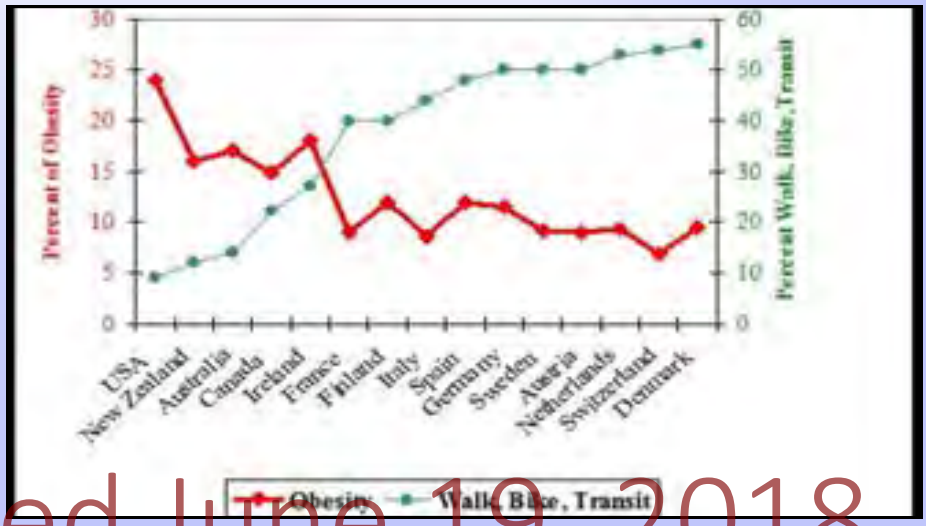
The RRPC has been successful in obtaining project funding from the VT Department of Health to combine health and wellness planning with existing transportation programs. The need for these planning efforts in the Rutland Region is supported by the demographics of the area. Rutland County residents are older, have less income, and are more likely to have a lower level of educational attainment. Consequently they are more vulnerable than Vermonters as a whole to the changes in the economy and may encounter difficulty supporting a healthy lifestyle.

Providing for safe, convenient, economic, and energy efficient transportation systems that respect the integrity of the natural environment, including public transit options and paths for pedestrians and bicyclers is one of the main goals of the Transportation Plan. The Vermont Department of Health has also recognized the link between health and wellness and compact, mixed-use, walkable and connected transportation systems.

Historically, land use patterns in the Region were dictated by transportation and industry-related constraints. People lived close to jobs and services and were not dependent on automobile travel. Today, regional communities are not integrally tied to the use of natural resources and waterways; and a new low density, "suburban" development pattern has emerged that separates land uses. Commercial and industrial activities are often separated from residential areas and the majority of residents are likely to live in less densely populated centers with a transportation network allows for increasingly lengthy commutes. This development pattern has replaced walking and bicycling, with the automobile, as the primary mode of transportation. It is not surprising, therefore, that a reduction in physical activity has led to an increase in health and wellness issues, requiring a different approach to land use planning

Vermont Department of Health project components to address the link between health and wellness and transportation include:

- Walk audits with local officials from the towns, AARP and Rutland Area Physical Activity Coalition, occurred in Danby, Pawlet, Pittsford, and West Rutland; as the condition of sidewalks and streets can impact travel choices. Town plans and regulations were reviewed for mixed use policies, which can influence development patterns and travel demand.
- Complete Streets presentations were made to local officials in Rutland Town, Rutland City, Fair Haven and Poultney. These were towns that participated in previous work on health and wellness planning, which included review of plans and regulations with suggestions for building a healthier community. Work continued in Rutland Town, where a Complete Streets Plan was developed. The plan incorporates all potential users of the road into project planning.
- A Regional Trail Map has been developed for both transportation and recreation purposes. The map will be an inventory of all trails, which will be followed by the identification of potential links between existing trails.



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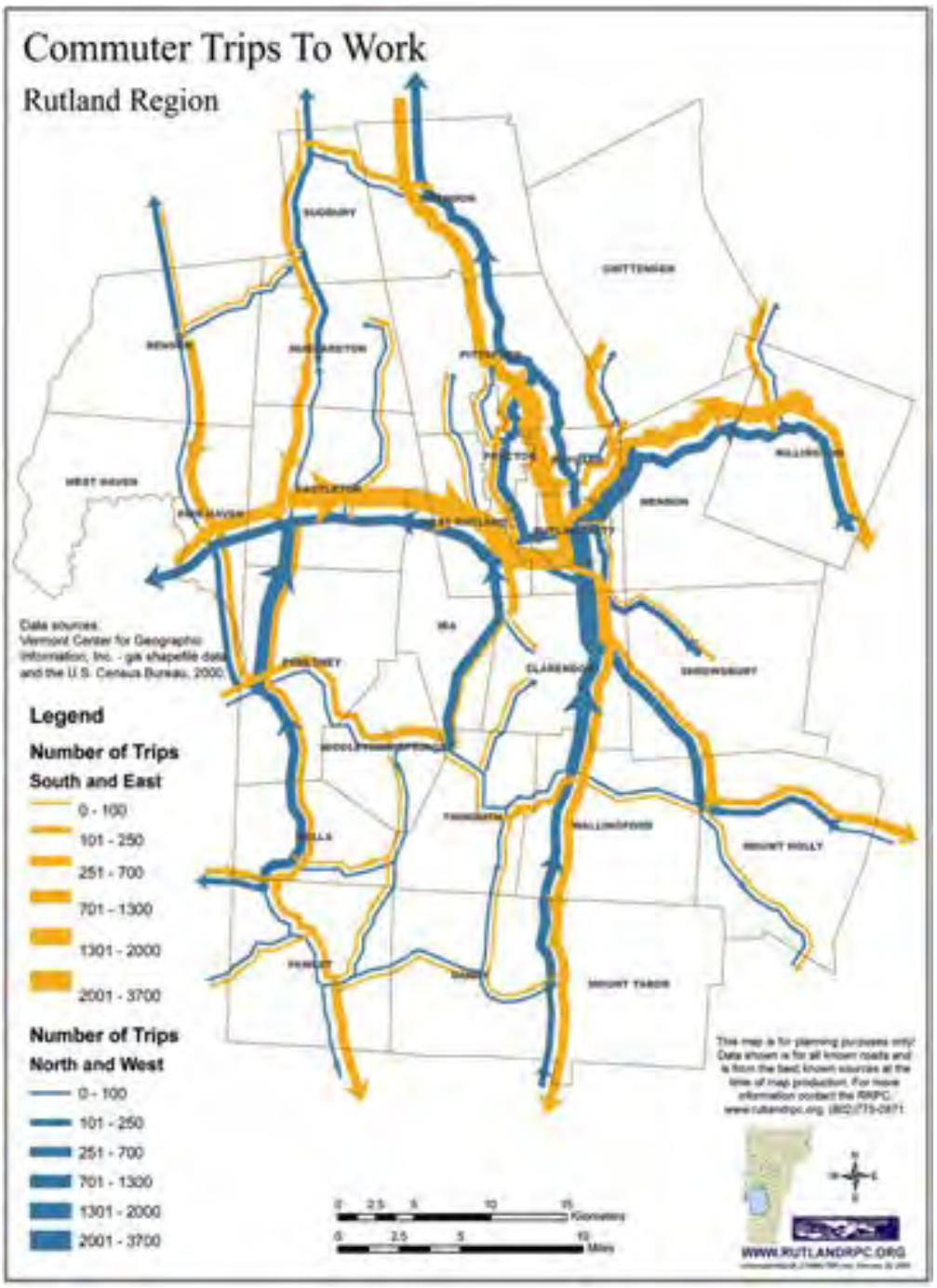
commuters traveling west along Route 4 to work within Killington Township.

The most significant trend, however, was a heavy flow of commuters north and south on Route 7. Benson, Brandon, Castleton, Danby, Clarendon, Mount Holly, Pawlet, Pittsford, Poultney, and Fair Haven all show commuter flow along Route 7 ranging from heavy employment in Burlington in the north and Rutland Town and City in the center, to moderate employment in Middlebury in the north and in Manchester to the south.

Looking beyond the Region's borders, many towns, particularly on the western side of the Region have relatively small, but consistent commuters to Montpelier. Some of these towns included Wallingford, Poultney, Fair Haven, and Clarendon. These longer distance commutes may make public transportation more attractive if it were available.

In addition, Pawlet, Mount Holly, and Benson, showed a high percentage of commuter flow along Route 7, and some amount north and east to Killington; however, none of these towns is currently served by public transportation. Their locations at the edges of the Region means that their residents have relatively high travel costs for SOV travel, which may make them more enthusiastic and likely to participate in ride shares or public transit if it was made available to them. Connecting these remote largely residential townships to the transportation network may provide them with more affordable access to necessities.

LEHD data was used to identify areas with significant potential for bike and pedestrian development. Enhancing existing live-work communities, or areas with



Commuter Trips to Work

The map above shows the places where people travel to work in the Rutland Region. Thicker lines represent more people (in most cases, cars, but it could be by any mode) traveling from one town to another.

Yellow lines show people headed either south or east. Blue lines show people headed west or north. For example, a person who lives in Poultney and works in Rutland would be a part of the blue line headed north to Castleton and the yellow line headed east into Rutland.

Not surprisingly, Routes 4 and 7 are the most heavily traveled. But also note how many people live in Rutland County and travel to Bennington County each day. Or the number of people who work in Mendon and Killington. The most heavily trafficked routes may offer opportunities for increased ride sharing or public transit. More detailed town-by-town maps are available at the Rutland Regional Planning Commission.

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commuters with LEHD origins and destinations within the same town represent potential walk/bicycle trips. Rutland County's top 10 census blocks for this type of live-work communities were within Rutland City, all with more than 500 local commuters. Statewide, the communities with the highest live-work populations were clustered around Burlington and Chittenden County; however, 3 of the top 6 live-work populations were within Rutland Town. Within the greater Rutland County area, there were clusters of live work communities in Brandon, Pittsford, Killington, and around the intersection of Poultney, Ira, and Middletown Springs. Outside of Chittenden County, there is nowhere else in Vermont that can rival Rutland County's density of relatively large, distinct live-work communities.

MULTIMODAL CONNECTIVITY

The transportation infrastructure system within the Region is fixed in location and therefore, to some extent, fixed in capacity for a convenient, efficient, and safe system. Because of the highway system's capacity limitations, in the future there will be a need to shift transportation from the highway system to other modes (rail, air, bus service, bike, pedestrian). Some obvious examples are moving freight traffic from truck to rail and improving air, rail and local public transportation to reduce adverse environmental impacts..

Switching modes of transportation will not happen unless the convenience, reliability and connectivity to other transportation is in place. The shift of transportation from one mode to another will require ease of transfer of people and goods from one mode to another. This development will require public commitment and investment for start up operations. Choosing the right time to act is critical. Current projects should be designed, constructed and implemented to accommodate these future needs. Land development will need to be coordinated with this shift. A factor for people considering public transportation (air or rail) to the Region is the availability and convenience of safe affordable travel upon arrival. More emphasis and support is needed for this element of the transportation system.

PARKING

The presence of available parking, particularly in the major commercial areas of Rutland City and the sub-regional centers in the Region, provides an incentive for vehicular travel. Until January 2005, sheltered and secure parking was free of cost and readily available at the multi-modal Transit Center. The sub-regional centers and villages all have either parallel or angled on-street parking, adjacent to businesses. Brandon's Town Plan notes this as a problem in meeting the need for additional off-street parking. Rutland City recently began enforcing policy that vehicles could only stay in a "prime downtown space" for the hours on the meter rather than allowing one to continually feed the meter all day.

Poultney identifies the deficiencies of both on-street and off-street parking and the overall need for a parking plan for the village. Fair Haven's plan suggests time limits for parking in particular places. Both the business communities and local officials recognize the need for convenient parking in the downtowns. Many believe convenience is critical, and requires parking directly adjacent to a particular destination.

One possible means to reduce the volume of trips in conjunction with parking is to provide off-street parking on the edge of the commercial district.

This should be done in conjunction with improving pedestrian conditions and more parking facilities. Another strategy is to link quality transit service to parking, reserving the "best" spaces for those who carpool,

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although enforcement of such a policy may be difficult.

CARPOOL AND RIDE SHARING

As the volume of traffic, cost, and distance to employment centers increase, carpooling- the second most prevalent means of transportation to work in the Region- may become more widespread. The 2007-2011 American Community Survey (ACS) 5-Year Estimates reported that only 9.6% of workers 16 years and older, compared to 11.2% of workers in 2000 chose this, a greater decline from 14.6% in 1990. ACS also reported the mean travel time to work was to be 20.4 minutes. Many factors contribute to one's means of travel to work, and though the Region lacks an organized program, the state has been promoting its program. It would be useful to have a program accessible by website telephone. This should be managed by the public transit provider.

The presence of park and ride lots in safe and convenient locations could also encourage a reduction in the number of single occupancy vehicle trips. Use of such facilities is primarily limited to those making habitual trips, to work or school.

PARK AND RIDE FACILITIES

Developing park and ride lots should be focused on the towns of Benson, Danby, Clarendon, Mount Holly, Pawlet, Pittsford, and Poultney. The fact that transit also serves the towns of Proctor, Wallingford, and Mount Tabor/Danby reinforces their potential for such a facility.

Table 1 on page 9 lists existing sites, and potential sites. Potential sites are those with easy commuter capture accessibility, visibility, and limited security issues.

Based on work flow data and the presence or lack of park and ride lots in towns, further research on developing park and ride lots In the Rutland Region should focus on the towns of Benson, Danby, Clarendon, Mount Holly, Pawlet, Pittsford, and Poultney. Suggested locations are sites in close proximity to major roads. In siting new lots, best practices for access management should also be considered.

This is critical as access to and from the park and ride lots to the major roads are most frequent during the peak hours, when traffic volumes are highest on these roads.

Danby and Mount Tabor residents travel south to Manchester and a park and ride site serving both towns would also be beneficial to reduce southbound single occupancy travel in the Region.

Although the work flow travel patterns do not have significant percentages of the residents of Hubbardton, Middletown Springs, and Shrewsbury working in one single town, these towns either lack transit service and/or a park and ride lot in close proximity. They are also suitable candidates for lots.

Since transit also serves the towns of Proctor, Pittsford, Mount Holly, Danby and Mount Tabor, this reinforces their potential for such a facility.

The expansion of transportation options should continue and there will continue to be informal park and ride arrangements throughout the Rutland Region. Formal designations of new lots can serve to promote transit as well as a complete multi -modal network.

TRAFFIC CALMING

Traffic calming involves changing the physical design of a road and using enforcement to reduce the undesirable impacts of vehicular traffic within residential and commercial areas. When successfully employed, traffic calming can decrease cut-through traffic volumes, lower traffic speeds, and improve safety for all transportation modes. Traffic calming initiatives have to balance the needs for



FAST FACT

VTrans has instituted a 511 System. Travelers can dial 511 for access to the Condition Acquisition and Reporting System (CARS), the primary source of data on :

- Weather-related road conditions
- Traffic incidents
- Highway Construction

VTrans and Vermont State Police staff from dispatch centers and out in the field use this system to maintain real-time information.

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FAST FACT

Carpooling is a great way to save on gas, reduce wear and tear on your car, and to make new friends for those boring, dreary winter commutes. If you're interested in carpooling, go sign up to find your perfect carpool partner at: www.connectingcommuters.org

slower vehicles with emergency management access and road maintenance needs. Roads that are a priority for traffic calming changes should be within or adjacent to regional growth areas, schools, commercial centers, and areas designated for high density development. Safety and quality of life are the primary considerations that are considered when evaluating the necessity for traffic calming.

A wide range of traffic calming techniques are available - installation of roundabouts at selected intersections, reduction of travel lane widths within regional growth areas, on-street parking and enhanced road lighting, bump outs and splitter islands for pedestrian crossings, and pavement markings. Streetscaping is a method of improving the aesthetic quality of roads with landscaping and tree plantings. Trees and landscaping have been shown to be an important component of a successful traffic-calming road enhancement. The landscaping and trees help restore a sense of community to a road, often mirroring the historic look and feel of New England tree-lined streets. A better looking road evokes a psychological reaction where motorists identify a road's character as a road supporting a community use as opposed to a highway which is just a means to connect to a destination. Projects that incorporate traffic calming and other bicycle and pedestrian enhancements can include landscaping and tree plantings.

Pavement markings are often a simple and affordable method for improving safety and encouraging lower traffic speeds. Center line and fog line markings clearly delineate travel lanes. They also serve to visually narrow lane widths which encourage motorists to decrease vehicle speeds.

TELECOMMUTING

Another TDM strategy is telecommuting, which allows employees to work from home. Technological advances, particularly the availability of high speed internet in rural areas will increase this pattern. The 2000 US Census reported that approximately 6% of workers 16 years old and over worked at home. The U.S. Census Bureau, 2007-2011 American Community Survey estimates reported that number to have increased to 6.4%. The data are not broken down farther to determine how many of these people were self- employed versus those who potentially impacted the demand on the transportation network.

INTELLIGENT TRANSPORTATION SYSTEMS

Intelligent transportation systems (ITS) refer to the application of information technologies to improve the efficiency and safety of transportation systems. It is one of the tools transportation planners and managers use to increase the capacity and safety of the Rutland Region transportation infrastructure. It involves real time data collection and transmission for immediate use by transportation system managers and transportation system users.

VTrans' Transportation Operations Center is the communications base for the Agency and facilitates radio communications throughout the state. Weather, storm alerts, and road conditions are transmitted to the Agency regularly and the media is kept informed of road conditions as well.

ConnectVermont: ConnectVermont's mission is to provide a comprehensive information system for all travelers. The program's vision is to deliver this information through all available types of media such as websites, road signs, radio stations and traditional media, via all types of devices, including laptops, PDAs, cellular phones, and car radios. ConnectVermont is responsible for a suite of Vermont's most creative travel and technology projects. ConnectVermont nurtures innovative

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TABLE 1- Park and Ride Lot Sites- Existing and Potential and Counts

Town Name	P & R Site—Existing	P & R Site—*Potential*
Benson		*Town Office*
Brandon	Estabrook Field, off US 7- 20+ spaces	*Fire Station* *Grand Union Parking Lot*
Castleton	Exit 5- E Hubbarton Rd. and Main St.- 20+ spaces	
Chittenden	Chittenden Grange Hall - Lower Middle Road near intersection with Stoney Hill Road 20-30 spaces	
Clarendon	Rutland Southern Vermont Regional Airport	
Danby		*Rt. 7- See Mount Tabor*
Fair Haven	Town Green @ VT 22A and 4A – 30+ spaces	*Shaw's parking lot*
Hubbardton		*Site along VT 30*
Ira		*Church/Town Hall on VT 133*
Killington		*Chamber of Commerce on US 4* *Killington Skyeship parking lot*
Mendon	Town Office on US4- 10+ spaces	
Middletown Springs		*Town Office*
Mount Holly		*VT 103 in Belmont/ Town Office*
Mount Tabor		*US 7 and Mount Tabor Rd*
Pawlet		*Pawlet Green/Library- 10 + spaces*
Pittsford		*Carter, Von Turkovich, Pittsford Commons, and Gecha lots – US7*
Poultney		*Shaw's parking lot* *Senior Citizen Center VT 31*
Proctor		*VT 3, near LaFonds*
Rutland Town	Transit Center–BR US 4 and West St.-125+ spaces	
Rutland City	Town Office – 10+ spaces	*US7 and Post Road* *Green Mountain Plaza* *Home Depot*
Shrewsbury		
Sudbury		*Town Clerk's office – VT 30*
Tinmouth		*Community Center/ Church/ VT 140*
Wallingford	Meadow Street at the Wallingford Recreation Park – 10+ spaces	
Wells		*VT30 @ Modern Woodmen*
West Haven	*Old School, off 22A near Main Road – 10+ spaces	
West Rutland	Thrall Avenue near the intersection with Marble Street - +30 spaces	*Price Chopper parking lot / US BR 4*

Re-Adopted June 19, 2018



FAST FACT

Strong Communities, Better Connections

In a new collaboration to support vibrant community centers and increase in town and regional transportation options, the Vermont Agency of Transportation (VTrans) and the Vermont Agency of Commerce and Community Development (ACCD) announced the Strong Communities, Better Connections (SCBC) Pilot Grant Program to help align land use planning and community revitalization efforts with transportation investments. West Rutland and Rutland Town applied for a Smart Growth Plan for Business Route 4 (BR4), which serves local and regional traffic, having multiple users with diverse trip types.

collaborations among Vermont state agencies, developing meaningful public sources of information about travel on Vermont's roadways.

VT511: Provides up-to-date reports regarding road conditions, road construction and weather. This system can be accessed via the internet at: http://www.vt511.com, or by dialing 511 from both landline and cellular phones inside Vermont. This road information can be reached outside of Vermont by calling 1-800-ICY-ROAD (1-800-429-7623).

Road Weather Information System (RWIS)

VTrans has a number of RWIS stations located throughout the state. These stations may be accessed via the VT511 website. They provide information about pavement conditions such as surface temperature, types of precipitation on the roads, atmospheric weather data, and also provides camera images of the roads.

This information is used to automatically activate flashing signs to inform motorists of road conditions, and can be available via phone or internet for travelers and tourists. It is also be used by maintenance crews to determine the need for de-icing, and the amount of chemicals to apply.

The ITS applications in the Region consist of :

- The deployment of en-route Traffic Information Dissemination Devices (Variable message signs at strategic locations).
- The deployment of Road Weather Information Systems (RWIS) (Weather sensors, pavement sensors with data transmitting equipment).
- The deployment of Weigh in Motion Stations (Equipment will collect data on commercial vehicles for monitoring, enforcement and planning. When completed, real time monitoring of truck traffic and freight movement will be available.).
- The deployment of Flooding Warning Systems along Route 73 (Water level sensors and flood warning signs).
- The deployment of Monitoring and Traffic Detection Technologies (Initially manual data entry plus future installation of traffic volume, density and speed detection equipment at strategic locations).
- The integration of these ITS components with the TRIO project. Specifically with CARS and FORETELL (TRIO is the Advanced Traveler Information System for Northern New England. CARS stands for Condition, Acquisition, and Reporting System and FORTELL for Weather Prognostication Reporting System. Real time data compatibility, availability and appropriate use by all systems is the goal.)

RUTLAND RPC GOALS

- Provide communities with land use planning tools and assistance to concentrate growth in centers and develop settlement patterns that reduce the demand on the transportation network
- Implement access management programs in cooperation with communities, AOT, landowners, developers and local officials.
- Consider adjacent land uses and identify good access management practices along major travel and freight routes.
- Continue to develop Corridor Management Studies to comprehensively address land use and transportation.
- Annually develop a prioritized list of all types of transportation projects and seek funding for implementation
- Assist communities with preparation of town plans that contain transportation elements that are comprehensive and consistent with the Regional Transportation Plan

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- Review existing transportation projects in the local and regional context, ensuring consistency with the Regional Plan
- Continue to employ and expand the appropriate intelligent transportation system applications for the Rutland Region, including traffic management, traveler information and safety-related projects.
- Continue to provide staff support to the Rutland Region Transportation Council.
- Continue to refine strategies with the Council for the identification and prioritization of new transportation projects.
- Promote local traffic calming projects for town roads that are located within regional growth areas and/or have speeding related safety concerns.
- Work with towns to develop complete streets and road standards that promote traffic calming in all developments.
- Work to ensure state transportation policies accommodate traffic calming principles.
- Require that transportation projects follow the Vermont Agency of Transportation traffic calming guidelines.
- Ensure that greater amounts of traffic calming related projects are selected by the Vermont Agency of Transportation.
- Discourage the elimination of on street parking for the benefit of increased traffic capacities within all regional growth areas.
- Develop transportation alternatives projects that advance multi-modal transportation options.
- Support fog line markings for all Class 1 and 2 paved roads.

RUTLAND RPC ACTIONS

The Rutland Regional Planning Commission shall achieve these goals through assisting communities to develop bylaws and town plans; regional approval of town plans; participating in Act 250 and Section 248 processes; training and education; information dissemination; preparing funding applications; and GIS mapping.



FAST FACT

Traffic calming measures, such as bulb outs, can greatly increase both the aesthetic of a location as well as pedestrian and motorist safety and comfort.

Before



After



Photo Source: Minnesota Department of Transportation

ADDITIONAL RESOURCES

- US Census – (www.census.gov). This site contains the most commonly used demographic and transportation data across the country. The 2000 US Census on Transportation (www.fhwa.dot.gov/ctpp/census.gov) contains the most widely used basic transportation planning data
- Vermont Agency of Transportation website (www.aot.state.vt.us).
- Vermont Center for Geographic Information—http://www.vcgi.org/
- Planning Magazine of American Planning Association.
- Marble Valley Regional Transit District– www.thebus.com and http://www.aot.state.vt.us/planning/studies.htm
- US DOT Design Guide, "Accommodating Bicycle and Pedestrian Travel", www.fhwa.dot.gov/environment/bikeped/design.htm.
- McCann, Barbara, "Complete the Streets." Planning Magazine. May 2005.
- Rutland Area Physical Activity Coalition– http://www.walkbikerutland.org/
- Albany-Bennington-Rutland- Burlington ABRB Project. Clough, Harbour and Associates LLP. October 2004.
- Intelligent Transportation Systems– ITS Deployment and Integration in Rural Vermont

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