2024 Town Plan

Ripton, Vermont

Adopted: April 8, 2024

Prepared by the Ripton Planning Commission

With assistance from the Addison County Regional Planning Commission, the Ripton Conservation Commission, the Ripton Energy Committee, and Barry King.

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RIPTON TOWN PLAN 2024

Introduction

The Town of Ripton has considerable small-town charm in a lovely mountain setting. Its residents and this Plan intend to preserve Ripton's unique character by promoting policies that manage development and change in a way appropriate to its people and environment. The goal of this plan is small scale, orderly use of land for the security, health, welfare, and peace of its citizens. The terms "appropriate" and "inappropriate" used in this Plan are intended to be defined by the above statements.

The Ripton Selectboard adopted Ripton's first Town Plan on the 28th of December 1971 under the authority of the Vermont Planning and Development Act, Title 24 VSA Chapter 117. Subsequently, the Plan was revised every several years, most recently on the 26th of October 2015. The Plan must be amended and/or readopted, or a new plan adopted, every eight years. The Plan may be amended at any time by due process. The Town Plan serves as the basis for zoning bylaws and subdivision regulations.

The Town Plan guides land use in Ripton. Ripton's Unified Development Bylaw (UDB) is the primary vehicle for implementation of the Town Plan. The Town first adopted a zoning bylaw on the 7th of March 1989 and most recently on the 8th of October 2018. The UDB incorporated the 13th of April 2006 update of the zoning bylaw, as well as subdivision regulations that were adopted on the 13th of March 2006 and the formerly free-standing Fluvial Erosion Hazard Bylaw, adopted on the 14th of September 2009.

The Plan may affect development through the Act 250 process; therefore, it is important that residents of the town consider the Plan carefully to be certain that it reflects the best interests of the community.

ARTICLE I. LAND USE

Goal

Permit land use that enhances the town's rural residential identity, guiding development in areas in high and medium density residential zones, with suitable soils and topography, where municipal services are readily and conveniently provided; preserving the historical character of Ripton's village center and the relatively unfragmented forested landscape that Ripton residents and visitors appreciate; thereby reducing the risk of flood and erosion hazard to Ripton's homes and business structures.

Policies

1. Restrain rapid and inappropriate growth.
2. Guide development toward parcels in high and medium density residential zones with soil conditions suitable for development and slope less than 20 percent, and away from land that is in lower density residential zones, or with unfragmented forest blocks, or risk of flood and erosion hazard.
3. Discourage development where adequate drainage, snowplowing, emergency vehicle access and similar services are not available.
4. Require permanent and seasonal dwellings to install and maintain either a functional state-permitted or an inspected pre-existing wastewater system and potable water supply.
5. Encourage flexibility in the design of development to minimize the number of access points on public rights of way and maximize undeveloped, unfragmented forested land.
6. Promote and maintain conditions ensuring the health, safety, and welfare of all.
7. Prohibit new construction and storage of toxic, buoyant, or unsecured items or materials in the Fluvial Erosion Hazard Area.
8. Continue a policy of modest public development and expenditures consistent with low intensity land use.
9. Protect property values while permitting an adequate range of opportunities for property use.
10. Support the establishment of home occupations and small businesses, compatible with surrounding land use.
11. Encourage preservation of the town's largely forested nature through the use of planned unit development (PUD) techniques for subdivisions, and enrollment in the Vermont Use Value Appraisal Program (hereafter referred to as Current Use) for forested parcels 25 acres or greater.

To provide continuity between Ripton's current land use patterns, the quality of life to which we are accustomed, and a future that meets the goals of its residents and is consistent with the objectives of Ripton's and Vermont's energy plans, Ripton needs to guide development through the Town Plan and UDB. Zoning provides the primary mechanism for implementing land use goals and helps ensure that residents have adequate access to municipal services at an affordable tax cost. Ripton's Town Plan and UDB encourage retention of a largely forested landscape, which promotes economic, ecological, recreational and wildlife habitat values.

Subdivision regulations provide a process for evaluating proposed subdivisions in the context of the town's physical, economic, and ecological limitations and long-term goals. The subdivision regulations help implement the Town Plan by seeking to protect wetlands, wildlife, air and water quality, forest health, agricultural resources, carbon sequestration, and the town's rural characteristics, and to assure the individual's freedom to use and enjoy their property in ways that do not impinge on the rights and well-being of neighbors.

Flood and erosion hazard regulations seek to limit development in areas designated as having flood or erosion hazard to minimize loss of life or property, disruption of commerce, impairment of the tax base, and extraordinary demands on public services that result from flood-related erosion. Ultimately, these regulations work toward re-establishing a natural hydraulic equilibrium that avoids the need for stream channelization and bank stabilization.

In 1995, when the Town approved the "Ripton Hollow" as a Historic District, commercial and public facilities were primarily located in one area along Route 125. However, there are now three facilities located near the junction of the Lincoln Road, Robbins Crossroad and the Dugway: The Elementary School, the Volunteer Fire Department, and the North Branch School. Recently, year-round residential settlement has oriented to the outlying roads, especially along the Lincoln Road, North Branch Road, and Natural Turnpike.

By providing for smaller lot size requirements closer to the town center and along existing class 1, 2, and 3 roads, Ripton's zoning supports a settlement pattern and density of residences that are consistent with the Town Plan's vision for the town, while ensuring that all residents have an adequate range of opportunities for property use.

A. Zoning Districts

The following districts are described below and are shown on the accompanying Land Use District Map (Map 9):

Neighborhood Commercial	NC-1
High Density Residential	HDR-2
Medium Density Residential	MDR-5
Low Density Residential	LDR-10
Rural Residential	RR-25
Conservation	CON-25
Institutional	INS-5
Historic	HISTORIC
Flood Hazard Area	FHA
Rare Species Overlay Zone	RARE

Neighborhood Commercial District NC-1 (1 acre)

This district is in the village area along Vermont Route 125 where there is a mixture of existing, small-scale residential, public, and commercial uses. The intent of this district is to continue to permit modest expansions of these uses.

Uses permitted in this district are limited to one- and two-family houses, public buildings, small neighborhood retail and service businesses and offices. The minimum lot size is one-acre for residential uses and one-half acre for other uses.

High Density Residential District HDR-2 (2 acres)

This district includes areas in and immediately adjacent to the existing village center that are served by existing town roads. The purpose of this district is to guide higher density housing development to locate close to existing village services and, therefore, to avoid the widespread construction of new roads, and to utilize soils best suited to economic and environmentally desirable development.

Uses permitted in this district are limited to one- and two-family houses, home occupations, as well as hay land, pasture, and domestically related agricultural uses. The minimum lot requirement for residences and home occupations is two acres; the minimum lot requirement for agricultural, non-residential building uses is five acres.

Medium Density Residential District MDR-5 (5 acres)

This district includes substantial areas suitable for development along town roads outside the village area. The purposes of this district are to encourage development to use existing town highways, especially where these highways form efficient loops, and to use soils most economic and satisfactory for development.

Permitted uses are limited to one- and two-family houses, home occupations, and agriculture (land cultivation or pasturing only). The minimum lot requirement is five acres.

Low Density Residential District LDR-10 (10 acres)

This district is designated along active town highways outside the high and medium density residential zones. It allows the opportunity to develop land on existing roadways.

Uses permitted in this district are limited to one- and two-family houses, home occupations, agriculture (land cultivation and pasturing), commercial forestry and camps. The minimum lot size is 10 acres.

Rural Residential District RR-25 (25 acres)

This district includes lands remote from existing class 2 or 3 roads and with a mixture of soil capabilities. The intent of this district is to discourage residential development in remote areas of the town when more economic and convenient locations are available and where the relatively unfragmented landscape promotes forestry, carbon sequestration, and connected wildlife habitat.

Uses permitted in this district are limited to one-family houses, home occupations, commercial forestry, camps, and agriculture. Two-family houses are proposed as a conditional use. The minimum lot size is 25 acres.

Conservation District CON-25 (25 acres)

This district is intended to protect large, forested blocks remote from class 2 and 3 roads and the town center from development. The Green Mountain National Forest owns most of these lands. Uses in this district are limited to forestry, agriculture, and open land recreation. The construction of buildings is proposed as a conditional use. If the Forest Service should in future wish to sell any of its land, it would be encouraged to sell minimum lot sizes of 25 acres.

Institutional District INS-5 (5 acres)

Public and private institutional buildings, structures and contiguous open spaces are included in this district. Land uses within this district are limited to educational, recreational, municipal, agricultural and forest uses. Land (Map 9) within this district includes parcels owned by the Town of Ripton, the School District and Middlebury College. The minimum lot size is 5 acres.

Historic District HISTORIC (1 acre)

Overlapping the Neighborhood Commercial District is the Ripton Historic District, adopted by the Town in 1995 and revised slightly in 2003 (see Map 9). The Historic District contains structures of historic and architectural significance to the town. With respect to external appearances, other than renewable energy and energy efficient innovations and normal maintenance, structures within the Historic District may not be substantially altered, renovated, moved, changed, or demolished. New structures may be erected after approval by the Historic District Commission. The Historic District Commission does not dictate the architectural style of any one period but approves only construction that is compatible with structures in the Historic District.

Flood Hazard Area FHA

The areas of special flood hazard are indicated on the Flood Hazard Map (Map 12) made part of this document by reference and are mapped on the Flood Insurance Rate Map for the Town of Ripton, dated 18 September 1985. Flood Hazard Area Regulations controlling use and establishing flood-proofing standards are adopted as part of the UDB.

Rare Species Overlay Zone RARE

A mile-long stretch of land along the North Branch of the Middlebury River and certain tributaries contains a cluster of sites with a significant population of eastern Jacob's ladder (Polemonium van-bruntiae), considered threatened in Vermont by the Vermont Agency of Natural Resources (ANR). This overlay zone is intended to protect the plant without the need to prohibit development throughout the entire overlay area (Map 5). Envisioned protection will include site visits by a botanist appointed by the ANR to confirm on the ground the occurrence of the site occupied by the species plus a 50-foot buffer.

B. Land Use and the Green Mountain National Forest

Policy

Encourage the Town and interested residents to participate in the Green Mountain National Forest's public information exchange prior to any significant Forest Service decisions affecting forest management in Ripton.

The general land purchase policies of the U.S. Forest Service (FS) are determined by a list of 16 guidelines that address the Forest Service's multiple goals and objectives. The more of these guidelines a parcel meets, the higher its priority for acquisition. A court decision denied municipalities the right to approve or disapprove FS transactions. Since 2010, the FS has acquired one parcel of 4.2 acres in Ripton.

Ripton residents' comments had a major impact on the final design of the Green Mountain National Forest (GMNF) Natural Turnpike Project, a multi-year project affecting 11,000 acres in Ripton and South

Lincoln, of which 4,700 acres are FS land. A primary decision of the project separated snowmobile and ski use from vehicular use of the Natural Turnpike (Forest Road 54) on FS land for safety reasons. Snowmobilers and skiers have a new trail just west of and parallel to the existing road. Other changes included closure of unauthorized roads and trails, installation of gates on some trails, removal of an existing gate to allow vehicle access to the southern end of Cobb Hill Road, formerly accessible only on foot, arrangements for year-round access to two private inholdings, diversification of forest types and ages, creation of several permanent openings to improve wildlife habitat, timber harvest to support local and regional economic resources, and improvement of fish habitat on Sparks Brook.

C. Land Use and Middlebury College

Policies

- Work with Middlebury College to continue the financial and community arrangements that allow Ripton residents to enjoy the recreational opportunities and scenic quality that the College lands currently provide.
- Encourage management of Middlebury College forestland that promotes biological diversity and maintains unfragmented forest blocks.
- Work with Middlebury College to ensure the maintenance of the historic nature of the Bread Loaf Campus and its buildings.
- Encourage renewable energy such as solar and wind.

Middlebury College owns 2,203 acres of land in Ripton, of which 2,068 (94 percent) are forested.

The Bread Loaf Campus on Route 125 east of Ripton Village, originally Joseph Battell's Bread Loaf Inn and adjacent seasonal accommodations, comprises most of the non-forested land. Bread Loaf, with its more than twenty buildings, is the site for a number of programs. Foremost of these is the Bread Loaf School of English, a six-week summer period during which the campus provides housing and other facilities for approximately 250 students, 25 faculty and 25 staff. This is followed by the two-week Bread Loaf Writers' Conference in August, with roughly 200 participants. In 2014 Middlebury College began offering additional programs based on the Writers Conference model. Additionally, the College uses Bread Loaf throughout the year for various alumni and college activities such as graduation, family weekends, Alumni College, and winter sports.

The College operates the Rikert Outdoor Center, a student and public recreational outdoor center, at the campus. Ripton's elementary school students attend cross country ski lessons there each winter. Middlebury College and Middlebury High School Nordic ski teams train there. The Center also hosts a Bill Koch league and is the home center for the Frost Mountain Nordic Club. The Rikert Outdoor Center will continue to provide recreational opportunities, including cross-country and back-country skiing and snowshoeing. Hiking and biking continue to be approved uses.

In 2013 Middlebury College installed snowmaking equipment that covers much of the Bread Loaf field north of Route 125 as well as the racing trail. Artificial snowmaking will continue; its coverage may increase and new ponds for snowmaking water may be constructed. The trail qualifies as an International Ski Federation homologated trail, one of a small number in New England. Consequently, use of the Rikert Outdoor Center by individuals and by organizations seeking a race venue has increased substantially.

The Middlebury College Snow Bowl, further east on Route 125, is in the town of Hancock. Tri-Valley Transit (TVT) has provided public transport to Ripton village, Rikert and the Snowbowl since 2007.

On 23 June 2015 Middlebury President Ronald D. Liebowitz granted development and conservation restrictions to the Vermont Land Trust (VLT) on 1,458 acres of the College's Bread Loaf Campus and nearby college-owned lands in Ripton, hereafter referred to as the Grant. The Grant identifies uses permitted in 11 Campus Zones covering 167.1 acres and the buildings and their associated infrastructure and utilities, the educational, scientific, and recreational uses of which may be undertaken without prior approval of the VLT, but which are subject to the current Ripton land use plan and specific regulations.

Resources, conservation values and attributes of the remaining 1,290.9 acres outside the Campus Zones, referred to as the Protected Property, are defined in detail in a Baseline Documentation Report on file with the College and VLT. A Management Plan for the Protected Property will be updated every ten years. The Management Plan addresses recreational and educational management needs, including a forest management plan and a road, trail, and sanitary facilities plan. The Management Plan identifies and protects significant natural communities, plant, wildlife, and aquatic habitat. It provides for construction and maintenance of camps, trails and recreational uses and their associated structures and improvements.

Protection of the ecological values of the terrestrial, wetland and aquatic natural communities and their native flora and fauna identified in the Grant and the Conservation Plan is the primary purpose of the easement. Under the terms of the Grant fifteen Ecological Protection Zones (EPZs) protect about 203 acres of at least six state-significant natural communities. Surface Water Protection Zones (SWPZs), of undetermined acreage, protect areas within 50 feet of streams, ponds, vernal pools, and wetlands. The location, description, use and protection to be offered the EPZs and SWPZs are specified in the Middlebury College Conservation Plan.

Forest management and harvesting may continue in the Protected Property only if they promote the ecological health of the forest ecosystem, for safety reasons, for removal of invasive species, or harvest of plantation lumber outside of the EPZs and SWPZs for college use to accelerate a return to native natural communities.

Several College-owned parcels are specifically excluded from the Grant. These comprise lands along the shore of the Middlebury River Gorge west of Ripton village, Coal Kiln Flats lots, where the Spirit in Nature path network is located, Goshen Brook lots, and the Crystal Brook lot. Also excluded are 47 acres of the Dragon's Den parcel along Route 125, and 265 acres of the Edwards parcel, which includes the Gordon Edwards 30.96-acre lot, north and east of upper Wagon Wheel Road. Excluded by virtue of not being mentioned as part of the Protected Property are several additional parcels of college-owned land.

The Grant specifically provides for public use of lands in the Protected Property outside the Campus Zones for "all types of non-commercial, non-motorized, non-mechanized, dispersed recreational, and educational purposes (including, but not limited to, birdwatching, fishing, hiking, snowshoeing, swimming, walking, wildlife observation and hunting, but excluding trapping)". Several restrictions or limitations protect the purposes of the Grant, natural habitats, public health and safety, and avoid conflict with the College's programs.

The College views the Grant as being without precedent in the U.S. and perhaps the world. It is unquestionably of significant benefit to the perpetuation of recreational and educational opportunities in Ripton.

In 2015 the Bread Loaf Inn reopened after major renovation with a new foundation, interior renovation, and enhanced insulation to permit year-round use. The drinking water system was renovated as well. Other campus buildings are receiving major maintenance, too.

The Bread Loaf Campus, with its 19th century origins and generally harmonious architectural style blending well with the mountain scenery, is a significant asset to the town. The town has a strong interest in seeing that the Bread Loaf Campus is maintained with close attention to its aesthetic and historical appeal, and that the campus continue as a center for academic, non-profit activity rather than commercial enterprise. The Grant will help to ensure that these objectives are met, thanks to a dedicated endowment.

In 2014 Middlebury College agreed to a 10-year compensation plan in lieu of taxes with the Town of Ripton for their tax-exempt property. The College pays tax on several properties, per state statute.

ARTICLE II. NATURAL, HISTORIC, SCENIC, and RECREATIONAL RESOURCES

Goal

Identify, protect, and improve Ripton's natural, historic, scenic, and recreational resources:

- Significant natural and fragile areas and native biological diversity.
- Forest blocks and habitat connectors including wildlife crossings on roads throughout town.
- Water resources, including rivers, ponds, aquifers, and wetlands.
- Significant scenic roads, waterways, and views.
- Historic structures, sites or districts, archaeological sites, and archaeologically sensitive areas.
- Recreational areas and opportunities.
- Air quality.

Policies

- Encourage management of private and public lands with an awareness of their vital ecological services, the wildlife habitat, and the town's environmental, economic, community and social resilience.
- Maintain ecological connectivity throughout town by promoting policies that protect wildlife corridors and large forest blocks.
- Recognize the importance of cleared fields for landscape and habitat diversity.
- Encourage landowners to enroll their eligible lands in Vermont's Current Use program.
- Encourage small-scale agricultural activities.
- Encourage residents to be vigilant about invasive species and to safely control any that appear.
- The timing of Ripton's roadside mowing should be carefully considered so it doesn't spread invasives.

Definitions of terms used in this document:

- Forest Block: a contiguous area of forest in any stage of succession and not currently developed for non-forest use.
- Forest Fragmentation: the division or conversion of a forest block by land development other than by a recreational trail or use exempt from regulation under Title 24 subsection 4413(d).
- Habitat Connector: land or water, or both, that links patches of wildlife habitat within a landscape, allowing the movement, migration, and dispersal of animals and plants and the functioning of ecological processes.

- Recreational Trail: a corridor that is not paved and that is used for hiking, walking, bicycling, cross-country skiing, snowmobiling, all-terrain vehicle riding, horseback riding, and other similar recreational activity.

As identified on the Agency of Natural Resources "Natural Resources Atlas", Ripton has some of the highest quality waters and highest priority forest blocks in the state of Vermont. These waters and forests provide countless benefits for both the plants and animals that rely on them for a healthy and thriving life, but also provide solace and recreational opportunities for Ripton residents and visitors. In addition, healthy forests and waters provide invaluable ecosystem services such as flood prevention and erosion control, filtering air and water, storing carbon, and moderating the effects of extreme weather. As climate change continues, there will be stresses on these natural resources – increased heavy rainfalls, shorter winters, warmer summers, increased drought, etc. In the past, the remote nature of Ripton and the cold winters were impediments to growth here. This will likely change in the future as more people seek reprieve from hotter temperatures and access to clean water, healthy air, and nature. Many plants and animals require healthy and unfragmented forests as they too migrate northward or upward to escape the effects of climate change. It is important to recognize that our forests and surface waters are part of a critical network that goes well beyond our town boundaries; we need to plan for the future with that in mind.

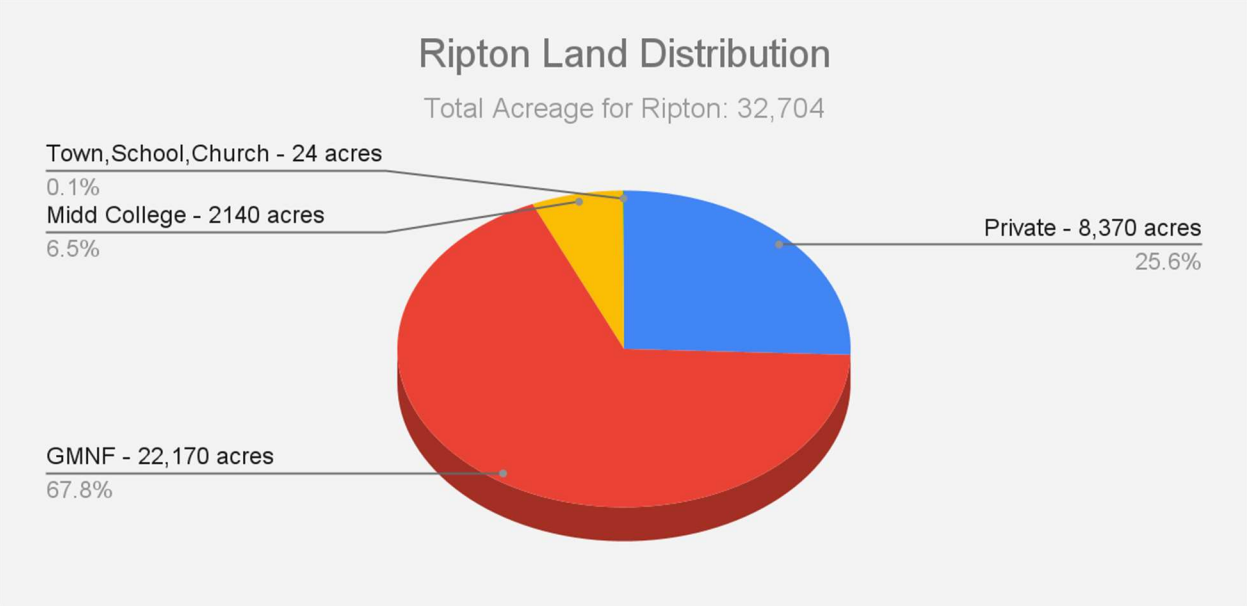
Vermont's goal of maintaining and improving natural resources now specifically calls for management to maintain and improve forest blocks and habitat connectors (24 V.S.A §4303 (6) (C)). Act 171 now requires town and regional plans that are adopted after January 1, 2018, to:

- Indicate those areas that are important or require special consideration as forest blocks and habitat connectors, and to
- Plan for land development in those areas to minimize forest fragmentation and promote the health, viability, and ecological function of forests.

Ninety-four percent of Ripton's land area is forested and much of it is mountainous. It rises to the crest of the Green Mountains to the east and occupies a natural basin that forms the watersheds of the upper Middlebury River, its three main branches, and the New Haven River. The Middlebury River flows west from Ripton through a dramatic wild gorge to the community of East Middlebury. Ripton's town center is located below the confluence of the Middle and South Branches. Most habitation is limited to the less steeply sloping lands between and along the Middlebury River's branches.

A. Land Cover

Ripton's area is 32,704 acres. As the chart below indicates, only about 25 percent of Ripton is privately owned. The rest is either part of the Green Mountain National Forest (GMNF; 22,170 acres) or is owned by Middlebury College (2,140 acres). Since the GMNF makes a payment in lieu of taxes and Middlebury College only pays taxes on part of its lands, Ripton's taxable land is about one-third of its total.

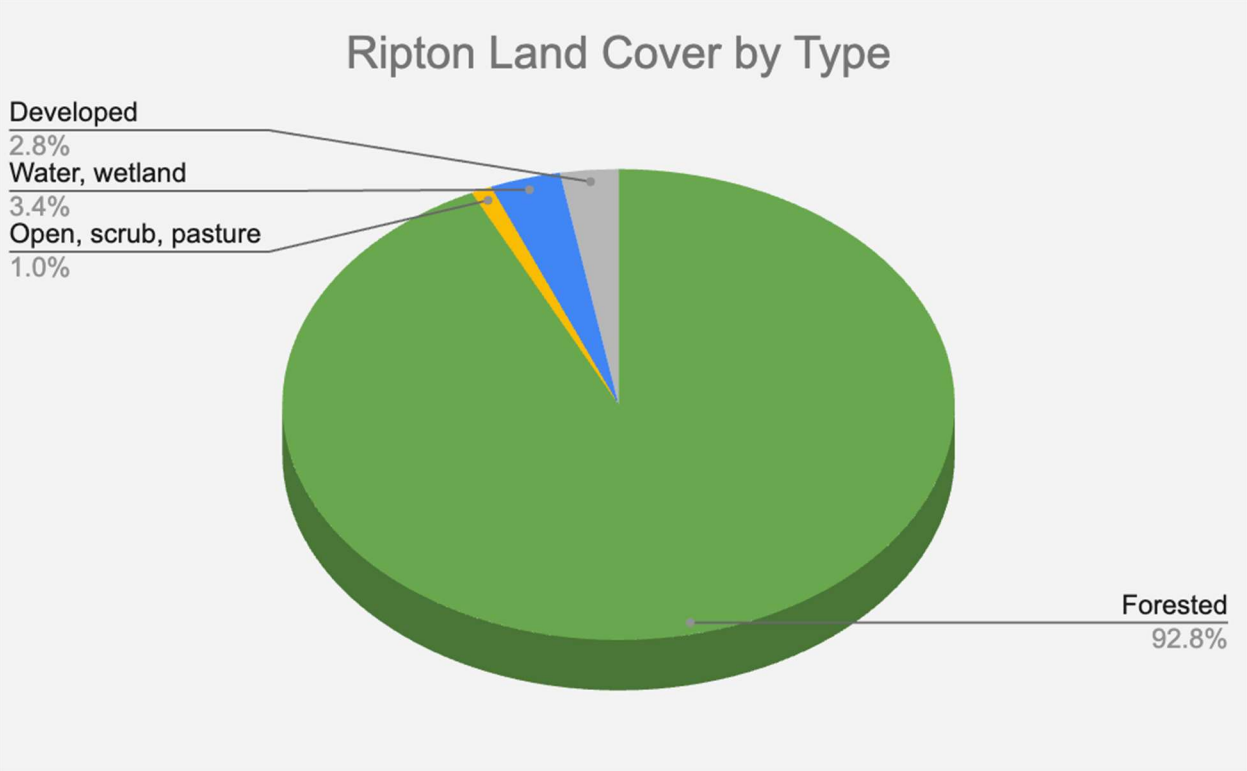


Land Distribution	Total Acres	% of Ripton
Private - 8,370 acres	8,370	25.60%
GMNF - 22,170 acres	22,170	67.80%
Middlebury College - 2140 acres	2,140	6.50%
Town, School, Church - 24 acres	24	>0.1%
Total Ripton	32,704	100%

Ripton is fortunate to have “highest priority” forest and habitat blocks, riparian areas that support significant headwaters, rare and uncommon species, and physical landscapes that deserve protection. The designation, “highest priority”, is from Vermont Conservation Design, as defined by the VT Agency of Natural Resources. Forest blocks are areas of contiguous forest and other natural habitats (wetlands, old meadows etc.) that are unfragmented by roads, development, or agriculture. These areas, which can range in size and are not bounded by political or parcel boundaries, provide significant interior forest habitat, ecological connectivity, or physical landscape diversity. Forested areas of Ripton are covered in more detail in a subsequent section.

Forests provide Vermonters with enormous benefits and a range of critical goods and services. Vermonters rely on healthy forests state-wide to maintain functioning natural systems. These are necessary for the plants and animals that depend on healthy forests as well as for human quality of life and a robust forest economy. Forest benefits include water supply and water quality protection, flood control and protection, wildlife habitat and biodiversity, clean air, carbon sequestration, outdoor recreation, and scenic beauty. Forests also provide cultural, spiritual, and intellectual enrichment. All of these benefits are known as ecosystem services because of the value they provide. Without forests, these services would need to be replaced and at a great expense.

Interpretation of Ripton’s land cover from 2021 satellite imagery (Map 2) showed the following cover types and approximate percent of total cover.



Ripton Land Cover by Type	
Forested	92.80%
Open, scrub, pasture	1%
Water, wetland	3.40%
Developed	2.80%

Ripton is primarily forested, and timber resources are a source of economic activity. In addition to logging and firewood, Christmas tree growing provides some residents with income, as does maple sugaring. Forty-two property owners have enrolled 3800 acres in the Vermont Use Value (Current Use) Program. This represents 85 percent of eligible land in Ripton.

Ripton's heavily forested land cover also helps protect against flooding and thus provides resilience in the face of the more severe rain events we expect in the future.
Having a diverse mix of land cover is important to maintaining wildlife habitat and promotes a diversity of plant species. Large, unbroken blocks of forest, along with smaller woodlots, small open fields and beaver meadows combine to afford habitat for most of the animals that are expected at this altitude and latitude.
Another important component of good wildlife habitat is ecological connectivity – the connections that allow wildlife to travel from one core area to another. For many species, good habitat consists of large blocks of contiguous forest connected by vegetated corridors. Roads often interrupt wildlife corridors; disruption is lessened when there are wetlands or forest nearby. Houses have a "wildlife shadow" (area of impact) of 15-30 acres. Houses that are near each other and near roads have less impact than dispersed housing. Currently, Ripton's land cover includes good connectivity and diverse natural features. As the

climate changes, large blocks of connected forest such as currently exist in Ripton are increasingly valuable to wildlife.
While Ripton is not heavily reliant on agriculture, niche agricultural activities do exist, including specialty vegetable and fruit growing and animal husbandry. In addition, many residents raise vegetables, fruit, and livestock for their own use. These activities provide income to townspeople and help keep some of Ripton's land open. Open fields are a necessary component of a diversified habitat. They also provide scenic vistas and space for recreation.
Invasive species outcompete and displace many native species. While the impact of most of these non-natives on humans is often indirect, some of them will make a difference to the way we enjoy our community. At this point Ripton has not been heavily degraded by invasive species, however three are of major concern: Wild Parsnip, Wild Chervil, and Emerald Ash Borer (EAB). In 2022, Wild Parsnip, which is toxic to humans, exploded along Rte. 125 and, unless controlled, is extremely likely to spread to roadsides and fields throughout Ripton, preventing people from using these areas. Wild Chervil, less toxic than Wild Parsnip, is rampant along Rte. 125. Its seeds are spread by motor vehicles, and it has started to invade town roads as well. EAB has been found in nearby towns and may already be in Ripton. As it spreads, it will significantly alter what our town roads look like as well as the composition of our forests and wetlands. Ripton's many roadside White Ash trees will either fall on their own or need removing before they damage infrastructure.

B. Earth Resources

Policy

- Allow local resource extraction only if other alternatives have not been found feasible and only if the process meets the following criteria:
    - Is sited to ensure the safety of residents and minimize its environmental impact;
    - Prevents erosion debris from entering watercourses, see river classifications;
    - Reduces safety hazards caused by pits with steep or unstable slopes;
    - Includes a plan for restoration and recovery, including returning a site to gradual contours with native vegetative cover and allowing for the vegetative cover to mature.
    - Includes a plan to remove safety hazards and prevent persistent noise that is incompatible with the reasonable use of the surrounding area.

Ripton's bedrock is complex metamorphic rock, and its surficial materials are mainly gneiss, schist, quartzite, and graywacke. Bedrock and soils determine the nature and quality of ground water as well as surficial waters. These underlying materials also partially determine what plant species grow here. The various glaciers that covered Vermont are responsible for many of the town's landscape features. Our rocky soils and gravel deposits are directly attributable to glacial till and post-glacial melt conditions.

Gravel deposits have been extracted from the GMNF and private property with landowner permission since the early 1900's, but construction and road maintenance materials are primarily trucked to Ripton from elsewhere. Siting of a gravel pit in Ripton is important not only for reducing the cost and environmental impact of hauling gravel from elsewhere, but also to ensure a local source to repair connecting town roads that are severed due to severe flooding.

In 2008, as part of its Steam Mill project, GMNF approved a site off FR 59 for a new gravel pit to defray their costs associated with trucking. Plans to develop the site have not proceeded and there is currently no expectation by GMNF to do so. Planning and construction of excavation sites will adhere to State and Town policy of ensuring appropriate development of land.

Ripton's policy regarding soil and gravel extraction, if undertaken, specifically requires that this process does not unduly impact environmental quality or the character of the community. Upon termination, sites must be restored to gradual contours with a native vegetative cover that is allowed to mature.

C. Soils

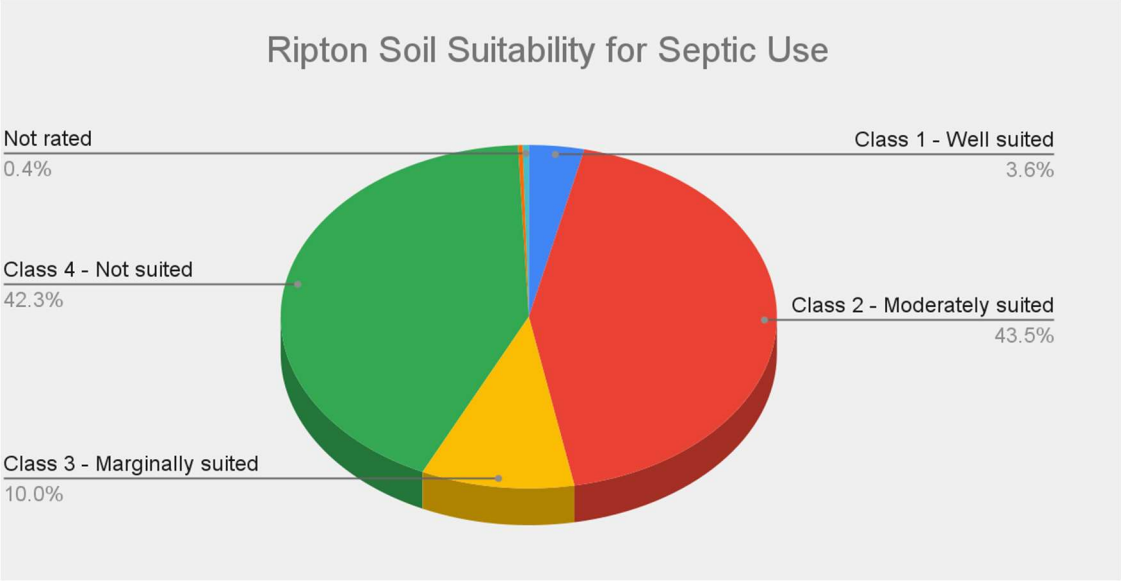
Policy

- Encourage the management of private and public lands to increase the carbon content and therefore the healthy functioning of the soil ecosystem.

Ripton has a mix of soil types and composition. The table below and Map 3 show the distribution of soil types and their relative suitability for septic use. In addition to issues related to septic installations, soil is a living ecosystem consisting of air, water, minerals (e.g., sand, silt, and clay), and organic matter from living and dead organisms, and it provides many essential functions:

- Sustains plant and animal life.
- Allows water infiltration, thereby limiting run-off that can cause erosion.
- Filters/buffers pollutants, which helps protect groundwater sources.
- Provides the physical stability and support for plants as well as human structures.
- Cycles nutrients.
- Retains carbon from the atmosphere.

The more organic matter in soil, the more these functions are enhanced. Soil can also be viewed as a carbon sink – that human practices can build healthy soil which pulls carbon out of the atmosphere and increases the carbon content of the soil. These practices can be used as tools to mitigate climate change due to high atmospheric carbon levels.



Source: Natural Resources Conservation Service (U. S. Dept. of Agriculture)

Ripton Soil Suitability for Septic Use			
Class	**Description**	**Percentage**	**Acreage**
1	Class 1 - Well suited	3.6%	1,131
2	Class 2 - Moderately suited	43.5%	13,796
3	Class 3 - Marginally suited	10.0%	3,157
4	Class 4 - Not suited	42.3%	13,389
	Not rated (water)	0.3%	84
	Not rated	0.4%	140

Map 3 shows distribution of the four soil categories summarized in Table A, based on VT Environmental Protection Rules, August 16, 2002, and 20 percent slope for lots created on or after June 14, 2002. Map 4 shows the distribution of five categories of landscape slope, ranging from flat to greater than 30 degrees.

D. Biologically Significant Areas

Policies

- Participate in measures to control invasive exotic species that directly threaten local populations of rare, threatened, or endangered species.
- Preserve and protect rare and endangered plant and animal species, outstanding natural communities, and other significant natural and fragile features for aesthetic, scientific, economic and recreational purposes.
- Retain existing reflective signs and a lower speed limit in the immediate area of the priority wildlife crossing on Route 125 and support a larger sized culvert when replaced for wildlife passage.

Ripton is endowed with a variety of natural communities that sustain diverse and, in some instances, rare or fragile biological resources. Map 5 shows the general location of these areas of significance.

The Beaver Meadows and Abbey Pond Special Management Area was declared as an Ecological Special Area in February 2006 in the GMNF Land and Resource Management Plan. Management by the Forest Service emphasizes “protection of geological, botanical, zoological and ecological values and opportunities for public use and interpretation”.

Protection of a significant eastern Jacob’s ladder population in Ripton has been aided by a rare species overlay zone (see Article I A: Zoning Districts) which came into force with the revision of the Ripton Unified Development Bylaw on October 8, 2018.

In 2015 Middlebury College protected 1,458 acres of college lands in Ripton that includes state-significant natural communities, other woodlands, and surface waters by creation of a perpetual conservation easement held by the Vermont Land Trust.

For further details see Article 1 C: Land Use and Middlebury College.

All these natural areas are or may be threatened by the spread of invasive species.

The 2009 report "Critical Paths: Enhancing Road Permeability to Wildlife in Vermont" identifies the area along Route 125 between the Bread Loaf Campus and the Robert Frost Interpretive Trail as a priority wildlife road crossing zone. It is clearly an important link in a north-south wildlife corridor in the Green Mountains.

E. Air Resources

Policies

- Encourage residents to use the most efficient wood stoves and wood-fired boilers or energy efficient sources of heat and electricity like solar and heat pumps.
- Encourage residents to switch from gas-powered tools to electric tools and from gas-powered vehicles to hybrid and electric vehicles.
- Support a town ordinance and a change to the UDB preventing take-off or landing zones or other accommodations for aircraft of any sort.

While most issues dealing with air quality are out of the hands of the Town, several potential pollution sources are close enough to home to warrant treatment here.

- Trash Burning - Burning of solid waste is illegal. More information may be obtained on the Addison County Solid Waste Management District website under "Trash Disposal".
- Outdoor Wood-Fired Boilers - Outdoor wood-fired boilers, also known as hydronic heaters, are regulated by the State of VT. In no case may a boiler operate in a manner that creates a public nuisance.
- Wood Stoves - Residents who have wood stoves uncertified by the Environmental Protection Agency (EPA) are encouraged to exchange them for new, more efficient, and cleaner burning wood, pellet, or gas stoves or heat pumps. Catalysts in EPA-certified catalytic wood stoves should be replaced every five years.
- Vehicle Emissions - Vehicle emissions may be Ripton's largest source of air pollution and greenhouse gasses. According to a study, "The Environmental Assessment of a Full Electric Transportation Portfolio," by EPRI (Electric Power Research Institute) and NRDC (Natural Resources Defense Council), fueling transportation through electricity instead of petroleum can significantly reduce emissions of greenhouse gasses and other air pollutants that threaten our environment and health. Producing the electricity to power electric vehicles can generate emissions, but those emissions levels are far lower than the pollution emitted by conventional vehicles and could be even lower as the electric-power sector transitions to renewable energy sources over the next few decades.
    - Encourage the switch from gasoline-powered/diesel-fuel vehicles to hybrid/electric vehicles.
    - Support and use public transportation between Ripton and Middlebury.
    - Unnecessary idling harms human health, pollutes the air, wastes fuel and money, and causes excess engine wear, and is against the law.
- Energy Efficient Heat Sources & Electricity - Ripton supports the use of residential based solar electricity, heat pumps, solar hot water, and other energy-efficient sources of heat and electricity that reduce pollution and GHG emissions. See the Energy Section of the Town Plan.
- Electric Tools - Electric chain saws, lawnmowers, trimmers, lawn tractors, and other tools are recommended. These battery-powered items work extremely well and reduce GHG emissions and noise pollution.
- Air Space - Air traffic's potential negative impacts on the town include: air quality, noise, fossil fuel consumption, invasion of both privacy and personal space. Ripton's primarily mountainous landscape does not lend itself to safe horizontal airstrips. While vertical airstrips might be safely constructed, they would have a significant negative impact on the town and its residents. Ripton

should not support take-off or landing zones or accommodations for aircraft of any sort in its Unified Development Bylaw.

F. Water Resources

1. Groundwater

Policies

- Identify locations, sources, and quality of groundwater and implement protective measures if necessary, including measures to prevent contamination of public water system source protection areas.
- Prevent high intensity uses of groundwater from a single tract.
- Recommend adhering to VTFWD guidelines concerning seeps.

a. Drinking Water

VT's Groundwater is considered, by state law, a resource held in public trust (DEC 2014). Groundwater serves as Ripton's sole source of drinking water, typically as shallow wells and springs for individual properties and Ripton's public spaces. Residents would be vulnerable to a reduction in flow or quality due to excessive withdrawal or contamination of groundwater.

Daily use above 5,000 gallons per day from one tract is considered a "high intensity use" by the State. Withdrawals averaging 20,000 gallons per day must be reported to the State. High intensity withdrawals of water in Ripton for uses other than residential, agricultural, and municipal are not in the best interests of Ripton residents and should not be permitted.

Contamination of drinking water is an increasingly important topic as more information around emerging contaminants such as Per- and Poly-fluoroalkyl substances (PFAs) is becoming more well-known and understood. However, many household items and substances improperly disposed of can also contaminate groundwater including but not limited to, automotive fluids, fluorescent bulbs, gasoline, mothballs, pesticides, herbicides, batteries, and other substances.

Ripton has four public community water systems which are all served by wells: the Ripton Elementary, North Branch School, Middlebury College's Bread Loaf Campus, and the Silver Towers Camp. A broad area along the town's western boundary provides upslope recharge and serves as a water source for both East Middlebury and parts of the Town of Middlebury's municipal water supplies. The Lucky Seven Spring located on the Lincoln Road is a continuous flowing spring and is considered an active groundwater source by the State. It is frequently used as a source of water by the public but has no state or town approval for that purpose.

b. Seeps

Seeps are small but important natural communities created where groundwater slowly reaches the surface, usually on slopes or at the base of slopes in upland forests. Seeps flow throughout the year, even in dry summers. They often form the headwaters of perennial streams and have been used to site spring boxes for household water. Their constant temperature of about 47◦F allows early spring development of grasses and sedges, important spring food for black bears. Certain amphibians, a rare dragonfly, and Appalachian Jacob's ladder, a state-listed threatened species, are closely associated with seeps in our area. Seeps are threatened by development and logging activities in their associated groundwater recharge areas by altering the hydrology and disrupting the natural community.

The Vermont Fish and Wildlife Department (VTFWD) recommends that heavy machinery be kept out of seeps and that a forested buffer of at least 100 feet be maintained around seeps with no logging or only selective thinning within this buffer. Acceptable Management Practices (AMPs) for Maintaining Water Quality on Logging Jobs in Vermont were adopted as State rules and have been subsequently revised over time.

2. Surface Waters

Policies

- Identify surface waters that meet a higher level of classification than B(2) and request the collection of data to support a reclassification petition.
- Work with partners and other towns in Ripton's watershed to monitor the quality of surface water to identify areas of degradation and remediate as necessary.
- Require best management practices for road maintenance, not limited to use of erosion and sediment controls, culvert and bridge maintenance and replacements, ditch maintenance, woody vegetation management, salt and sand application, and emergency repairs.
- Encourage riparian buffers as described in the VTFWD Guidance document.
- Utilize State tools to identify river corridors and incorporate into town planning, including identifying Class 3 and 4 roads that are at highest erosion risk and undertake actions to reduce risk.
- Encourage landowners to establish river corridor easements on their properties and explore potential buyout opportunities for properties within high-risk areas of flooding along rivers and streams or properties that contain wetlands which attenuate flooding risk such as headwater wetlands or those specifically along the Middle Branch and Sparks Brook.
- Limit development in areas where there is a high potential for erosion and subsequent surface water pollution or flood damage.
- Avoid encroachments within the mapped erosion hazard zone, and allow only site-appropriate forestry and agriculture, passive recreation, functionally dependent facilities, limited improvements to existing structures and facilities, and state-recommended channel management activities within this area, subject to Zoning Board review and approval.

Ripton's surface waters include the Middlebury River, its three branches and many tributaries, numerous small (generally man-made private) ponds, and abundant wetlands which will be treated in a subsequent section.

a. Classification

All surface waters in Vermont are categorized by ANR as Class A or Class B waterways. Class A(1) waters are managed for the protection of and enjoyment of water in its natural condition with significant ecological values or as Class A(2), public drinking water supplies. Class B (1 or 2) waters are those that have had a minor or moderate change from natural condition respectively and are to be managed to achieve and maintain very good to good biological integrity for insects, fish, and habitat accordingly. Supported by data, water bodies demonstrating excellent or very good water quality can be "reclassified" by the state or by public petition from a B(2) status to A(1) or B(1) status respectively, giving those waters a higher standard of protection.

All streams and rivers within Ripton are considered Class B(2) waters, unless otherwise designated. Ripton's rivers and streams above 2,500 feet are Class A(1) for significant ecological waters. Brandy Brook specifically is designated as Class A(2) for its documented use as a public water supply. In addition, Alder Brook, Blue Bank Brook, and Goshen Brook were reclassified by petition from B(2) to A(1) for their high quality Aquatic Biota, Aquatic Habitat, and Aesthetics, effective November 15, 2022.

b. Riparian Buffers

Riparian buffers provide a wide variety of important ecological, social, and economic benefits. Riparian buffers provide space and vegetation to store and slow flood waters thus reducing erosion and storm damage, absorb pollutants, provide a unique area of habitat, and serve as important wildlife travel corridors locally and on a larger landscape connectivity across the state. The larger the riparian buffer width, the greater the benefits it provides for the continued high-water quality of our waters and for the safety of our infrastructure. The VTFWD have developed a guidance document for Riparian Management which can be found on their website under Regulatory Review documents.

c. River Corridors

River corridors encompass an area around and adjacent to the present channel where fluvial erosion, channel evolution, and down-valley meander migration are most likely to occur. ANR was required to develop advisory river corridor maps, adopt Protection Procedures to include best management practices, and make model bylaws and other incentives to assist municipalities.

The Addison County Regional Planning Commission completed a Middlebury River Corridor Plan in 2009. The plan prioritized sites along the river at greatest risk of erosion or inundation damage, including massive bank failure, undersized bridges and culverts, and lack of river access to its floodplain. Ripton's village is one of two sites of greatest erosion hazard identified along the river corridor.

Towns which adopt and enforce river corridor protection standards are eligible for an enhanced state cost share under the Federal Emergency Relief and Assistance Fund (FEMA). Adoption of river corridors still allows for new development provided it is no closer to the river than existing development and does not require new channel management to protect the new investment that would not otherwise occur.

Absent town adoption, individual landowners may acquire a river corridor easement of private properties through the Vermont Department of Environmental Conservation (VT DEC) River Corridor Easement Program which provides a financial incentive to the landowner. As of January 2023, three Ripton properties are enrolled in the Corridor Easement Program. Information on this program can be found on the VT DEC River Programs web page.

3. Wetlands

Policies

- Prevent impacts to the functions and values of all wetlands, including those (Class III) not protected under the State of Vermont Wetland Rules (VWR), discourage wetland fragmentation to maintain intact habitat and connectivity, discourage activities that harm or degrade wetland habitats, and encourage invasive plant species awareness and control.
- Maintain and support state standards of wetland protection by following state rules and regulations; encourage landowners to acquire wetland permits as necessary to stay in compliance with State and Federal Wetland Rules.
- Utilize State tools and techniques to identify potential wetlands for planning purposes.
- Initiate a town wetland mapping project after the State's revised mapping effort to identify and document any remaining unmapped wetlands and confirm vernal pools within forested environments.

Wetlands are areas where there is enough water present in the soil long enough, typically two weeks during the growing season, to support the documentation of hydrology, hydrophytic (water-loving) vegetation and hydric (evidence of saturation) soil conditions. Ripton contains a diversity of wetlands, ranging from open water habitats to forested swamps to seasonal vernal pools. Wetlands can contribute to supporting significant forest blocks and habitat connectivity.
Ripton seeks to protect the functions and values that wetlands provide by preventing wetland loss. Activities proposed within or around wetlands typically require a State Wetlands permit as required under the VWR.

a. Functions and Values

The State has identified ten specific functions and values of wetlands which are beneficial to the general public and environment. Although a wetland may not serve all functions, each wetland works in combination with others as part of a complex integrated system providing increased functions such as flood resilience and climate change mitigation across the town and region. A detailed description of each function and value can be found on the DEC Wetlands Program webpage.

b. Classification

Wetlands are classified by the State as Class I, II, or Class III, based on the level of function and value they provide within the landscape. Ripton references these classifications. Class I or II wetlands also have a state regulated buffer zone.
Class I wetlands are exceptional and/or irreplaceable for their contribution to Vermont's natural heritage protected by at least a 100-ft buffer. Ripton's Beaver Meadows Wetland Complex, located on GMNF land, reclassified in 2019, is a Class I with a 400-foot buffer zone.

Class II wetlands serve to provide one or more functions at a significant level listed in §5 of the VWR, and/or they share a boundary with a mapped wetland, and/or they meet one or more of the categorical wetlands listed in VWR §4.6. Any activity proposed in a Class II wetland, or its 50-ft buffer typically requires a State Wetland Permit. Most of Ripton's wetlands are Class II; including and regardless of current land use, those wetlands that are over 0.5 acres in size, wetlands adjacent to surface waters, those above 2,500 ft in elevation, and wetlands that are vernal pools supporting amphibian breeding.

Class III wetlands are usually under one-half acre in size, lack overall function and value, and do not meet any of the presumptions of significance listed in VWR §4.6. The State currently does not take jurisdiction over activities occurring within Class III wetlands. Towns can protect Class III wetlands through local zoning.

c. Wetland Mapping

There are tools that have been designed to help the public research potential wetland locations and features. These tools are intended to be used for informational purposes only and were not designed, nor do they have the accuracy, to determine the precise location of features. Not all state-regulated wetlands are mapped. Only a qualified wetland scientist may determine the absence or presence of a wetland and its boundaries.

1. The Wetlands Inventory Map is a web-based mapping tool which can be accessed through the Wetlands Program webpage: The tool shows mapped wetland areas from the Vermont Significant Wetlands Inventory (VSWI), as well as potential wetland indicators including hydric soils, flood hazard zones, surface waters, and vernal pools.

2. The Wetland Screening Tool was developed to automate the process of identifying potential wetland concerns on a given property and can also be accessed through the Wetlands Program webpage. All you need is the 911 address or the SPAN number for a property.

d. Threats to Wetlands

Development within, through, or immediately adjacent to wetlands can affect wetland functionality in a number of ways. The cumulative effects of dredging or filling of wetlands can cause decreased stormwater and floodwater storage capabilities and reduce suitable habitat for plants and animals.

Invasive plants and insects can often dominate an environment, reducing suitable wildlife habitat including food resources and destroying or outcompeting native vegetation, which may include threatened or endangered plant species which should be protected.

Off-road vehicle use and improper logging techniques can compact soils, cause rutting or filling of wetlands, change hydrologic patterns, create obstacles to amphibians and reptiles, and increase the potential introduction of invasive plant species.

G. Flood Resilience

Policies

1. Incorporate the policies from sections above into strategic town planning to build in additional flood resilience, including river corridors, riparian buffers, wetland protection, and retain forested lands.
2. Keep the All-Hazards Mitigation Plan current. It was approved by FEMA Aug. 20, 2019, and is good for 5 years. Update the Local Emergency Operating Plan annually.
3. Maintain Ripton's qualification for 17.5% state post-disaster funding from the Emergency Relief and Assistance Fund.
4. Determine base flood elevations for flood prone areas of Ripton.
5. Utilize State tools and databases to identify and prioritize inadequate culverts and bridges and have studies for each structure on file for replacement. Replace structures to meet state standards and secure funding for structures when applicable.
6. Develop a long-range flood plan for Ripton village including a plan with partners to ensure vehicular access from Ripton to Route 125 via Old Town Road.
7. Develop a floodplain reconnection project along the South Branch between the Bread Loaf Campus and the Robert Frost Interpretive Trail.

Ripton developed an All-Hazards Mitigation Plan, re-approved by FEMA in 2019. The All-Hazards Mitigation Plan assesses the potential impact of drought, widespread power failure, flooding, high winds, landslide/erosion hazard, lightning, hazardous materials spill and highway/transport accidents, structure fires, wildfires, winter storm/ice storm, and earthquake. The VT Legislature specifically called out Flood Resiliency to be addressed in the Town Plan.

Flooding of the Middlebury River and/or its tributaries occurs on a semi-annual basis with varying degrees of damage to public and private property and infrastructure, including damage to the village center. With predictions of increased precipitation, largely from intense storms as a result of climate change, the potential for flooding events to occur both in frequency and severity of damage will increase and needs strategic planning.

Ripton has responded to the threat of flooding through a number of planning measures and implementation of mitigation work.

- Conducted geomorphic assessments of the Middlebury River and its three main branches (2003-2007);
- Developed a Middlebury River Corridor Plan in 2009;
- The Selectboard approved a fluvial erosion hazard bylaw that was incorporated into a unified development bylaw in 2012;
- The Selectboard approved zoning bylaws to limit development in Ripton's special flood and erosion hazard zones;
- Utilized flood mitigation grants to: acquire easements on floodplain land just upstream of and within Ripton village, armor 700 feet of the north bank of the Middlebury River in the village, reopen a historic flood chute at the upper end of the village to reduce flood-level flows, construct a weir to control headward erosion, remove a garage at risk, and plant a riparian buffer to stabilize soil on top of the bank in the village;
- Clarified that Old Town Road is a public right-of-way to preserve an alternative route in case of catastrophic washout of Route 125; and
- Incorporating larger capacity culverts into the road network during culvert replacements.

H. Forest Resources

The Town encourages the retention of intact blocks of forestland. Within the bounds of state laws, the Town has adopted the following policies related to forest resources:

Policies

- Protect connectivity blocks, habitat blocks, interior forest blocks and riparian areas identified in Ripton and in order to prevent fragmentation.
- Implement policies to promote growth in the Town center.
- Develop and implement policies that promote building new structures close to existing roads limiting the impact on unfragmented forest blocks.
- Develop policies and zoning to maintain a certain percentage of forest cover when clearing, define building envelopes, and encourage roads and driveways in locations that will not unduly fragment forest resources.
- Encourage conservation easements and enrollment of eligible parcels in the Vermont Current Use Program to enhance land conservation and a local and regional forest products economy.
- Educate landowners about habitat loss and fragmentation.
- On privately-owned forestland, promote the development of forest management plans utilizing professional foresters and/or ecologists.
- Encourage logging that mimics natural disturbance regimes and/or will result in old growth characteristics.
- Encourage creative opportunities that keep forestland undeveloped, such as promoting recreational access, the production of wood products, and opportunities to create reserve forestland.
- Encourage landowners to become familiar with Vermont Forest, Parks, and Recreation (VT FPR)'s "Voluntary Harvesting Guidelines for Landowners".
- Promote sustainable forest management techniques through federal and state assistance programs, including those offered by VT FPR and the U.S. Natural Resources Conservation Service.
- Encourage landowners to utilize programs, such as those offered by Vermont Family Forests that keep the origin, preparation, sale, and use of wood products local and sustainable.

At the time of European settlement, forests covered almost all of Vermont, but wide scale clearing significantly changed the landscape to agricultural. With the decline of the sheep industry and reduced timber harvesting, forested areas now cover 74% of the state. However, at present, reforestation is slowing as commercial and residential development pressure increases. For the first time in a century, Vermont is experiencing an overall loss of forest cover; a US Forest Service report indicates Vermont may have lost up to 69,000 acres of forest land between 2010 to 2015.

In addition, it is not just the loss of forested areas, but forest fragmentation that can have a long-lasting impact on a community and the larger region. A primary driver of forest fragmentation is rural sprawl. This type of fragmentation occurs incrementally and over time. Over time, new roads and homes and businesses with driveways and yards intrude into previously connected forest acres.

Eventually, the contiguous forest is reduced to scattered and disconnected forest islands surrounded by land uses that threaten the health, function, and value of these forests for animal and plant habitat. Furthermore, as forest fragments become ever smaller, practicing silviculture becomes operationally impractical, economically nonviable, and culturally unacceptable. In turn, we lose the corresponding contributions that forestry makes to our economy and culture. Vermonters gain enjoyment from living in rural areas, but the benefits of forests disappear as trees are removed for development. Communities need to balance the importance of forests with other human values.

The loss of forests and their benefits reduces the overall sustainability and resilience of communities both close to and far from the forest. In the short term, a forest loss results in a reduction of wildlife habitat, flood mitigation capabilities, and economic goods and services. In the long term, carbon absorption and climate change mitigation benefits are lost. These short and long-term impacts can also have fiscal implications for towns through increased costs associated with infrastructure, water quality, or services previously supplied by forests.

Ripton is fortunate to have what the state designates as “highest priority forest and habitat blocks” (... the largest and/or highest ranked forest blocks from all biophysical regions that provide the foundation for interior forest habitat and associated ecological functions) and riparian areas that support significant headwaters, rare and uncommon species and physical landscapes that deserve protection. Ripton promotes policies and zoning to protect and retain these critical areas. Landowners should bear in mind the range of community responsibilities inherent in the ownership and utilization of natural resources, including provision of clean air and water, protection of wetlands, wildlife, endangered and threatened species, other fragile natural features such as heron rookeries, and appealing viewscapes. Tourism is of economic importance to the town and Addison County, and maintaining forest resources can help maintain a vibrant tourism economy. See the following Maps: **4** “Landscape Slope”, **5** “Natural Communities”, **11a** “Forest Blocks and Habitat Connectors”, and **11b**” Forest Blocks and Fragmentation” .

I. Scenic Resources

Policies

- Encourage management of private and public lands to maintain and promote the scenic quality of Ripton.
- Discourage and regulate outdoor storage of trash, junk, and junk vehicles.
- Encourage use of lighting that minimizes impact on the night sky.

Ripton has many beautiful areas and views that are enjoyed by residents and tourists. The buildings of Ripton’s village are frequently photographed. Route 125 is one of the state’s three Scenic Highways. A portion of the North Branch of the Middlebury River is identified by the GMNF as Eligible as a Wild,

Scenic, and Recreational River. The Lincoln Road adjacent to this river is a lovely drive, as are parts of the Natural Turnpike (Forest Road 54) and the Steam Mill Road (Forest Road 59). The views of Robert Frost Mountain and Bread Loaf Mountain are treasured as are the views afforded by the fields at Bread Loaf.

Though publicly accessible views like these are not very common due to the predominantly forested landscape, many residents maintain private views that do showcase the natural beauty of the town in broad strokes. The town respects these private scenic resources by giving opportunities to residents to comment when planned projects may broadly impact the scenic resources of town. A list of some of the valued viewscapes include:

- The view of Bread Loaf and the spine of the Green Mountains from North Branch Road, the Natural Turnpike, Peddlers Bridge Road, Barker Road, County Cross Road, Old Town Road, and residences on those roads.
- The views north and south from the Bread Loaf Campus of Middlebury College and Vermont Route 125.
- The views of Robert Frost Mountain and the Middlebury River basin from west facing slopes, for example from residences on Lincoln Road, Pearl Lee Road, and Natural Turnpike above the four corners.
- The views of the Moosalamoo region from south- and west-facing slopes, for example from Maiden Lane and Wagon Wheel and North Branch roads.
- The views of the rolling waters of the branches of the Middlebury River along Route 125, Lincoln Road, Natural Turnpike, Peddlers Bridge Road, and the Dugway.

J. Recreation and Special Uses

Policies

- Follow the practice of "Leave No Trace" as requested by the Forest Service.
- Encourage participation in Green Up Day and the Community Garden.
- Discourage use of motorized recreational vehicles on trails without snow cover to limit noise pollution and soil erosion.
- Encourage landowners to provide open access to their lands for dispersed and/or low intensity recreation and urge people to treat the privilege responsibly.
- Many trails that are appropriate for winter sports are inappropriate for mountain biking and horseback riding due to steep terrain and wet soils. Discourage their use for these activities. Also, individuals should consider trail conditions before setting out on a given day.
- Encourage riparian buffers to support fisheries and to decrease erosion.
- Encourage control of invasive species by applicable landowners at recreational sites, for example the Robert Frost Interpretive Trail managed by the USFS.

Ripton's lands and waters support a wide range of dispersed, low intensity recreational activities. The Green Mountain National Forest, Middlebury College, and privately-owned acreage provides ample space for recreation. Scenic Route 125, one of the few roads that traverse the Green Mountains, provides access to many of them. It also provides motorists and cyclists close-up and broad views of the mountains.

Opportunities abound throughout the town for hiking, hunting, fishing, and back-country skiing/snowshoeing. Map 6 "Roads, Trails, Utilities, and Facilities" includes many of the following:

- Silver Towers Camp off Goshen Road, offering overnight summer camp experience for mentally or physically challenged individuals, ages 6 to 75, operated by the Vermont Elks Association, one of very few facilities of its kind in the country.

- Route 125 is an important route for bicycling. It attracts recreational riders, touring groups, weekly rides, and annual competitions.
- Many of Ripton's back roads and trails are favorite locations for bicycling.
- Bread Loaf Wilderness and Battell Wilderness, 9,596 acres of which are in Ripton. One-third of the 15,857-acre Moosalamoo National Recreation Area lies within Ripton.
- One third of the Moosalamoo National Recreation Area lies within the Town of Ripton.
- The Robert Frost Interpretive Trail and Wayside on National Forest land off Route 125.
- The Spirit in Nature Trails, open to the public on Middlebury College land from Goshen Road (FR 32).
- The Wilkinson and Water Tower Trail networks, and the Widow's Clearing Trail offer ungroomed cross-country skiing, snowshoeing, hiking, and horseback riding opportunities on designated trails off Goshen Road.
- A Ripton recreation trail from the end of Pearl Lee Road to Cobb Hill Road in South Lincoln.
- The Catamount Trail runs across Ripton between Lincoln and Goshen and beyond to the north and south.
- Abbey Pond, within Ripton's borders, is accessible via a 4-mile loop trail from its Forest Service trailhead off Route 116 in Middlebury.
- Town to town cross country skiing, snowshoeing, hiking, and biking.
- 5.8 miles of the Long Trail crosses the northeast corner of Ripton from access at the Middlebury Gap on Route 125 in Hancock, Burnt Hill, and Skylight Pond trails off Steam Mill Road (FR59) in Ripton, and Emily Proctor and Cooley Glen trails in South Lincoln.
- The Bread Loaf Campus of Middlebury College offers the annual Bread Loaf School of English and Writers' Conference, Orion Environmental Writers' Conference, and the Translators' Conference.
- Over 31 miles of groomed recreational trails at the Rikert Outdoor Center located on the Middlebury College Bread Loaf Campus on Route 125.
- The Vermont Association of Snow Travelers (VAST) provides and maintains trails for snowmobiles across Ripton to Middlebury, Lincoln, and Goshen.
- The Middlebury River and its three branches and tributaries provide an extensive network of fishing and swimming opportunities. Expert level kayaking in high water provides some of the best white water in the state.
- The Ripton Community Garden at the Ripton Elementary School.

K. Preservation of Rare and Irreplaceable Natural Areas, Scenic and Historic Features and Resources

Policies

- Protect all structures recognized in the State Register of Historic Places, whether in the Historic District or elsewhere in the town.
- Encourage the U.S. Forest Service to consider inclusion of all of Alder Brook and Huntley Brook, both tributaries of the North Branch of the Middlebury River as part of the area that is Eligible as a Wild, Scenic and Recreational River.

The Green Mountain National Forest (GMNF) Land and Resource Management Plan, released in February 2006 and intended to guide planning in the GMNF until 2021, identified the Abbey Pond-Beaver Meadows area in the northwestern corner of Ripton and adjacent portions of Middlebury and Bristol as an Ecological Special Area, to be managed to protect its special values.

The GMNF Land and Resource Management Plan also identified the portion of the North Branch of the Middlebury River between its confluence with the main stem of the Middlebury River and the confluence with Alder Brook as Eligible as a Wild, Scenic, and Recreational River with "outstandingly remarkable botanical and ecological values." See Article IA for the overlay zone that protects a significant population of the threatened Appalachian Jacob's ladder within this area.

See Article I C for discussion of the permanent protection of state-significant natural communities and surface waters on Middlebury College lands at Bread Loaf as Ecological Protection Zones and Surface Water Protection Zones under terms of a conservation easement held by the Vermont Land Trust.

Several areas of this plan address these concerns: see Article I goal, Article IA policy 11, Article IC, Article II goals and policies. The issues are discussed in depth under Article II, Natural, Historic, Scenic and Recreational Resources in sub-headings D, F, H, I and K and in discussion of the Town's Historic District in Article IA.

It is expected that any consideration of change in land use will include concern for the preservation of rare and irreplaceable natural areas, scenic and historical features, and resources. The Town will draw upon its Conservation Commission for expertise in locating and tabulating areas needing protection.

ARTICLE III. POPULATION

Population

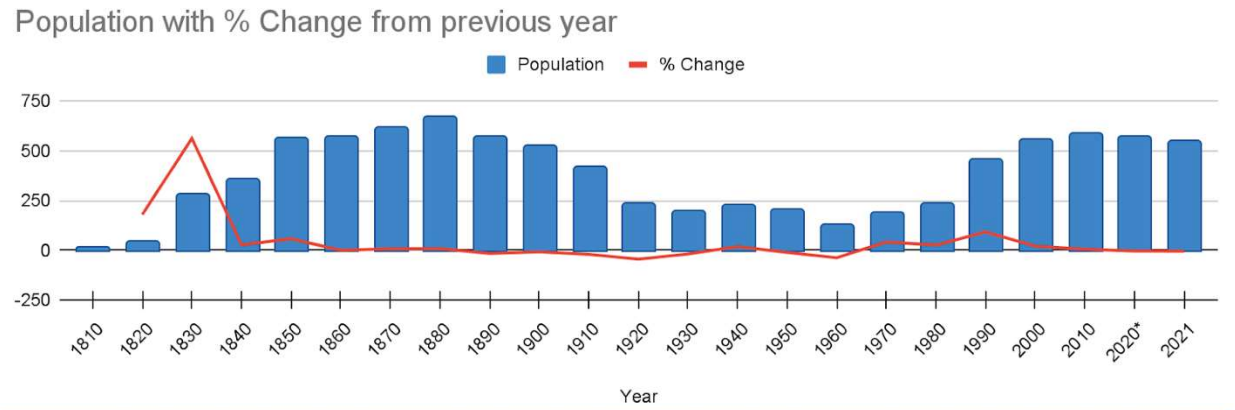
Addison County's population is predicted to grow by modestly, with the greatest growth projected for those 55 years or older, the same applies for Ripton.

(2015-2020 Vermont Housing Needs Assessment**,** Addison County Overview, p. 2).

As shown in the chart below, the 2020 US Census reported 739 Ripton residents, an increase of 151 from 2010 which would indicate the largest population in the town's history, however the census included an erroneous count of 170 Middlebury College Students at Bread Loaf Campus. The accurate population would be 569.

Historically, the town's population peaked in 1880 at 672. From 1880-1930 the population decreased to 194. A slight increase to 213 in 1940 was short-lived, and by 1960 the population hit a low of 131. In 1970 it was back to 187, then more than doubled from 1980-2000, reaching 555. The population is currently holding relatively steady from the year 2000 on, remaining above 500. According to Vital Records, from the Vermont Department of Health, from 2015 to 2022, 37 births and 32 deaths were recorded. During this same time period, the voter checklist has decreased by 7, or under 2%. The voter checklist for 2022 is 419.

Following tables show change in population, and Map 10 shows population density in Ripton.

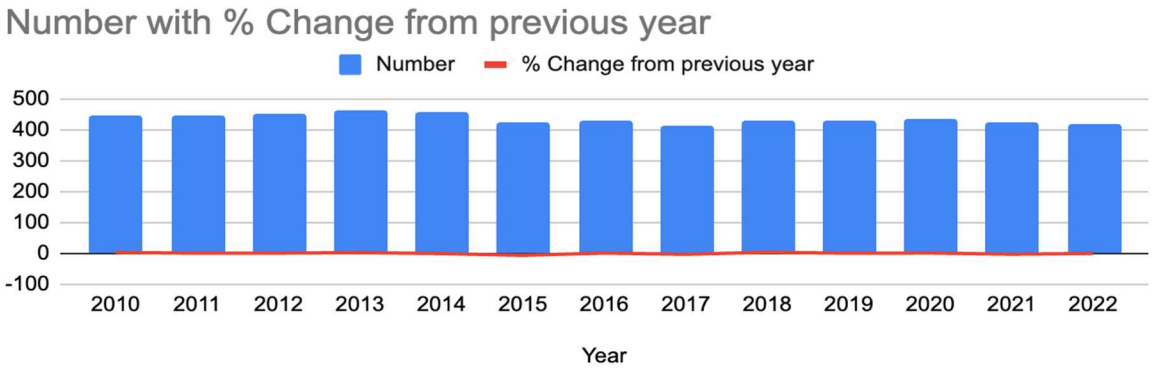


Year	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2020*	2021
Population	15	42	278	357	567	570	617	672	568	525	421	237	194	231	207	131	187	237	458	555	588	569	549
% Change		180	562	28	59	1	8	9	-15	-8	-20	-44	-18	19	-10	-37	43	27	93	21	6	-3	-4

2020* The Census count erroneously included **170** Middlebury College Students housed at Bread Loaf Campus.

Voter Checklist

The voter checklist includes only registered Ripton voters, not all residents. The voter checklist also includes voters who were last registered in Ripton but no longer live here.



Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number	446	447	450	460	456	426	429	415	429	430	434	421	419
% Change from previous year	3.0	0	1	2	-1	-7	1	-3	3	0	1	-3	0

ARTICLE IV. TRANSPORTATION

Goal

To provide Ripton residents and visitors with safe, efficient, cost-effective transportation opportunities while encouraging a reduction in miles traveled per person through community planning, ride sharing, use of public transportation, working towards the town's goal of reducing carbon emissions by 2030.

A. Public Transport

Policies

- Encourage carpools, ride sharing and public transportation to and from Middlebury and beyond.
- Collaborate with the State Agency of Transportation and adjacent towns to maintain the "Scenic Highway" qualities of Route 125 to limit heavy commercial traffic and to arrive at mutually agreeable plans for modification of the Route 125 corridor.
- Support the Tri Valley Transit (hereon referred to as TVT) route and encourage commuter transport.
- Encourage TVT to consider provision of service to support middle and high school after-hours activities.
- Support transportation opportunities provided by social service agencies.

Most transportation in Ripton is by personal vehicle. Public transport to and from Ripton is available through TVT, refer to their website for current schedule and cost - https://www.trivalleytransit.org/.

Several Addison County social service agencies provide complimentary rides to and from their facilities for those receiving their services. TVT Dial-A-Ride (388-2287) has volunteer drivers for qualified Ripton residents aged 60 or older and/or have a disability and are approved by Champlain Valley Agency on Aging, Counseling Service of Addison County or Addison County Home Health and Hospice for meal-sites, medical, and social or employment-related appointments. Medicaid covers TVT transportation for any number of trips per year if the client has regular fee-for-service Medicaid coverage or is in the Primary Care Plus managed care program. TVT can provide wheelchair service when necessary. TVT, in partnership with the Vermont Department of Families and Children in the Reach Up program, may provide qualifying residents free transport for employment-related activities, childcare, or self-improvement activities. TVT, in partnership with the Vermont Association for the Blind and Visually Disabled, provides free transportation for eligible residents for medical, social, or employment-related appointments. TVT provides Ride Match, a fee-based service for people not eligible for any other ride. The American Cancer Society (802-872-6312) provides round trip transportation for radiation and chemotherapy treatment; call 5-7 days ahead of appointment.

As of 2023 there are no taxi services in Ripton or Middlebury.

B. Roads

Policies

- Encourage practices that emphasize the scenic quality of Ripton's roadways.
- Encourage practices consistent with the recommendations of the Vermont Better Roads Program.
- Encourage practices that eliminate erosion and sedimentation.

- Given the land use pattern, the low population and traffic volumes in Ripton, and the cost of new roads, discourage construction of additional public roads, and limit additional paving to special maintenance problems and the elimination of highway hazards.
- Private roads or construction of roads that the Town might be expected to maintain must meet State Agency of Transportation Guidelines for Class 3 town highways, Town Road Standards, and any scenic preservation standards set by the Town.
- Encourage private road residents to establish maintenance and repair agreements if no local written agreement exists and support State Act 121, which lays out basic requirements for private road owners.
- Collaborate with the FS regarding winter use of roads, limitation of road development in remote areas, and road construction practices consistent with low impact development.
- Encourage roadside vegetation management practices on town, FS, and private roads to control invasive species.
- Encourage road design, construction, and signage that considers all users as recommended in Complete Streets Guide for Vermont Communities, and creates a safe environment for travel by foot, bicycle, ski, or vehicle.

Ripton's 29. 166 miles of public road, 13 bridges, and more than 200 culverts are maintained by three entities:

- State of Vermont, Agency of Transportation (VTrans), District 3, 5.786 miles, Route 125;
- Town of Ripton, whose roadwork is performed by private contractors, 23.38 miles class 2 and class 3, 3.52 miles class 4, 2.35 miles legal trail;
- United States Forest Service (FS), which shares 11.88 miles with the Town and has 22.91 additional miles.

Route 125 is paved. Less than half of the town road mileage is paved; most FS roads are gravel. Ripton also has approximately 10 miles of private roads, all gravel.

The Selectboard files an annual Certificate of Highway Mileage showing the mileage and category for all town roads and trails. VTrans uses it to update the General Highway Map. The chart below and Maps 6 and 7 summarize the General Highway Map. Map 8 shows transportation safety concerns in Ripton. These maps are made part of this plan by reference.

Type	Miles	Road Name	Town#	FS#	Bridges
State Scenic Byway	5.786	Route 125			5 total
Class 2: State Aid Road	4.9	Lincoln Rd	1		B2, B3
Class 3: Year-round Road	18.48				
	0.8	Maiden Lane	2		
aka Smith's Flats	0.48	Peddlers Bridge Rd	2, 14		B13, B5
	2.86	North Branch Rd	3		B18
	0.85	Dugway Rd	3		B15
	0.5	Pearl Lee Rd	4	69	

	0.5	Barker Rd	5		
	0.46	Dragon Brook Rd	6	95	
	0.15	County Crossroad	7		
now called North Branch	0.74	E. Middlebury Rd	9		B9
	0.1	Norton Farm Rd	10	235	B12
FS closes gate during winter, only part year-round	3.37	Natural Turnpike	11, 22	59, 54	B16
	0.4	Chandler Hill Rd	12		
	0.66	Robbins Crossroad	13		
	0.65	Wagon Wheel Rd	15	214	B14
south part discontinued	0.09	Ira Dow Rd	17		
	2.37	Goshen Rd	18	32	B17, B10
	0.53	Frost Rd	19	396	
only part year-round, aka Brandy Brook Road	0.45	Steam Mill Rd	20	59	B8, B7
	1.1	Brooks Rd	21	67	B11
		Old Town Road	25		
Class 4: a road that is not 1,2, or 3	1.72	Parts of: Natural Turnpike, Norton Farm, Pearl Lee, Wagon Wheel, Old Town Rd			
Legal Trails	1.5+/-	County Crossroad, Pearl Lee, off of Brooks Rd, Old Town Rd bypass trail			
FS Roads		see class 3 above with FS #; also 233 Alder Brook Rd; 296 Old Town Rd; 89, 130, 205, 206			
Private Roads		Barrows Rd			
		Burnt Hill Rd			
		Chandler Hill Rd beyond #427			
		College Inn Rd			
		College Cross Rd			
		Deacon Hill Rd			
		Eagles Nest Rd			
		Elzira Winter Rd			
		Fire Brook Rd discontinued town road			

		Hemlock Lane
		Murray Lane
		Reichert Lane
		Selden Mill Rd discontinued town road
		Scott Rd
		Whitman Rd
		Wimett Lane

1. Vermont Route 125

Vermont Route 125, also known as the Robert Frost Memorial Highway and the Middlebury Gap Scenic Highway, is the major route in and out of Ripton. Ripton encourages the State Agency of Transportation to maintain Route 125 to emphasize its scenic qualities and natural features, and to limit the use of the road by heavy commercial traffic.

Sections of the road have repeatedly washed out in floods and have recently been damaged by landslides. See Article II G on resilience for more on this topic. To help address the problem of the town being isolated because of washouts, a study was done to determine the legal status of the Old Center Turnpike (Old Town Road) right-of-way. It was found to be a town road and preserves a corridor that may be needed in a catastrophic washout of Route 125. A study for upgrading the road for emergency access was completed in 2020. The road upgrade proposal has been submitted to the Building Resilient Infrastructure and Communities Grant Program, a FEMA mitigation project program.

2. Town Roads

Ripton has a road commissioner appointed by the Selectboard and a contracted road crew. The Town purchases sand, salt and other materials that are stored outdoors at 333 Peddlers Bridge Road. A sand and salt storage shed is under construction at 683 Lincoln Road. Typical annual road work includes winter maintenance, summer maintenance, resurfacing, and reconstruction. A “Major Project Fund" for special projects also allows for response to emergency situations.

In 2013 the Town adopted the guidelines and standards established by the Vermont Agency of Transportation as the “Road Design Standards for the Town of Ripton”. Permits for driveways, also called road cuts, must be obtained through the zoning.

The Town has several ordinances relating to roads and trails including:

- Special Regulations Governing Obstructions to Highways
- Speed Ordinance
- Trails Ordinance
- Stop Sign Ordinance

3. U.S. Forest Service Roads

The U.S. Forest Service (FS) maintains 22.91 miles of roads in Ripton and shares roadways with the Town on an additional 11.88 miles of road. Most FS roads are open to public vehicles in spring, summer and fall and are open for winter recreation.

Natural Turnpike and Goshen Roads are-maintained by both the Town and FS. The Natural Turnpike or Forest Road 54 connects Ripton and South Lincoln and is gated in winter to through traffic. Steam Mill Road is also closed to through traffic in winter. The Goshen Road or Forest Road 32 connects Ripton and Goshen. There are numerous FS roads and trails off of these roads that provide recreational opportunities of which some allow snowmobile, horse riding, and mountain bike access.

ARTICLE V. ENERGY

ENHANCED ENERGY PLAN AND MAPS

Section I. Introduction

Intent of Energy Plan

The Town of Ripton recognizes our individual and collective responsibility to help reduce and conserve the energy we all use. Ripton believes it serves its citizen's interests by conserving energy, reducing our consumption of non - renewable energy and shifting our usage to carbon free or carbon neutral renewable energy sources. We also believe the Ripton Town Plan must create a vision and clear policy statements for the town to follow concerning energy conservation, consumption, and generation within town. With this Plan Ripton hopes to exercise more control over the types of energy choices made within town.

The best way for Ripton to gain more control over its energy policies is to meet the municipal determination standards for enhanced energy planning enabled in 24 V.S.A. 4352, and thus to gain "substantial deference" in Section 248 hearings. As part of pursuing enhanced energy planning, Ripton agrees that it supports regional and state energy goals, including the goal of having 90% of the energy used in Vermont obtained from renewable sources by 2050 ("90 x 50"), and the following:

Vermont's greenhouse gas reduction goals under 10 V.S.A. § 578(a);
Vermont's 25 by 25 goal for renewable energy under 10 V.S.A. § 580;
Vermont's building efficiency goals under 10 V.S.A. § 581;
State energy policy under 30 V.S.A. § 202a and the recommendations for regional and municipal energy planning pertaining to the efficient use of energy and the siting and development of renewable energy resources contained in the State energy plans adopted pursuant to 30 V.S.A. §§ 202 and 202b (State energy plans); and
the distributed renewable generation and energy transformation categories of resources to meet the requirements of the Renewable Energy Standard under 30 V.S.A. §§ 8004 and 8005;

To receive a positive determination of energy compliance, an enhanced energy plan must be duly adopted, regionally approved, and must contain the following information:

An analysis of current energy resources, needs, scarcities, costs, and problems.

Targets for future energy use and generation.
"Pathways," or implementation actions, to help the municipality achieve the established targets. Mapping to help guide the conversation about the siting of renewables.
A positive determination of compliance with the requirements of enhanced energy planning will enable Ripton's Plan to achieve "substantial deference" from the Public Utilities Commission in Section 248 applications for energy generation facilities (wind facilities, solar facilities, hydro facilities, etc.). The Public Utilities Commission applies the "substantial deference" standard when evaluating a proposed generation or transmission project under Criteria (b)(1)- "Orderly Development of the Region", of Section 248. Substantial deference increases the respect the Public Utilities Commission must give to clearly articulated policies in this Plan (The current standard is "due consideration").

This plan includes the required analysis, target data, goals, policies and implementation actions, and the associated mapping necessary to meet the standards for an enhanced energy plan. Topics covered include energy conservation and efficiency as it relates to thermal and electrical energy usage, transportation, and land use planning. The plan also includes energy generation and siting standards. It contains a number of policies and statements specifying the type and size, and suitable locations for energy generation facilities in Ripton. Lastly, it articulates the goals, policies, and actions Ripton will support and undertake to help meet regional and statewide goals.

Ripton Energy Committee

Ripton has an active Energy Committee. In a 2014 energy survey, 41 percent of homes in the survey had some sort of energy audit, indicating a substantial interest in improving the energy efficiency of Ripton's housing. A majority, 68 percent of homes have upgraded to energy efficient airtight woodstoves, and 20-30 percent would like to upgrade to a more efficient furnace or hot water heater and own a heat pump, solar hot water panels or solar photovoltaic system. These results are based on the tallies from 85 returned questionnaires. Most residences in Ripton are connected to the grid, and Green Mountain Power supplies 84 percent of the electrical needs for those responding to the survey (see below).

In 2012 Ripton voters approved the creation of a Ripton PACE District. PACE stands for Property Assessed Clean Energy. PACE makes it easier for homeowners to invest in energy efficiency and /or renewable energy projects in existing homes by making annual payments that are added to their property tax payment or other municipal bill. The Ripton PACE District was created on 14 May 2012. Ripton chose not to use the PACE district at that time because of administrative concerns and financing costs. This plan considers repurposing and reusing the PACE program for community-based energy programs.

Outline: How to Read this Plan
This plan is organized into five Sections:

1. **Section I, Introduction**: Introduction and Summary
2. **Section II, Thermal Use**: focuses primarily on Energy used for space heating.
3. **Section III, Electrical Use**: focuses on efficiency and conservation of the energy used for operating equipment (lighting, appliances, motors, electronics), and addresses the conversion of transportation and heating to renewable electric power, and the consequent increase in electrical demand.
4. **Section IV, Transportation Use**: focuses on energy used for transportation. and
5. **Section V, Land Use, Generation, and Transmission**: focuses on planning land uses to reduce vehicle trips and to responsibly site energy generation and transmission resources.

Each chapter is broken into three subsections. The first subsection, "Use Analysis", analyzes current usage data in Ripton for each of the four energy sectors and includes charts of usage and a discussion concerning the data. The second subsection, entitled "Targets", looks at future projections of usage corresponding to one scenario that theoretically would meet the 90 x 50 goal and interim mileposts. In 2016, the Addison County Regional Planning Commission worked with the Vermont Energy Investment Corporation (VEIC) and the Vermont Department of Public Service to develop regional targets for future energy use and generation that would serve to meet the State's energy goals. The targets represent one pathway--an approach that appears the most likely, reasonable, and economic given current technology and forecasts through mid-century. For more information about the regional targets, please see the Addison County Regional Energy Plan (www.acrpc.com). The third sub-section in each Section provides goals, policies, and recommended actions to implement the plan.
After the three major Sections covering Thermal, Electrical and Transportation Uses, Section IV, Land Use, Generation and Transmission adds a mapping analysis of Ripton's energy resources and constraints, and a siting policy for new generation.

Section II. Thermal Use

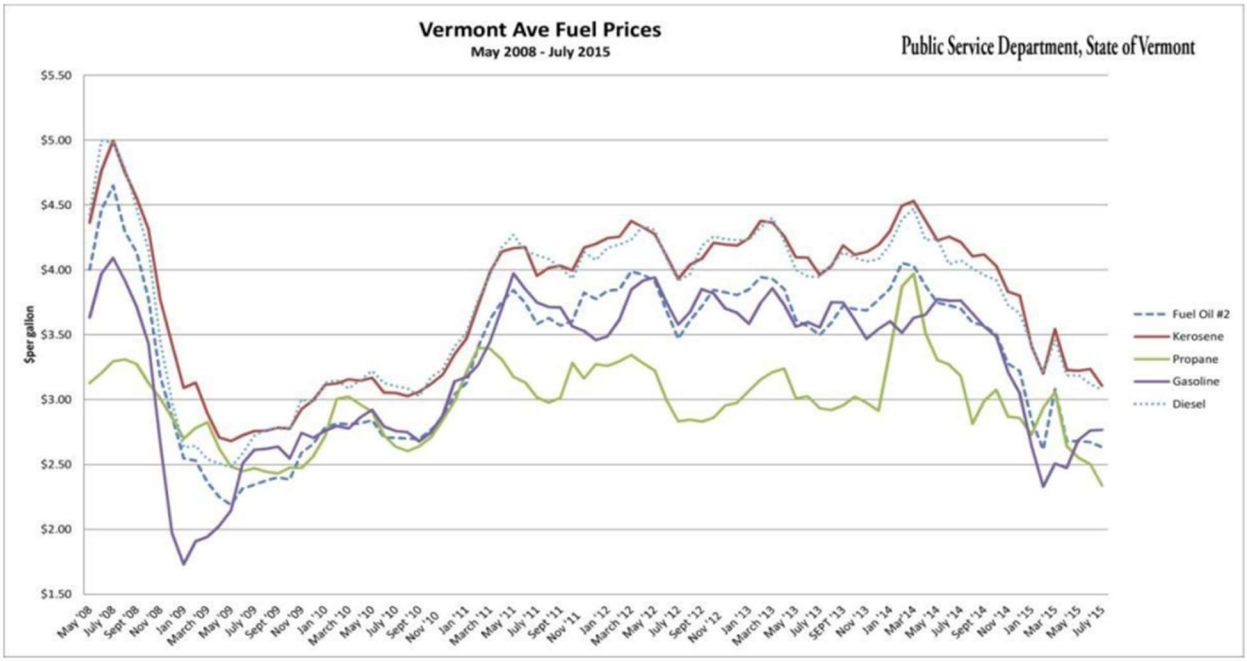
Thermal Use analysis

An estimate of somewhat current residential thermal energy demand in Ripton, based on data from the American Community Survey (2011-2015), is shown in Table 1. The data shows that the majority of residences in Ripton (59%) used wood as their primary heating source. Wood was followed by fuel oil (about 25% of households) and propane (about 16%)[1].

Table 1. Municipal Current Residential Thermal Energy Use

Fuel Source	Ripton Households (ACS 2011-2015)	Ripton % of Households	Ripton Residential Heating BTUs	Ripton BTU (in Billions)
Natural Gas	7	2.6%	13,272	1
Propane	36	13.3%	61,008	4
Electricity	0	0.0%	0	0
Fuel Oil	67	24.7%	115,254	7
Coal	0	0.0%	0	0
Wood	161	59.4%	274,452	16
Solar	0	0.0%	0	0
Other	0	0.0%	0	0
No Fuel	0	0.0%	0	0
Total	271	100.0%	n/a	28

Ripton's significant use of wood heat is something of an anomaly in the Region and is nearly twice as high as most towns. However, it is not surprising given Ripton's wooded, mountainous terrain. The following graph, Graph 1, compares the price trends of various fuels used by Ripton residents from May 2008 through July 2015.



Like the graph above, the table below lists the relative cost per million BTUs of heating fuels in Vermont as of January 2015 (November 2014 for natural gas and September 2014 for green wood and pellets).

[1] The survey shows that 2.6% of households' heat with natural gas. However, since that fuel source is not currently available in Ripton, we believe it may be an error in response and that those respondents likely heat with propane.

Comparing the Cost of Heating Fuels — Public Service Department, State of Vermont

Type of Energy	BTU/unit	Typ Effic	$/unit	$/MMBtu		High Efficiency	$/MMBtu
Fuel Oil, gallon	138,200	80%	$2.84	$25.73		95%	$21.67
Kerosene, gallon	136,600	80%	$3.41	$31.23			
Propane, gallon	91,600	80%	$2.73	$37.25		93%	$32.05
Natural Gas, therm	100,000	80%	$1.48	$18.55	*	95%	$15.62
Electricity, kWh (resistive heat)	3,412	100%	$0.15	$43.46			
Electricity, kWh (cold climate heat pump)	3,412		$0.15			240%	$18.32
Wood, cord (green)	22,000,000	60%	$ 227.14	$17.21	*		
Pellets, ton	16,400,000	80%	$294.00	$22.41	*		

* The natural gas price is based on the rate effective 11/1/14. *Wood green and Pellets updated 9/19/14.

Firewood is the least expensive fuel in Ripton. Firewood is renewable, arguably carbon neutral, and for Ripton, locally abundant. If harvested by the homeowner, the cost is even lower than the listed heating fuel cost. This means that Ripton residents on the whole spend considerably less to heat their homes than a lot of their neighbors. However, firewood is heavy to move and generates smoke and particulates to a

degree dependent on the age and efficiency of the wood stove and the quality of the firewood. For some, the effort and mess are unacceptable and/or unfeasible.

Both fuel oil and propane gas are fossil fuels. In order to meet State targets, their use will need to be largely eliminated by 2050. Simply making homes more thermally efficient by insulating and air-sealing reduces fossil fuel use, and improvements in technology can make fuels work more efficiently. However, a much more impactful solution is to replace fossil fuel sources with renewable fuel sources, such as electricity produced through renewable generation. The cost of the change, principally the capital investment in new equipment, and possibly the comparative price of the fuels used, constitute the major barriers to entry. While the Town of Ripton has little control over the cost of energy, it can and does work to encourage conservation, efficiency, and lower local generation costs.

As an example, in response to rapidly rising heating fuel prices in late 2008, several Ripton residents formed the Ripton Energy Assistance Program (REAP) to provide a range of heating fuels to income-qualifying Ripton residents at no cost. Partnering with HOPE (formerly ACCAG), REAP provides firewood and arrangements for fuel oil or propane delivery to several Ripton households annually. Ripton residents needing help with heating fuel may call HOPE at 388-3608.

Other services available promoting weatherization and efficiency include:

- The Champlain Valley Office of Economic Opportunity (CVOEO), which provides fuel assistance to income - qualified residents either on a seasonal basis (call CVOEO at 800-479-6151) or on a crisis basis (call CVOEO Addison Community Action at 388-2285). The CVOEO website, CVOEO.org, describes additional fuel assistance programs available to Vermont residents.
- Efficiency Vermont, the nation's only efficiency utility, has a number of programs to improve energy efficiency. It describes most on its informative homepage at Efficiencyvermont.com. Current programs, including energy audits, incentives for Home Performance with Energy Star, information on appliances and compact fluorescent and LED bulbs, building an Energy Star home, home heating help, rebate information, and Efficiency Vermont's reference library.
- Champlain Valley Weatherization Service, part of CVOEO, provides free weatherization services to income qualified Addison County households.
- Neighbor works of Western Vermont also offers audits and subsidized weatherization services through their HEAT squad program https://heatsquad.org/.

Vermont has residential energy construction standards. Officially called the "Residential Building Energy Standards" (RBES), the Residential Energy Code is a minimum standard of energy efficiency for all new residential construction in Vermont. The Vermont Residential Energy Code Handbook edition 4.1 March 1, 2015.

The REBS encompasses two requirements:

1. a technical requirement that includes minimum standards for energy-efficient building components and construction practices. And
2. a certification requirement for reporting compliance. Upon completion state law requires every Vermont builder to self-certify that the home complies with the Code as built. The builder must complete and sign a certificate and submit it to the Town Clerk for filing. This should be on record before the Zoning Administrator issues a Certificate of Occupancy.

The Zoning Administrator's duty to enforce the RBES also provides an opportunity for the Town to communicate with homeowners regarding energy programs and conservation opportunities.
Estimates for commercial and industrial thermal energy use are difficult to calculate. An estimate of total commercial energy use (thermal and electricity) is provided in Table 2 and based on data from the Vermont Department of Labor (VT DOL) and the Vermont Department of Public Service (VT DPS).

Table 2. Current Municipal Commercial Energy Use

Column1	Commercial Establishments in Municipality (VT DOL)	Estimated Thermal Energy BTUs per Commercial Establishment (in Billions) (VT Dept. of Public Service)	Estimated Thermal Energy BTUs by Commercial Establishments in Municipality (in Billions)
Municipal Commercial Energy Use	14[2]	1	10

As the table immediately above shows, Ripton has ~~a~~ very few commercial establishments. However, Green Mountain Power ("GMP") has efficiency incentives for businesses as well as homeowners. All businesses in Ripton are encouraged to speak with GMP about conducting an energy audit and determining improvements that may help them increase their efficiency to conserve the amount of energy they use for heating and other purposes.

Further analysis of electrical use depicted in Table 4, below, and discussed in the next Section, calculates that residential structures consume two and a half times as much electrical energy as the commercial entities within town. Accordingly, most of the thermal energy changes that will need to take place in Ripton to meet the targets will need to be done by individual homeowners.

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[2] In a GMP survey of Ripton customers, cited in the Section of this plan addressing Electric usage, GMP recorded 33 commercial enterprises versus the 14 cited by the Department of Labor. The Ripton Energy Committee expects this discrepancy may stem from home-based businesses and different meters belonging to a single entity. In any case, the vast majority of total electrical use in Ripton is still attributable to residential use. Further, we suspect the State estimate of commercial thermal energy above is an overestimate owing to the differential between State average and Ripton average commercial establishment size.

Thermal Targets

Thermal targets for Ripton include increasing weatherization of homes, an increase in new efficient wood heat systems and switching to efficient heat pump systems. See the tables below for target numbers to meet the 90 X 50 State goal with our chosen scenario.

TABLE 3A. Residential Thermal Efficiency Targets	2025	2035	2050
Residential - Increased Efficiency and Conservation (% of municipal households to be weatherized)	2%	9%	47%

TABLE 3B. Commercial Thermal Efficiency Targets	2025	2035	2050
Commercial - Increased Efficiency and Conservation (% of commercial establishments to be weatherized)	17%	18%	51%

Table 3C. Thermal Fuel Switching Targets (Residential and Commercial) - Wood Systems	2025	2035	2050
New Efficient Wood Heat Systems (in units)	1	2	11

Table 3D. Thermal Fuel Switching Targets (Residential and Commercial) - Heat Pumps	2025	2035	2050
New Heat Pumps (in units)	28	67	133

Targets have been established for each of four classes of change, based on improved efficiency and fuel switching. In order to hit these targets, Ripton property owners will need to make significant improvements to their homes and businesses. Approximately half of the houses and businesses in Ripton will need to be weatherized to conserve energy used to heat those spaces. Given the significant weatherization effort Ripton has already completed, Ripton may have an easier time reaching these targets than other communities. For instance, given the significant number of homes currently using wood as a heating source, the cost to invest in upgraded technology to burn that wood more efficiently is relatively modest. Lastly, nearly all of the houses currently heating with oil or propane (and some heating with wood) will need to switch to efficient electric heat pumps. Electricity currently plays an insignificant part in heating Ripton homes. A 2015 survey indicated only three homes owned a heat pump at that time, although 21 percent of respondents indicated a desire to own one. We have no more current reliable data but can assume many more have been installed since. Additionally, at least 13 residents have installed solar domestic hot water systems, and least three have opted for heat pump water heaters. At least one resident uses ground-source heat pump home heating.

Thermal Pathways to Implementation - Goals, Policies and Recommended Actions

Given the large changes that Ripton will need to effect to conserve energy and switch fuels in pursuit of its energy targets, Ripton adopts the following Goals, Policies and Recommended Actions for itself and its citizens.

Goal

A. Increase Ripton's thermal energy efficiency and self-sufficiency by reducing its energy use and reducing its carbon footprint to meet local and State targets of 90% renewable energy by 2050.

Policies and Recommended Actions

1. Promote thermal efficiency in Ripton's municipal buildings.
   a. Conduct further energy audits of all municipal buildings including the school, community house, fire station, and town offices to identify weatherization retrofits; incorporate the recommendations into the municipal capital budget.

2. Encourage and promote local and sustainably harvested wood and efficient wood heating.
a. Require outdoor wood boilers in Ripton to comply with state efficiency and emission standards b. Promote energy efficient wood stoves approved under current EPA standards.
3. Assure that no Ripton resident goes without heat.
a. Continue to support the REAP program.
4. Encourage Ripton residents to weatherize their homes and support that effort.
a. Coordinate with CVOEO, Neighbor works of Western Vermont, Efficiency Vermont, and other weatherization service providers to encourage Ripton residents to participate in weatherization programs.
5. Promote and encourage the retrofitting of existing homes with air-source or geothermal heat pumps.
6. Encourage proposed development to optimize design features and energy systems that conserve energy or use renewable sources.
a. Promote the installation of air source and geothermal heat pumps to reduce residential energy consumption and CO^2 production.
b. Promote the use of the residential and commercial building energy standards by asking the Zoning Administrator to distribute information about Vermont's Energy Codes to permit applicants, explain options for energy efficiency, and responsibly monitor compliance.

Section III. Electrical Use

Electrical Use Analysis

According to Green Mountain Power data from March 7, 2015, Ripton had 289 residences, 33 commercial sites and 10 streetlights serviced by the electrical grid. Ripton's average annual use of electricity over the five -year period from 2010 to 2014 was 2,675,478 kWh or an average of 222,952 kWh/month.

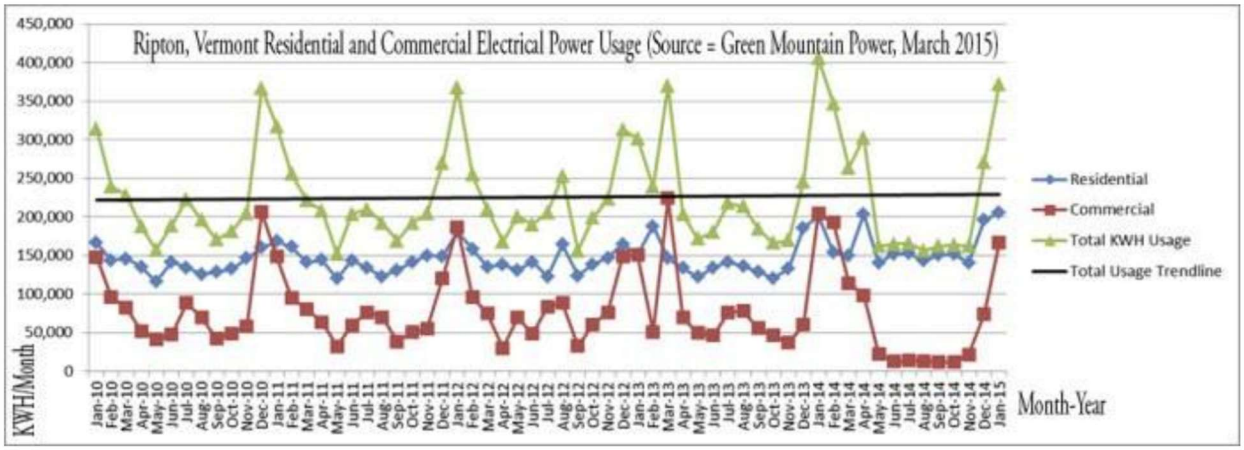
Analysis from VEIC contained in Table 4, shows a very similar total usage figure.

Table 4. Current Electricity Use - Town of Ripton

Sector		Current Electricity Use (Efficiency Vermont)
Residential (kWh)		1,790,604
Commercial and Industrial (kWh)		739,687
Total (kWh)	2,530,291	

In both cases, residential usage is more than twice that of commercial or industrial uses. The next graph shows Ripton's relatively stable yearly electrical consumption, which rises only slightly from January 2010 to January 2015. The red commercial plot in the second graph shows that beginning in the summer of 2014 there was a decline in summer usage, which is consistent with the installation of a 50 KW solar generator on the roof of the elementary school toward the end of the preceding year.

GRAPH 2



The Town of Ripton is already working to reduce its electrical consumption. It signed onto a municipal street lighting initiative offered by Efficiency Vermont in 2012. In July 2015 Green Mountain Power had replaced bulbs in nine of Ripton's ten streetlights with LED bulbs (One bulb had been converted previously). Efficiency Vermont covered the cost of the installation, noting that it will save 2,939 kWh and $400 per year.

Electrical Targets

As with the thermal targets noted in Section II above, Ripton will need to focus on efficiency and conservation to reduce the amount of electricity that it uses. Since electrical consumption by commercial entities is comparatively small, the process will require individuals to increase the efficiency of appliances, electrical fixtures, various motors, electronics, and lighting used in their homes.

However, even with significant efficiency steps taken by businesses and residents, Ripton's electrical usage will increase, principally because many of the new technologies needed to reduce fossil fuel consumption, primarily heat pumps and electric cars, involve fuel switching to electricity and so will increase Ripton's consumption. This means the strategies for thermal efficiency discussed in the previous Section will do additional duty here, reducing electrical loads for heating with heat pumps. It is worth noting that fuel switching to electricity serves to reduce greenhouse gasses only if the electricity comes from renewable sources.

Table 5A., below, illustrates the fact that Ripton must increase its efficiency and conservation by nearly 60% by 2050 to meet the proposed targets. Much of that change will be driven by technological improvements in household equipment like appliances, lighting, electronics, and "smart home" strategies, but these will have to be actively embraced by homeowners. Tables 5B. and 5C. indicate fuel switching to renewable electric sources for transportation and for heating will need to occur at rates between 80 and 90 percent by 2050. Table 5D. tells us that overall electrical consumption will double by 2025, and triple between 2025 and 2050 as fossil fuel use is retired. That is a six -fold increase in consumption from current levels and will require considerable additional generation.

Table 5A. Electricity Efficiency Targets	2025	2035	2050
Increase Efficiency and Conservation	10.80%	37.20%	59.20%

5B. Use of Renewables - Transportation	2025	2035	2050
Renewable Energy Use - Transportation	2.70%	18.20%	83.50%

5C. Use of Renewables - Heating	2025	2035	2050
Renewable Energy Use - Heating	47.30%	60.50%	88.00%

5D. Use of Renewables - Electricity	2025	2035	2050
Renewable Energy Use – Electricity (MWh/ann)	1424.5	2849.1	4316.8

Electrical Pathways to Implementation - Goals, Policies and Recommended Actions

Given the significant changes that residents and businesses will need to adopt to effect these changes, Ripton promotes the following Goals, Policies and Recommended Actions for itself and its citizens. Note that the policies and actions in the Sections addressing Thermal, Transportation, and Generation and Siting supporting fuel-switching and renewable generation are not duplicated here, though many are equally important to achieving these specific goals.

Goal

A. Reduce reliance on nonrenewable energy sources such as oil and gas, and shift reliance to renewable electrical generation sources, thereby reducing carbon and particulate emissions.

Policies and Recommended Actions

1. Support energy conservation efforts and the efficient use of energy by installing efficient electric equipment. a. Explore funding opportunities and implementation possibilities for upgrading the energy efficiency of all town buildings including the school, community house, fire station, and town offices.
    a. Discourage the use of "always-on" streetlamps and other outdoor lighting, as well as indoor lighting in public spaces.
    b. Support additional "energy challenge" style events and workshops for homeowners in partnership with organizations like VECAN and Efficiency Vermont.
2. Promote energy efficiency in all buildings, especially new ones.
    a. Promote improved compliance with the residential and commercial building energy standards by working closely with the Zoning Administrator and ensuring the distribution of code information to permit applicants.
    b. Incorporate EV ready standards into building code (beginning with changes as simple as installing a 220v outlet in garages).
    c. Consider requiring new construction to comply with the "stretch energy code".

(http://publicservice.vermont.gov/sites/dps/files/documents/Energy_Efficiency/code_update/2015%_20CBES%20Proposed%20Stretch_2015-2-3.pdf).

Section IV. Transportation Use

Transportation Use Analysis

Like most Vermonters, Ripton residents (98 percent of the time) drive themselves to work and to shop, rather than carpool or take the TVT bus. More than any other sector, the environmental impacts of Ripton's residential vehicle use demonstrate the scope of the change that will need to take place in Ripton to meet the State's energy goals. Transportation is particularly important for a hill town such as Ripton, given that its isolation means longer trips for commuting, shopping, and most other travel. Changing this paradigm will require a multi-pronged approach including a bit of social engineering, imaginative approaches to ridesharing and public transit as well as more mundane strategies like ensuring that residents continue to have an in-town option for purchasing basic necessities and fuel.

Based upon the number of registered vehicles in Ripton, assumed average vehicle miles traveled, gas mileage per vehicle and assumed gas prices at their current level, the table shows Ripton residents spend over $794,000 dollars per year on residential vehicle trips. While some money will go to local gas stations, the majority of the cost per gallon leaves the local economy. Reducing vehicle miles by transforming local infrastructure to provide for other choices than single family vehicles can aid conservation and efficiency savings for individuals. Converting to different, locally produced generation sources of energy for transportation could help reinvest some of that money locally. Table 6, below, depicts Ripton's fuel usage for passenger vehicles (It does not include heavy trucks or farm vehicles).

Table 6. Current Municipal Transportation Energy Use

Transportation Data	Municipal Data
Total # of Vehicles (ACS 2011-2015)	542
Average Miles per Vehicle (VTrans)	11,356
Total Miles Traveled	6,154,952
Realized MPG (2013 - VTrans 2015 Energy Profile)	18.6
Total Gallons Use per Year	330,911
Transportation BTUs (Billion)	40
Average Cost per Gallon of Gasoline (RPC)	2.40
Gasoline Cost per Year	$794,186

Dividing the number of vehicles by Ripton's 271 households (Census), reveals that, on average, Ripton's citizens have about two vehicles (cars, light trucks) per household. If we divide the $794,186 spent by the number of households, it shows the average household, with two vehicles, spends approximately $2,930 per year on gasoline alone. When one includes maintenance and depreciation, Triple A estimated that (in 2014) the cost per year of owning a single vehicle was nearly $9,000. Since the average household has two vehicles, that would be an average of $18,000 per household, per year. The nature of the markets for gasoline and diesel are volatile, and these numbers can change from year to year, but clearly the long-term trend is towards higher fuel pricing.

Given that vehicle expense is such a significant expenditure for most households, it stands to reason that consumers will choose what to drive based largely on expense, both initial purchase and operating expense, often with the former governing for households with limited resources and credit. Currently, electric vehicles (EVs) and hybrids as well (which provide a functional bridge to EVs) sell at a significant premium over conventional vehicles with internal combustion engines (ICEs). Operating expense for EVs is substantially lower than that for ICEs, however. Fuel expense is often half to a third of that of ICEs, and simpler mechanical design translates into less wear and repair expense. The higher initial purchase expense is due almost solely to battery cost. However, industry projections of rapidly decreasing battery pricing predict the differential to be erased by around 2025. At that point, EVs will have a clear price advantage owing to the operating expense side of the equation.

(https://data.bloomberglp.com/bnef/sites/14/2017/07/BNEF-Lithium-ion battery-costs-and-market.pdf)

The other significant impediment to consumer acceptance is so-called "range anxiety". Current EVs typically have ranges of some fraction of 100 miles to well in excess of 200 miles, after which they require battery recharging. Depending on the vehicle and the charging station's technology, and the degree of charging required, this can take up to 12 hours, which is vastly different from the five minutes it can take to fill a gas tank. Additionally, larger batteries for increased range and faster charging options can add significantly to the initial vehicle expense. However, the cost of these options is decreasing with the battery cost curve.

To date, a significant federal tax credit of up to $7500, and various smaller incentives at the state level have helped to drive consumer demand.

At the town level there is little to be done to affect the economics of EVs other than to support state and federal level programs of incentives. There is, however, much that can be done to educate residents and businesses to EVs' advantages, and to support and promote the installation of charging infrastructure. With that in mind, we propose the following targets and pathways.

Transportation Targets

Table 7A. Transportation Fuel Switching Target - Electric Vehicles	2025	2035	2050
Electric Vehicles	48	324	632

7B. Transportation Fuel Switching Target - Biodiesel Vehicles	2025	2035	2050
Biodiesel Vehicles	10	18	25

As the Tables show, to meet the proposed targets by 2050, assuming growth, nearly all personal vehicles in Ripton will need to run on renewably generated electricity. Additionally, most commercial vehicles and what farm equipment there is will need to switch from diesel to bio-diesel.
Transportation Pathways to Implementation - Goals, Policies and Recommended Actions

Given the significant changes that Ripton will need to make to meet transportation targets, Ripton promotes the following Goals, Policies and Recommended Actions for itself and its citizens.

Goal

A. Reduce reliance on nonrenewable fossil fuels, and shift reliance to renewable energy sources.

Policy and Recommended Actions

1. Create infrastructure supporting electric vehicles within Ripton.
    a. Plan for and install electric vehicle charging infrastructure on municipal property.
    b. Incorporate EV ready standards into building code. (This can be as simple as requiring 220v outlets in garages)
    c. Encourage Middlebury College, as well as other major employers in the region, to install (additional) EV charging stations for employees.

Goal

B. Maintain or reduce vehicle miles traveled per capita to 2011 levels by reducing the amount of single occupancy vehicle (SOV) commute trips.

Policies and Recommended Actions

1. Support regional efforts to increase access to safe everyday walking and cycling within and across municipal borders.
    a. Review municipal road standards to ensure that they reflect all "complete streets" principles applicable to our rural roads.
    b. Provide walking and biking paths in and between the village and elementary school areas.
    c. Explore the possibility of a pedestrian crosswalk across Rte. 125 in the village area, and additional traffic calming approaches.
    d. Nominate a Ripton representative to sit on the Walk-Bike Council of Addison County to foster safe and accessible opportunities for walking and cycling as an alternative SOV.
2. Support state and regional public transportation programs serving Ripton and ask major employers to promote energy efficient commuting.
    a. Work with TVT to explore creative approaches to service for Ripton, including small capacity ride -share, ZipCar style micro-lease, and even self-driving EVs for a connecting service between the village and the Rt. 7 corridor.
    b. Explore the possibility of seating a Ripton representative on the VT Board to bring issues facing smaller, more isolated towns to the table.
    c. Support use of a Park and Ride in Ripton at the town offices or at the school and encourage Ripton residents to consider ride-sharing programs.
3. Support improvement of high-speed Internet access in town and encourage telecommuting.

Section V. Land Uses, including Generation and Transmission

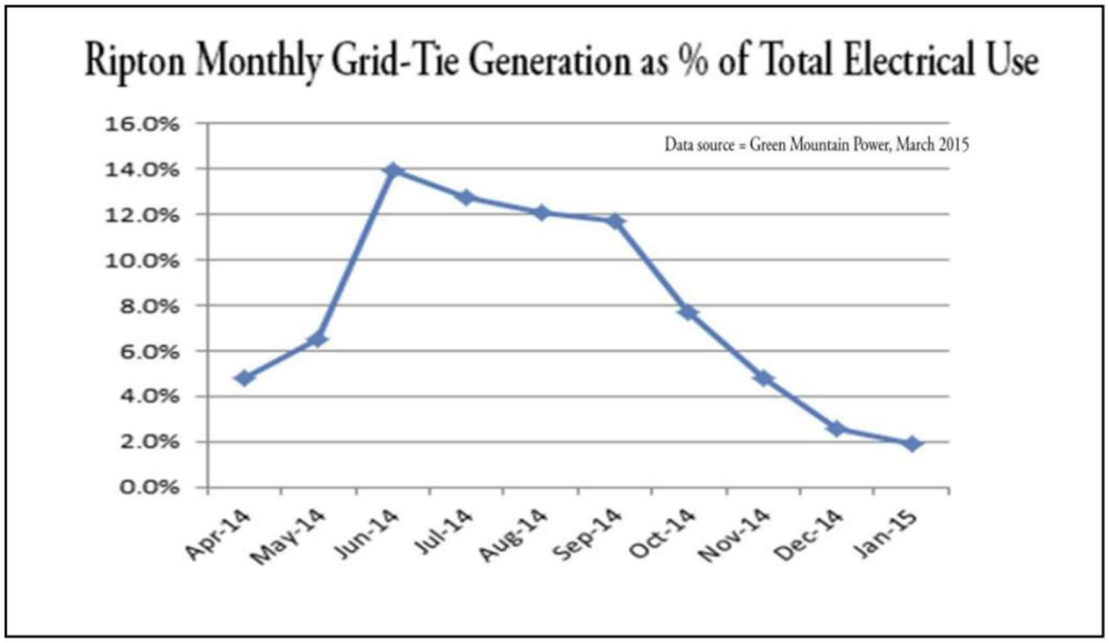
Land Use, Generation and Transmission Analysis

Ripton is a largely rural, densely forested town with some density of year-round homes located in or near its historic village. Because of its existing settlement patterns and lack of commercial and industrial facilities, Ripton residents are more dependent on their cars and light trucks, and the energy they use, than many Vermont towns. While Ripton undeniably will remain essentially rural, it can adopt land use policies that promote more transportation alternatives within the village and school areas, potentially saving some energy and promoting healthier options like walking and biking. Therefore, the Land Use Section of this Plan promotes greater density and housing options in Ripton's Neighborhood Commercial, High Density and Medium Density Residential Land Use Areas. It also promotes activities that allow Ripton's residents to reduce their trips to Middlebury or other communities, for work, or for general shopping needs. These include supporting the Ripton Village General store, allowing accessory and

home-based businesses, and supporting the buildout of telecommunications infrastructure throughout town. Other Land Use policies to limit energy use are listed in the Policy Section below.

Current Energy Generation

Ripton's energy supply is largely consistent with statewide patterns. Ripton does have a number of alternative energy installations that tap local energy resources. A growing number of homes have photovoltaic systems that supply at least a portion of their electrical energy. Thanks to Vermont's net-metering law, owners of these systems can sell excess power to the grid at a premium rate during periods of high solar production, and purchase grid power when needed, with accounting averaged and netted over the year up to a net zero bill. Thus, the grid serves as a kind of credit storage system for solar-produced electrical energy. The significance of this can be illustrated by the following graph of PV production for 10 months in 2014:



This graphic shows the total grid-tied PV production for the town as a fraction of Ripton's total electricity consumption for the period. It was created for the first season after the installation of the town's largest array to date. (In 2013 Ripton Elementary School installed a town-owned 198-panel 50 kW photovoltaic system on the Ripton Elementary School. In its first year the PV system produced 3/4 of the school's energy, precisely as planned, and avoided energy costs covered annual bond capital and interest for the project by year two.) The graph also illustrates the great variation of PV production by season, and by extension the importance of storage technology as we continue to build out renewables.

In the last four years, Ripton's solar PV installations have grown from 19 to 27, and the corresponding production from 173 MWh to 243 MWh according to the Vermont Energy Atlas.

Table 8 depicts Ripton's existing generation 14 resources as of mid 2019.

Table 8. Existing Generation Sites in Ripton thru 8/19			
Source	**Sites**	**Generation* (in MW)**	**Est. Actual Generation (in MWh/year)**
Solar	27	0.199	243.46
Wind	1	0.010	3.07
Hydro	0	0.000	0.00
Biomass	0	0.000	0.00
Other	0	0.000	0.00
Total	28	0.219	246.53

**Nominal (nameplate) generation*

The above table almost certainly omits off-grid power generation. While this is difficult to quantify, we note that Ripton has at least five households generating with PV arrays off-grid. At least one generates with wind, using a nominal 10kW turbine, the inclusion of which would double the wind generation indicated in the table above.

Ripton supports renewable energy generation installations sized, sited and constructed pursuant to the community Siting Standards contained later in this section. Ripton believes the best commercial/industrial solar sites in town would be in the areas Ripton has specified as preferred elsewhere in this document.

Generation Potential by Type

Solar Energy

Globally, the sun supplies energy to Earth at some 10,000 times the rate at which humankind currently uses energy. However, this energy is not distributed equally, and Ripton's location and climate mean our share of solar energy is less than the continental U.S. average, and considerably lower in the winter than summer. However, the average monthly solar energy available to a fixed solar array tilted optimally for its latitude in Ripton is still over 70% of that for its equivalent in Albuquerque, New Mexico—an excellent place for solar energy-- according to NASA data available at https://eosweb.larc.nasa.gov. Interestingly, the same data source indicates that Ripton is no worse and may actually be a better location than the adjacent valley for PV solar.

Ripton's total electrical energy consumption currently stands at approximately 211,000 kWh per month (2.530 GWh per year), according to VEIC estimates (Table 4, p.8) This means that Ripton could meet its total current electrical energy demand with solar energy, using cumulative generation and usage averaged over the year, with a single nominal 2MW PV array on around 24 acres of the town's 13,952 acres. However, as indicated in Table 5D, p.9, and again in Table 11, p.22, the scenario contemplated in this plan proposes a roughly 71% increase in electrical consumption and corresponding renewable generation from the present to 2050. This implies that the equivalent land requirement might be in the neighborhood of 40 acres (for a fixed array or arrays, using current PV design and technology). In other words, this rough calculation for total acreage of photovoltaics to cover the entire projected electricity use of Ripton represents less than one-third of one percent of Ripton's land area. Even less would be necessary, if any wind and/or hydro generation made a contribution. In any case, it's clear that the solar resource in Ripton is more than adequate for our current energy needs and can play a significant role in Ripton's future energy demand. However, solar power cannot provide baseload. The intermittent and seasonally variable nature of solar PV generation mean that without significant advances in the technology and economics of

energy storage, it cannot provide consistent, reliable power. The diminished production of PV in winter months, coupled with peak winter heating demands (with electric heat pumps) makes this problem particularly acute.

Solar energy facilities ranging from 150 kW to 5MW are being constructed in neighboring Addison County towns with varying visual and other impacts. Recent GMP flagged projects at the top of that range are well sited with minimal negative impacts. They also incorporate battery storage with large lithium-ion battery banks. Since the electric grid must reliably provide power to customers twenty-four hours a day, seven days a week, three hundred and sixty-five days a year (24/7/365), local solar generation—an intermittent energy source—cannot do the job alone. The electric utility must design and manage the grid for resilience. If that design properly accommodates renewable distributed generation inputs by blending it with baseload generation and if the transmission grid itself is 100% reliable, then the system is resilient, and the grid itself can be said to provide a kind of storage. However, it appears that we are in a long-term trend of increasingly intense weather events that damage the rather vulnerable transmission infrastructure, causing longer and more frequent outages, so the transmission side of this model fails. Another way to create resilience is with local energy storage, creating "micro-grids" and "islanding". An additional advantage of this local storage approach is that it can be used for regular "peak shaving" which tends to save electric utilities and ratepayers from the high cost of peak load generation, which tends to be expensive not only in dollars but in negative impacts, as peak load generation often comes from fossil fuel power plants.

Ripton residents are acutely aware of the fragility of the transmission infrastructure. Connection to the larger grid is made via only two transmission paths, which traverse heavily wooded areas and sometimes afford difficult access for repair. Frequent outages, often of long duration, take their toll in many ways. This would seem to make Ripton a good candidate for the microgrid/islanding approach. There may even be an option for energy storage without batteries; Ripton's ample supply of water, and significant elevation changes may afford an opportunity for pumped water energy storage.
Ripton supports renewable energy generation installations sized, sited, and constructed pursuant to the community Siting Standards contained later in this section. Ripton believes the best commercial/industrial solar sites in town would be in the areas Ripton has specified, which include several locations created by clearing areas within the extensive red pine plantations scattered throughout Ripton. (See more regarding these areas in the description of EP-Map 5)

Biomass

Tree leaves act as solar collectors, storing solar energy through the process of photosynthesis. Vermont's large areas of forest make for a substantial rate of solar energy storage in the form of tree biomass. Although the efficiency is low, that biomass can be burned for heat or to generate electricity. Many homes in Ripton use wood either as the primary heating fuel or to supplement another heat source, usually oil but sometimes solar or geothermal. As Table 1 shows, about 59% of Ripton's households burn wood for heat, generating approximately 16 billion BTUs. Burning wood for heat in Ripton makes a significant dent in the town's oil consumption.

Addison County and Middlebury College foresters agree that each acre of Addison County Forest could sustainably yield about one-third of a cord of firewood each year. Given that about 94% of Ripton is generally wooded, if we assume that 3,000 acres (15%) of Ripton's approximately 19,855 un-conserved forested acres were sustainably harvested for firewood, that would yield nearly 1,000 cords per year, a little more than 3.7 cords per household.

Accordingly, Ripton supports the use of biomass for residential and small commercial heating applications within town, and renewable biodiesel as an alternative to diesel fuel. As a cautionary note,

widespread use of wood and other biomass materials as a heat-producing or energy producing fuel might result in unacceptable levels of air-born particulates and other forms of air pollution. Therefore, while supportive, Ripton should consider biomass in the context of public health impacts in addition to whether supplies are truly sustainable to meet demands for renewable heating energy. Note that Ripton supports the use of EPA approved wood heating devices, which minimize the amount of smoke and particulates the devices produce.

Wind

Mapping of New England wind resources by the National Renewable Energy Laboratory (TrueWind Solutions, "Wind Energy Resource Map of New England," available through Massachusetts Technology Collaborative and incorporated into this plan in EP-Map 6b) indicates that most of Ripton has average winds in the Class 1 and 2 categories, which are unsuitable for commercial-scale wind power.

In Ripton, only the iconic highest ridgeline of the Green Mountains falls in Class 6 and Class 7. However, these areas are completely within a federally designated Wilderness Area (a Known Constraint) that harbors rare alpine flora, and therefore cannot be developed. Outside of that area, there are a few spots at lower elevation that fall in Classes 4 and 5, which might be suitable for larger-scale wind installations. These areas, indicated in EP-Maps 6a and 6b, highlight locations that may have potential for community scale projects. Most of Ripton, in wind zones I through 3, arguably is capable of producing wind energy at the smaller scales of individual or multiple home wind turbines, and there are existing wind installations in town (See the section "Alternative Energy in Ripton" below). However, experience has proven that, at the present time, the economics of these installations are significantly less attractive than those of solar PV.

With these caveats, Ripton supports residential and community scale wind projects that meet its siting standards contained later in this chapter. Industrial Wind projects, which have towers over 200 feet or generate over 1 MW of power, are prohibited in the Town of Ripton.

Geothermal Energy

Energy trickles from Earth's interior to the surface at a modest average rate of about 350 watts per acre, far less than the solar input. For the Region, far from major geological activity, that number is almost certainly significantly lower. In addition, solar energy warms the Earth, especially in the summer, and some of that energy is stored as heat in the upper layers of soil and rock. Year-round, soil temperatures just a few yards deep in Vermont average around 45˚F to 50˚F year-round. Unlike the case in seismically active areas like Iceland or even Yellowstone in Wyoming, this temperature is too low for direct (conductive) heating. It can, however, help with summer cooling, and there are simple designs to affect that, with, for instance, fan-driven air circulation through buried outside duct pipes, or attic and whole house fans pulling cooler air up from basement spaces.

Latent Heat-The Special Case of Heat Pumps

Air to Air cold climate heat pumps are becoming quite popular in the Region, and for good reason. They are actually able to make more energy available for heating and cooling than they consume; they perform this quasi-magical feat in the same way that an ordinary refrigerator does, by using an energy source called the latent heat of vaporization and the latent heat of condensation of a chemical refrigerant. In reality, they do not create or harvest heat so much as move it from one space to another. A refrigerator removes heat from its inside to its outside using an evaporator on the inside, converting the refrigerant to a gas, and a condenser on its outside turning the refrigerant from a gas back to a liquid. The evaporation phase absorbs heat from its surroundings and the condensation phase releases heat to its surroundings. In the case of a cold climate heat pump in heating mode, the condenser is inside, and the evaporator is outside, so heat is removed from the air outside and delivered to the air inside. It can also perform as an extremely efficient air conditioner, evaporating refrigerant in the interior and condensing it on the outside.

Cold climate heat pumps generally available for residential use tend to be economic down to around 12-15 degrees below 0° F using common refrigerants, so a secondary heating system is required for very cold periods. That may be a fossil fuel fired system, wood heat, or electric resistance heat, though widespread use of the latter can cause winter peak generation issues for electric utilities. Special air to air heat pumps using CO2 as a refrigerant are usable down to around -30°F but are not effective in reverse mode as air conditioners.

Distinct from air-to-air heat pumps, so called geothermal heat pumps can be more accurately referred to as ground source heat pumps. Rather than moving heat to or from outside air, they exchange heat with the ground or groundwater. There exist a wide variety of design types, including direct-coupled, closed loop and open loop. Open loop systems, which generally use an "open loop" of pumped groundwater to exchange heat with the refrigerant loop are most popular in the Northeast because of the relatively high availability of groundwater. The economics of this kind of system are best with relatively shallow and high flow drilled wells; they often can utilize a building's potable water well meeting those conditions. The initial cost of these types of systems is higher than other HVAC systems, and they are best suited to new construction. On the other hand, they are typically more efficient than even air to air systems because the temperature differential between the inside and the ground or groundwater is significantly less than the differential for air-to-air systems. The payback is generally well under a decade. To date, only one property owner in Ripton has installed a ground source heat pump system, but that number may well grow.

It is worth noting that all heat pumps, like refrigerators and older air conditioning systems, use refrigerants, a class of chemicals with very potent global warming and ozone-depleting potential. Ripton strongly supports responsible management of these devices by qualified personnel and policies that promote careful dispensing, disposal, sequestration and/or recycling of these compounds.

Hydropower

Ripton possesses limited hydro resources. It has no existing facilities. However, members of the Energy Committee have discussed integrating the installation of a run of river hydropower penstock buried in the Route125 corridor in coordination with roadway repair in a future flooding disaster recovery. Such an installation might be designed to confer some flood resilience as well as produce baseload power. Additionally, some residents continue to explore the possibility of "micro-hydro", which may hold some promise for residential power generation.

Energy Storage

Should Ripton permit commercial or industrial scale generation in its jurisdiction, it should negotiate to include some type of energy storage facility to supplement the power generated to improve its short-term resilience. Green Mountain Power has already partnered with one other town in the region to construct such a "micro-grid". Additionally, residential battery storage is decreasing in price, is commercially available to support homeowners and may work well with generation assets.

Mapping Renewable Generation Potential

As part of the mapping exercise described below, ACRPC created maps of places where resources were available to generate renewable generation resources within the Town of Ripton. The first map, EP-Map 1, "Known Constraints" within this plan on page 27 depicts natural resource layers that will preclude renewable energy development. These "Known Constraints" depict places where because of the natural resources located in the area it would be prohibitive to secure a permit for energy development. EP-Map 2, entitled "Possible Constraints" depicts places where natural resources exist, but may not prohibit development. Forest blocks would be an example of a possible constraint. The forest resource in Ripton is extensive, but it will not necessarily preclude wind or solar development. EP-Map 3 depicts the current

transmission and distribution grid within the Town of Ripton. Construction of new transmission facilities to support renewable energy generation can be a substantial cost driver for the total cost of the power the facility will generate. Knowing what infrastructure is available and where is an important planning component for renewable power development.
Maps that follow show where solar resources, wind resources and biomass resources exist in quantities that might support generation. EP-Map 4, shows biomass resources as identified by mapping commissioned by the State. EP-Map 5, depicts solar resources as identified by State mapping and also Ripton's preferred sites (in violet). EP-Map 6a, depicts wind resources as identified by State mapping and a few sites identified by the Ripton Energy Committee as possibly viable for future Community Wind sites. While EP-Map 6a indicates where some wind resource exists, this is a baseline resource, not necessarily the "best" resource in the area; it indicates where the wind blows at the minimum velocity necessary to support wind power. Accordingly, we have added the more useful wind resource mapping from TrueWind Solutions on EP-Map 6b, which also shows those same few sites identified by the Energy Committee as potentially viable Community Wind sites sometime in the future.

The constraints and resources depicted in these maps are planning tools only and may not precisely indicate locations where siting a facility is acceptable. When proposing a generation facility, applicants must verify the presence or absence of the natural resources and other specific characteristics of the site as a part of the application. As noted in the wind discussion above, while many places may meet the minimum criteria for wind development, the best areas for wind development in Ripton would be the few rated as zone 4 through 7.

As noted previously, Ripton has also identified preferred areas for community scale (group net-metered) solar as well as possible sites for community-scale wind and, with the assistance of ACRPC, located those to provide further development guidance to applicants. Preferred solar sites comprise locations that members of Ripton's Energy Committee have identified as "preferred" for development. With this designation, Ripton intends to enable solar development for net metered systems consistent with the definition of "Preferred Site" contained within Rule 5.100, Section 5.103 (7), of the Public Utilities Commission's Rules governing net-metered solar systems. As a rule, the areas identified comply with the siting conditions enumerated elsewhere in this document. Generally, these locations represent areas that are not currently forested and not highly visible. Additionally, some fall within Red Pine plantations, an artifact of depression-era forest policy, which can reasonably be considered monocultures with less value as natural resources than other forested tracts. More importantly, they are threatened by the invasive Red Pine Scale, and harvest soon appears to be the only way to salvage their value and avoid the creation of dead expanses with elevated fire potential. Most of these plantations fall within Green Mountain National Forest territory, so cooperation of the USFS would be essential.
Possible Wind locations are four locations that are conceivable community scale wind locations, imposed on both the resource map from the State Energy Planning Guidelines (EP-Map 6a), and also over a basemap of 50m wind zone ratings for Ripton (EP-Map 6b), according to data and mapping from VCGI, ANR, and the Massachusetts Technology Collaborative. These are virtually the only significant locations in Ripton that have wind class ratings as high as 4 and 5 and are not in designated Wilderness, and thus present the best options for development. However, it is likely none of these are economically attractive at present due to distance from transmission lines. Accordingly, while Ripton notes them as "possible" sites, they do not constitute "preferred" sites within the community at this time.

Mapping Methodology

Spatial data showing the location of potential energy resources (solar, wind, hydro, and biomass) formed the basis of the maps developed by ACRPC. "Known" and "possible" constraints were subsequently identified on the maps. Known constraints are conservation resources that shall be protected from all future development of renewable generation facilities. Possible constraints are conservation resources that

shall be protected, to some extent, from the development of renewable generation facilities. The presence of possible constraints on land does not necessarily impede the siting of renewable generation facilities on a site. Siting in these locations could occur if impacts to the affected possible constraints are mitigated, preferably on-site. A full list of known and possible constraints included on the maps is located in Table 9. The known constraints and possible constraints used to create the maps include constraints that are required per the State Determination Standards from the Department of Public Service.

Table 9 – Mapping Constraints		
Solar, Wind and Biomass Maps - Known Constraints		
Constraint	**Description**	**Source**
Confirmed and unconfirmed vernal pools	There is a 600-foot buffer around confirmed or unconfirmed vernal pools.	ANR
State Significant Natural Communities and Rare, Threatened, and Endangered Species	Rankings S1 through S3 were used as constraints. These include all of the rare and uncommon rankings within the file. For more information on the specific rankings, explore the methodology for the shapefile.	VCGI
DEC River corridors	Only mapped River Corridors were depicted.	ANR
National Wilderness Areas		VCGI
FEMA Floodways		VCGI/ACRPC
Class 1 and Class 2 Wetlands	**Vermont State Wetlands Inventory (VSWI) and advisory layers from site specific work collected by the municipality**	VCGI
Solar, Wind and Biomass Maps - Possible Constraints		
Constraint	**Description**	**Source**
Protected lands	This constraint includes public lands held by agencies with conservation or natural resource oriented missions, municipal natural resource holdings (ex. Town forests), public boating and fishing access areas, public and private educational institution holdings with natural resource uses and protections, publicly owned rights on private lands, parcels owned in fee by non-profit organizations dedicated to conserving land or resources, and private parcels with conservation easements held by non-profit organizations.	VCGI
Deer wintering areas	Deer wintering habitat as identified by the Vermont Agency of Natural Resources.	ANR
Hydric soils	Hydric soils as identified by the US Department of Agriculture.	VCGI
Agricultural soils	Local, statewide, and prime agricultural soils are considered.	VCGI
Act 250 Agricultural Soil Mitigation Areas	Sites conserved as a condition of an Act 250 permit.	ANR
FEMA Flood Insurance Rate Map (FIRM) special flood hazard areas	Special flood hazard areas as digitized by the ACRPC were used (just the 100-year flood plain -500-year floodplain not mapped). The inclusion of this resource as a regional constraint is consistent with goals and policies of the Addison County Regional Plan.	ACRPC

Table 9 continued

Vermont Conservation Design Highest Priority Forest Blocks	The lands and waters identified here are the areas of the state that are of highest priority for maintaining ecological integrity. Together, these lands comprise a connected landscape of large and intact forested habitat, healthy aquatic and riparian systems, and a full range of physical features (bedrock, soils, elevation, slope, and aspect) on which plant and animal natural communities depend. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Addison County Regional Plan. (Source: ANR)	ANR

At the end of the mapping exercise, ACRPC calculated the amount of energy generation possible from renewable resources in Ripton based on the State resource mapping and some assumed values for the amount of land it would take to produce specified amounts of solar and wind energy. The results of this analysis are depicted in Table 10, Renewable Generation Potential.[3] As the table demonstrates, the amount of renewable generation potential is substantial, especially when compared to the amount of generation that currently exists in Ripton, contained in Table 8.

Table 10. Renewable Generation Potential in Municipality		
Source	**Generation Potential (in MW) ***	**Est. Actual Generation Potential (in MWh)**
Rooftop Solar	0.47	573
Ground-mounted Solar	828.00	1,015,459
Wind	7683.25	23,556,845
Hydro	0.01	28
Biomass and Methane	0.00	0
Other	0.00	0
Total	8511.73	24,572,905

**Nominal (nameplate) generation*

Renewable Generation Targets

As part of the same exercise, DPS also provided renewable generation targets that all municipalities would need to meet in the context of the State goal of producing half of its energy within the State. Those goals for Ripton, shown in Table 11, below, are based upon a combination of Ripton's population (Correlated to its potential use) and to the number of potential resources available in Ripton.
When one compares the renewable generation targets in Table 11 with the renewable generation potential in Table 10, it is clear that Ripton's resource potential dwarfs its generation goals.3

[3] The wind potential indicated in this table makes the methodology questionable. Perhaps the process failed to exclude the Federal Wilderness Area which encompasses most of the acreage of high wind potential. Also, although the generation potential of wind indicated exceeds the modeled 2050 Ripton energy usage to meet the 90 x 50 targets by a factor of close to 1500:1, the exploitation of that potential would be diseconomies and aesthetically problematic.

Table 11. Renewable Generation Targets	**2025**	**2035**	**2050**
Total Renewable Generation Target (in MWh)	1424.5	2849.1	4316.8

Since Ripton has the luxury of having significantly more area for generation potential than it needs to meet its goals, Ripton has chosen to use the following community land use standards to help guide energy projects to locate in areas it deems preferred or acceptable and to prohibit them in other areas.

Community Standards for Siting Energy Projects

Purpose

The purpose of these standards is to promote and guide the development and use of renewable solar photovoltaic (PV), solar hydronic, and wind energy resources and infrastructure in Ripton, while preserving the character of the Town.

Solar PV, solar hydronic, and wind energy resources should be developed in an organized manner and conform to this Town Plan.

Goals

- Encourage the use of renewable solar and wind energy in Ripton.
- Develop Ripton's residential, commercial, and public solar and wind power generation and related infrastructure consistent with Ripton's Town Plan.
- Promote a good neighbor policy in siting solar and wind power infrastructure.
- Avoid or minimize the negative impacts of solar and wind power generation and related infrastructure on the scenic and historic character of the Town, and the Town's natural resources.
- Identify preferred locations for potential medium and large-scale commercial, community and public solar and possible locations for community scale wind installations in Ripton.

1. General Solar Siting Standards

The Town of Ripton will support the following types of solar projects that conform to the provisions of these solar PV & solar hydronic siting standards.

- Resident-owned or leased residential hydronic solar systems.
- Resident-owned or leased off-grid or net-metered residential photovoltaic systems not exceeding 15 kW that supply a single residence.
- Privately owned residential scale photovoltaic systems not exceeding 15 kW and hydronic solar arrays, if either is installed as part of an "energy purchase plan".
- Net-metered solar arrays on commonly owned or leased land by Limited Liability Corporations that allow residents to pool resources and share energy production.
- Resident-owned or leased, off-grid and/or group net-metered residential photovoltaic systems not exceeding 30 KW that supply a small number of adjacent residences.
- Commercial scale photovoltaic systems (defined as systems exceeding 30 KW but not so great that the anticipated aggregated real generation of all electric power facilities in the town exceeds the anticipated consumption of Ripton's user base) located outside the Historic and High-Density Residential Districts.

2. Specific Solar Siting Standards

The Town of Ripton will support solar energy facilities that comply with the following criteria:

- A solar system collector may be mounted on the rooftop of a conforming structure provided that it does not extend more than ten feet above the high point of the roofline.
- All roof and ground mounted solar energy facilities should meet the same setback and height restrictions as any building or facility within the land use district in which they are located. With

the exception of transmission and distribution lines, ground-mounted solar energy facilities that are not attached to existing or permitted structures may be located in Special Flood Hazard Areas (SFHAs), including floodways and floodway fringes identified on Flood Insurance Rate Maps (FIRMs) for the town, only if they meet minimum National Flood Insurance Program (NFIP) requirements.

- Ground-mounted solar facilities should not be located in fluvial erosion hazard areas as identified on Ripton Fluvial Erosion Hazard (FEH) maps adopted as part of Ripton's Unified Development Bylaw.
- A ground-mounted solar energy facility should not be located on steep slopes with natural (pre-development) grades in excess of 25 percent unless an engineering study is done to show that the installation can be safely and securely supported throughout the expected life of the facility.
- The setback for a ground-mounted solar energy facility from surface waters and class 2 wetlands should be at least 50 feet, and 100 feet from Class 1 wetlands.
- The setback from significant wildlife habitat, as identified in the ANR Atlas, for a ground-mounted solar energy facility and the supporting infrastructure (including roads, accessory structures, etc.) should be at least 50 feet.
- Installation of any solar energy facilities within the Historic District of Ripton should be located on an existing structure so as to be out-of-view from Route 125, or, if ground-mounted, should be screened with coniferous trees planted and maintained so as to keep the facility out-of-view from Route 125.
- Except for resident-owned or leased arrays of 15kW or less, solar energy facilities located in Ripton outside of the Historic District should not be visible from traffic on the Route 125 Vermont Scenic Byway.

3. Siting of Solar Arrays for Aesthetic Compliance

- Solar structures should be located on the site, so they do not appear above the horizon from public thoroughfares.
- Where solar panels may be seen by neighbors and the public, they should be arranged compactly, keeping the project as low as possible on the landscape.
- Where practical, solar installations should use existing topography, development, or vegetation on the site to screen and minimize visual impacts.
- Where existing elements do not provide screening, landscaping, plantings and/or fencing should be used to mitigate adverse effects as noted in 4. (Solar Siting) below.

4. Solar Siting-Adverse Effects

- Minimal Adverse Effects: When less than 20 degrees of a neighbor's view from his/her primary residence is occupied by a proposed solar project, and the project does not substantially obstruct the neighbor's vista, the visual impact shall be considered to be minimal, and screening may be recommended but not required.
- Moderate Adverse Effects: When 20 to 25 degrees of a neighbor's view from his/her primary residence is occupied by a proposed solar project, the effects are considered to be moderate. If the neighbor requests concealment, screening will be required, provided that the act of screening does not prohibit installation of the solar facility.
- Significant or Undue Adverse Effects: When greater than 25 degrees of a neighbor's view from his/her primary residence is occupied by a proposed solar project and the neighbor expresses an objection, the effects are considered to be significantly or unduly adverse, and the Ripton Planning Commission will recommend against a proposed grid-tied project to the Public Service

Board. If the project is not grid-tied the Planning Commission will not approve the project. Siting standards, policies, screening, and other requirements specified in this document shall be reflected in the Planning Commission's review of a proposed project for submission to the Vermont Public Utilities Commission for its consideration of a Certificate of Public Good.

5. General Wind Siting Standards

The Town of Ripton will support wind projects that conform to the provisions of these siting standards:

- Residential Scale Wind consists of a single tower less than 120 feet high generating less than 15kW of energy, located on an individual residential property.
- Community Scale Wind consists of 1 or more towers all less than 200 feet high (so as not to require night lighting) and producing less than 1 MW of electricity.
- Industrial Scale Wind consists of wind projects with a total capacity of greater than 1MW or with a tower or towers taller than 200 feet or requiring night lighting for any reason.

6. Specific Wind Siting Standards

- Residential Wind projects shall follow the guidelines in this publication of the PSD for small turbines and using the scoring system therein, be reasonably construed to score below the "significant" zone.

  http://publicservice.vermont.gov/sites/dps/files/documents/Renewable_Energy/Resources/Wind/psb_wind_siting_handbook.pdf

- Commercial or Community Scale Wind projects:
  - Shall not exceed 200 feet in height, excepting movable blades.
  - Shall not be visible from traffic on the Route 125 Scenic Byway, excepting portions of movable blades above the hub.
  - Shall present no part visible to the naked eye above the horizon from any viewpoint in any municipality to the east or west of Ripton, excepting portions of movable blades above the hub.

The Town of Ripton prohibits industrial scale wind projects.

Land Use, Renewable Generation and Transmission Pathways to Implementation - Goals, Policies and Recommended Actions.

In order to meet the energy generation targets cited elsewhere in this document, Ripton promotes the following Goals, Policies and recommended Actions for itself and its citizens.

Goal

A. Plan for increased electric demand in partnership with Green Mountain Power and Efficiency Vermont.

Policies and Recommended Actions

1. Lead by example. Encourage the use of renewable energy production in town buildings, the school, and residences. a. Investigate and support the installation of additional municipal solar and/or wind net-metering facilities that are compliant with the standards enumerated in this plan to off-set municipal electric use.

2. Support the development and siting of renewable energy resources in the Town that are in conformance with the goals, strategies, and mapping outlined in this energy plan. Support responsibly sited and responsibly developed renewable energy projects, which shall include solar panels, wind turbines and all associated supporting infrastructure.
    a. The Ripton Energy Coordinator will continue to work closely with the Ripton Planning Commission, DRB and Zoning Administrator on any proposed energy development projects within Ripton.
    b. Investigate and support installation of community-owned renewable energy project(s) that are compliant with the standards enumerated in this plan to allow Ripton's citizens to participate in the economic benefits of local energy production.
    c. Determine if the PACE program could be used as a financing and administrative mechanism to support community renewable ownership.
3. Favor the development of generation utilities in identified preferred locations over the development on other sites.
    a. Initiate a dialogue with GMNF management as soon as possible regarding the future of Red Pine plantation tracts.

Goal

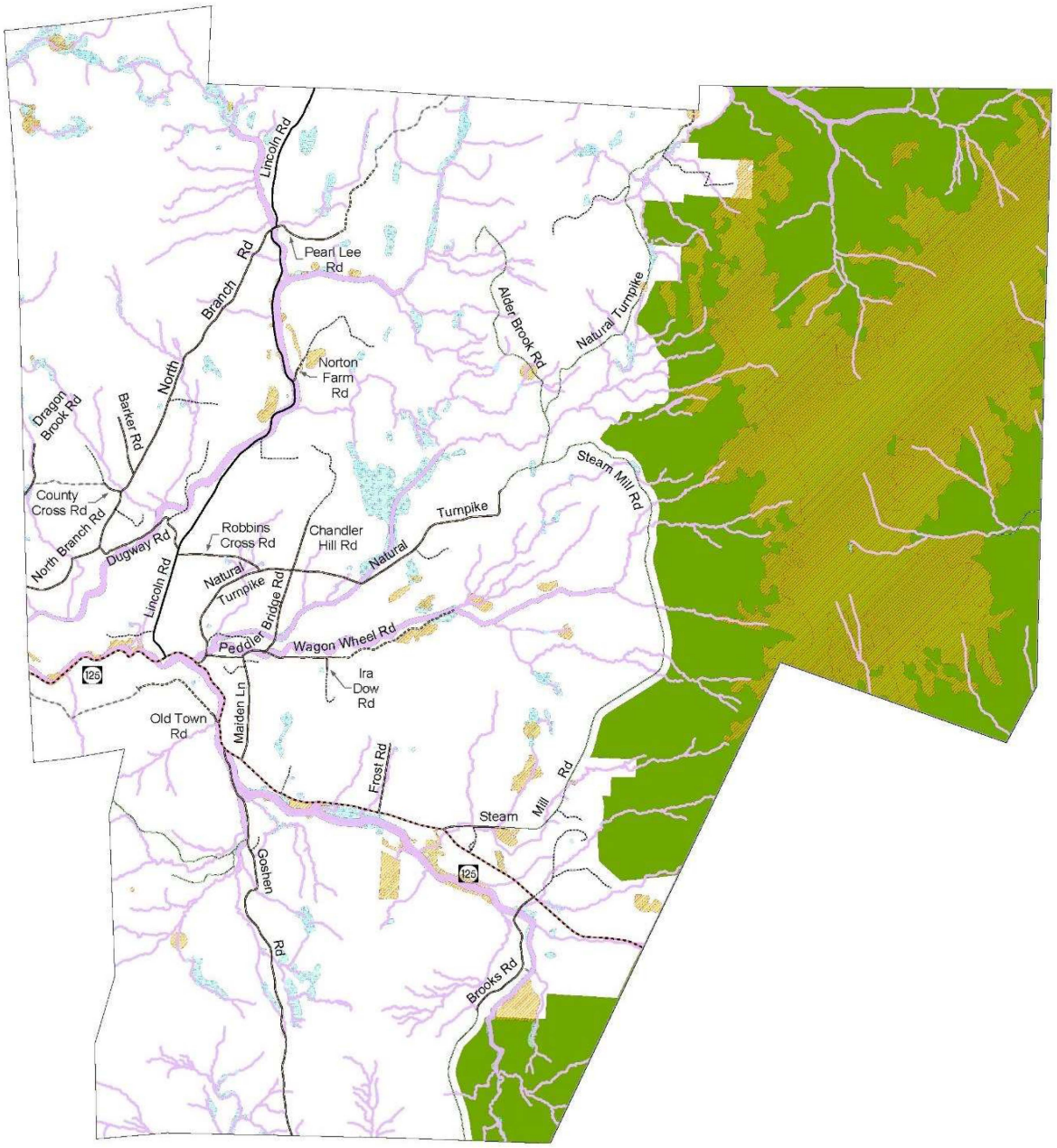
B. Promote Land Use planning that supports reducing energy usage and conserving resources.

Policies and Recommended Actions

1. Encourage settlement patterns that reduce travel requirements for work, services, and recreation.

a. Encourage development of compact neighborhoods within Ripton's Neighborhood Commercial, High Density Residential and Medium Density Residential Planning Areas.
b. Support the general stores and other businesses in the village area.
c. Allow infilling of existing large-lot development where higher density development is desirable and appropriate.
d. Provide opportunities for appropriate home occupations and telecommuting.
e. Support continued improvements in broadband connectivity and encourage telecommuting.
f. Conserve forest land as a renewable energy resource and promote the responsible and efficient use of wood for biomass energy production.

Renewable Energy Planning: Known Constraints - Ripton



Legend

- Vernal Pools (confirmed and unconfirmed layers)
- State River Corridors (inc 50ft buffers on sm streams)
- FEMA Floodways
- Natural Communities and Rare, Threatened and Endangered
- Vermont Significant Wetlands (Class 1 & 2 and advisory layers)
- National Wilderness Areas

Known Constraints (State Energy Planning Guidelines)

Vernal Pools (confirmed and unconfirmed)
DEC River Corridors (inc stream 50ft buffer)
FEMA Floodways
State Significant natural Communities and Rare, Threatened and Endangered Species
National Wilderness Areas
Class 1 and Class 2 Wetlands (VSWI and advisory layers)
Regionally or Locally Identified Critical Resources (none currently)

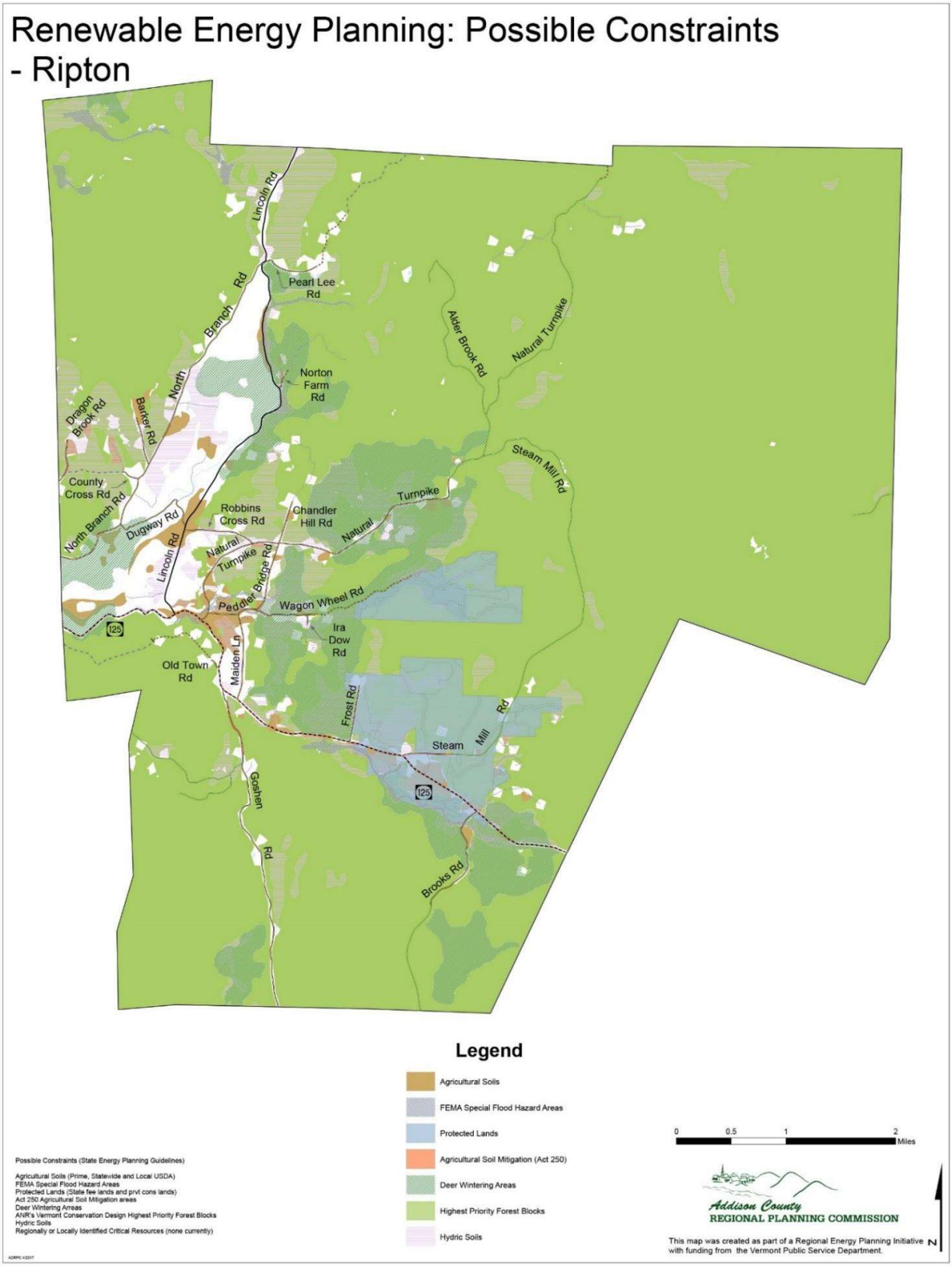
0 0.5 1 2 Miles

Addison County REGIONAL PLANNING COMMISSION

This map was created as part of a Regional Energy Planning Initiative with funding from the Vermont Public Service Department.

N

EP-Map 1


Renewable Energy Planning: Possible Constraints
- Ripton
Lincoln Rd
Pearl Lee Rd
North Branch Rd
Alder Brook Rd
Natural Turnpike
Norton Farm Rd
Dragon Brook Rd
Barker Rd
North
Steam Mill Rd
County Cross Rd
North Branch Rd
Dugway Rd
Robbins Cross Rd
Chandler Hill Rd
Turnpike
Natural
Lincoln Rd
Natural
Turnpike
Peddler Bridge Rd
Wagon Wheel Rd
125
Ira Dow Rd
Old Town Rd
Maiden Ln
Frost Rd
Steam Mill Rd
125
Goshen Rd
Brooks Rd
Legend
Agricultural Soils
FEMA Special Flood Hazard Areas
Protected Lands
Agricultural Soil Mitigation (Act 250)
Deer Wintering Areas
Highest Priority Forest Blocks
Hydric Soils
Possible Constraints (State Energy Planning Guidelines)
Agricultural Soils (Prime, Statewide and Local USDA)
FEMA Special Flood Hazard Areas
Protected Lands (State fee lands and prvt cons lands)
Act 250 Agricultural Soil Mitigation areas
Deer Wintering Areas
ANR's Vermont Conservation Design Highest Priority Forest Blocks
Hydric Soils
Regionally or Locally Identified Critical Resources (none currently)
0
0.5
1
2
Miles
Addison County
REGIONAL PLANNING COMMISSION
This map was created as part of a Regional Energy Planning Initiative with funding from the Vermont Public Service Department.
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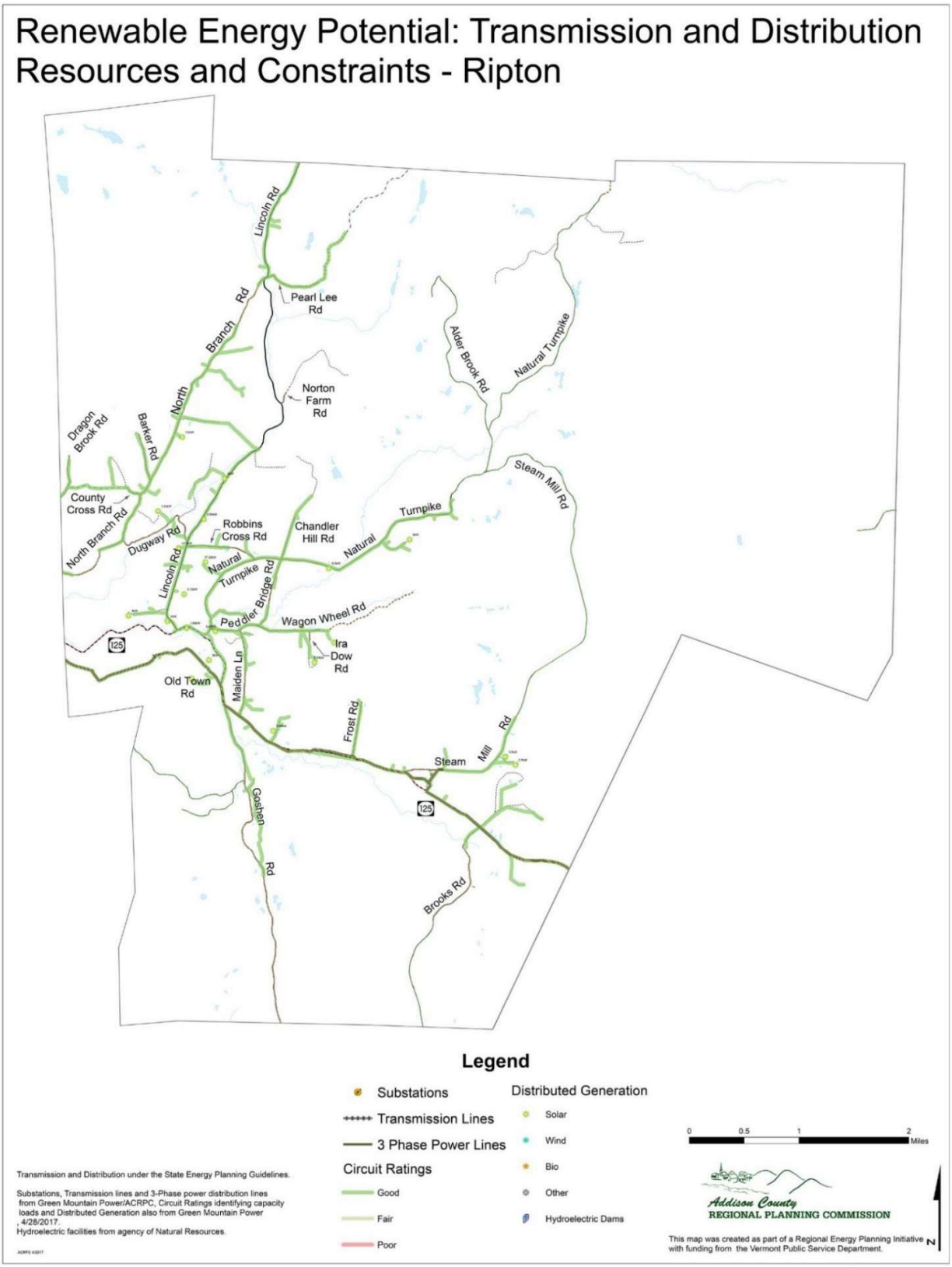
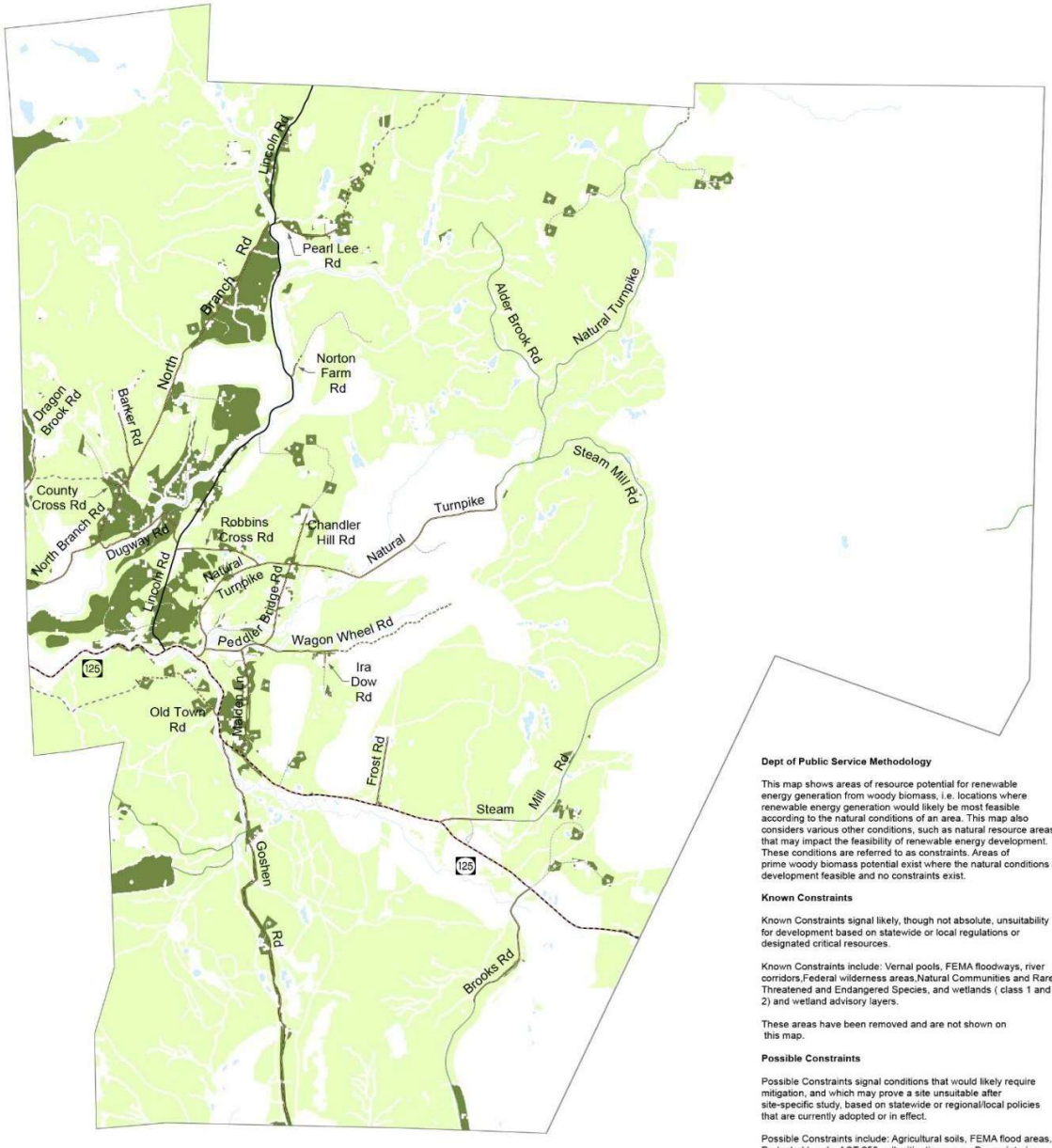
EP-Map 2

Renewable Energy Potential: Transmission and Distribution Resources and Constraints - Ripton



EP-Map 3

Renewable Energy: Potential Woody Biomass Resource Siting Areas - Ripton



Legend

- Primary Biomass Siting Areas
- Secondary Biomass Siting Areas

Woody Biomass Potential Analysis under the State Energy Planning Guidelines.

Statewide forest cover types from the 2006 National Land Cover Dataset (NLCD, 2006) were merged into a single file and used to calculate low-grade green tons per acre by VCGI. The forest cover areal extent was used in this analysis.

Dept of Public Service Methodology

This map shows areas of resource potential for renewable energy generation from woody biomass, i.e. locations where renewable energy generation would likely be most feasible according to the natural conditions of an area. This map also considers various other conditions, such as natural resource areas, that may impact the feasibility of renewable energy development. These conditions are referred to as constraints. Areas of prime woody biomass potential exist where the natural conditions make development feasible and no constraints exist.

Known Constraints

Known Constraints signal likely, though not absolute, unsuitability for development based on statewide or local regulations or designated critical resources.

Known Constraints include: Vernal pools, FEMA floodways, river corridors,Federal wilderness areas,Natural Communities and Rare, Threatened and Endangered Species, and wetlands (class 1 and 2) and wetland advisory layers.

These areas have been removed and are not shown on this map.

Possible Constraints

Possible Constraints signal conditions that would likely require mitigation, and which may prove a site unsuitable after site-specific study, based on statewide or regional/local policies that are currently adopted or in effect.

Possible Constraints include: Agricultural soils, FEMA flood areas, Protected Lands, ACT 250 soil mitigation areas, Deer wintering areas, Highest Priority Forest Blocks, and Hydric soils.

These areas are shown on the map where they coincide with areas of renewable woody biomass potential.

0 0.5 1 2 Miles

Addison County REGIONAL PLANNING COMMISSION

This map was created as part of a Regional Energy Planning Initiative with funding from the Vermont Public Service Department.

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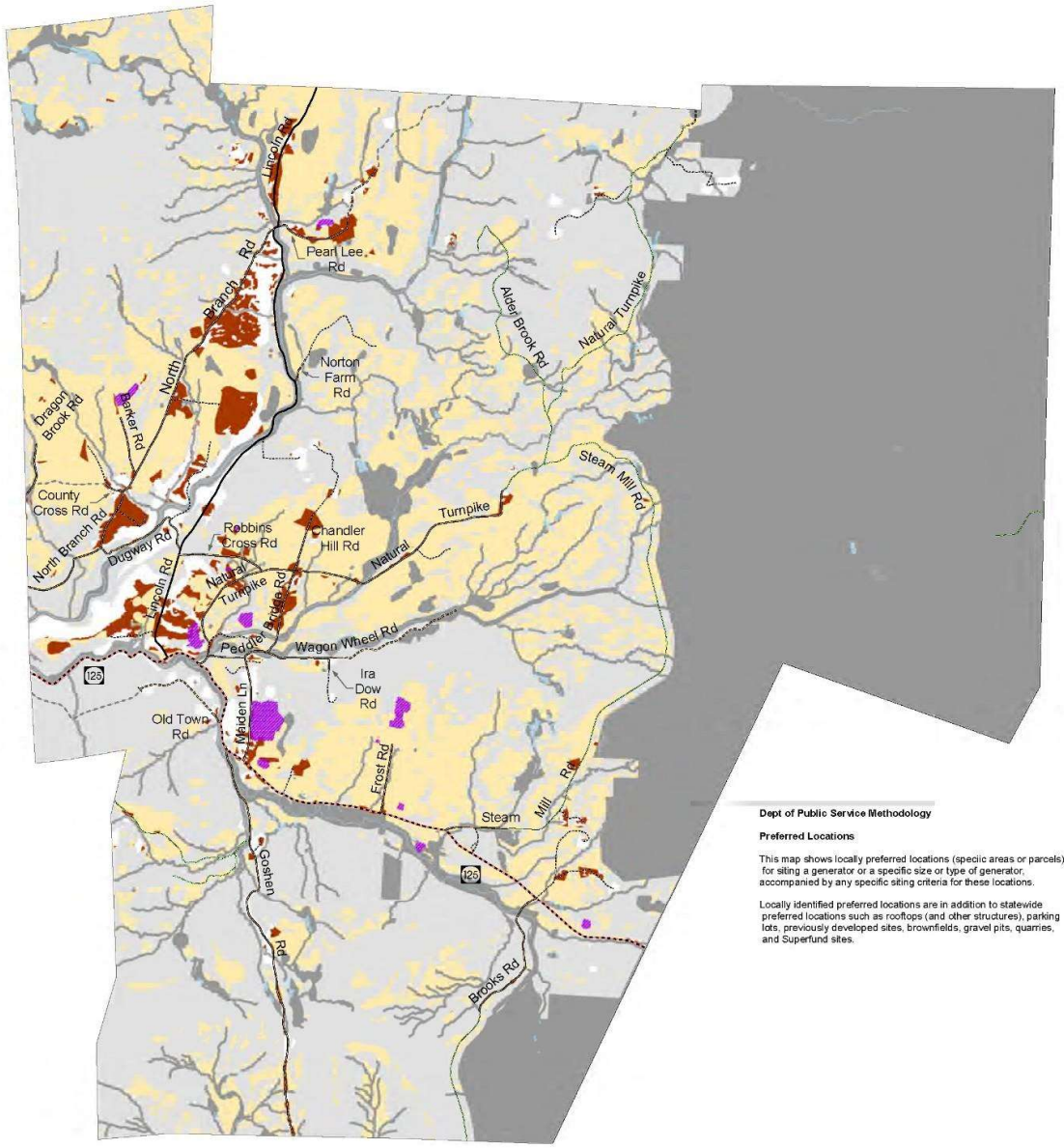
EP-Map 4

Renewable Energy: Preferred Net-Metered Solar Locations - Ripton



Dept of Public Service Methodology

Preferred Locations

This map shows locally preferred locations (specific areas or parcels) for siting a generator or a specific size or type of generator, accompanied by any specific siting criteria for these locations.

Locally identified preferred locations are in addition to statewide preferred locations such as rooftops (and other structures), parking lots, previously developed sites, brownfields, gravel pits, quarries, and Superfund sites.

Legend

- Preferred Net-Metered Solar Locations
- Primary Solar Resource Siting Areas
- Secondary Solar Resource Siting Areas
- Known Constraints
- Possible Constraints

Locally preferred solar locations identified by the Ripton Planning Commission.

Solar Potential Analysis under the State Energy Planning Guidelines.

Statewide ground based (30m USGS DEM) solar potential layer created with ESRI solar analyst by VCGI. Filtered by SLOPE (<= 14%), ASPECT (90-270 degrees) and values >= 1,000 kWh/sq meter.

0 0.5 1 2 Miles

Addison County REGIONAL PLANNING COMMISSION

This map was created as part of a Regional Energy Planning Initiative with funding from the Vermont Public Service Department.

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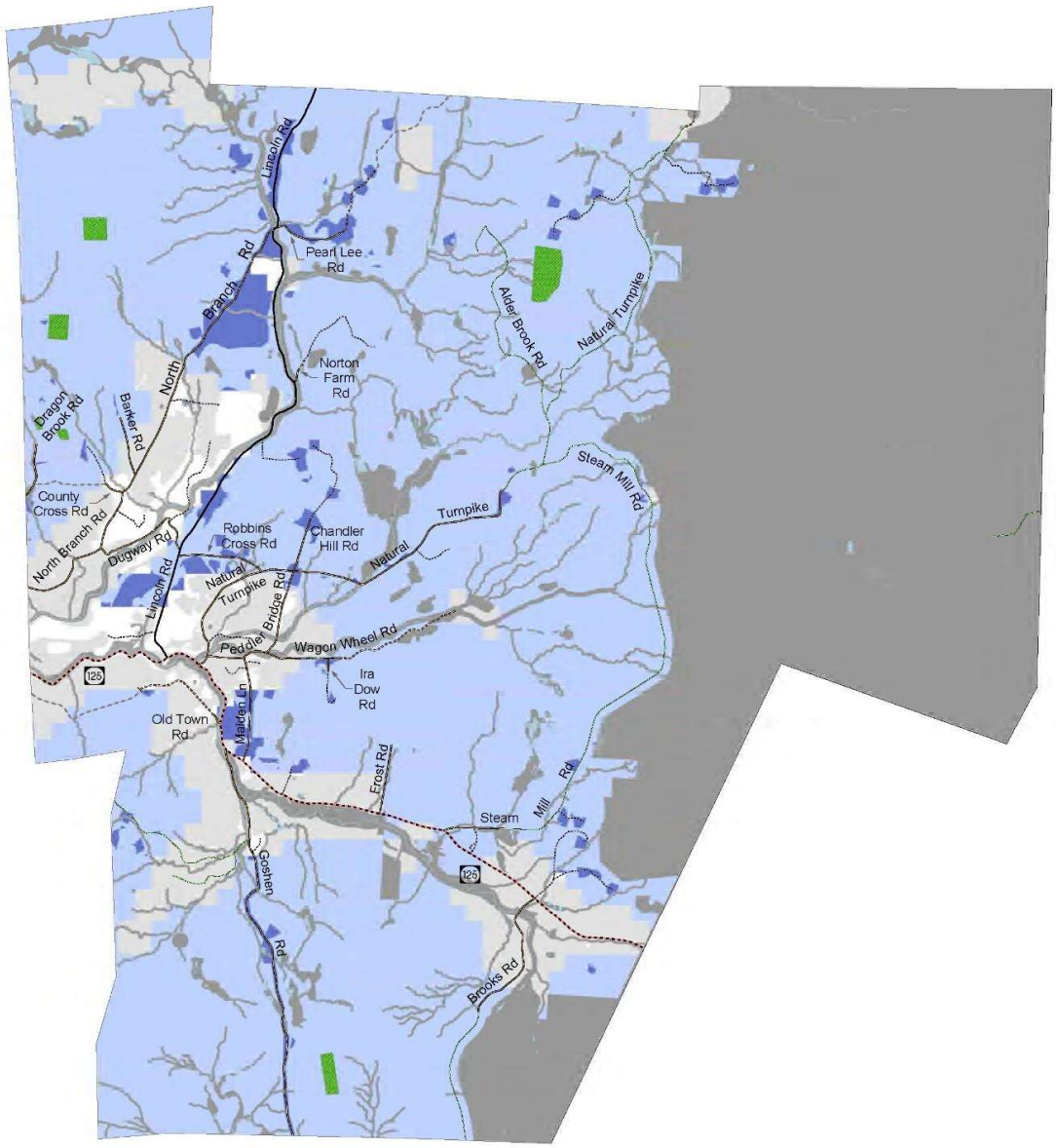
EP-Map 5

Renewable Energy: Possible Community Wind Locations - Ripton



Legend

- Possible Community Wind Locations
- Primary Wind Resource Siting Areas
- Secondary Wind Resource Siting Areas
- Known Constraints
- Possible Constraints

0 0.5 1 2 Miles

Possible community wind locations identified by the Ripton Planning Commission.

Wind Potential Analysis under the State Energy Planning Guidelines.

Statewide 30m, 50m, and 70m wind speed layers from Mass.Tech Collaborative were filtered for minimum wind speed, then merged into a single file by VCGI.

Addison County REGIONAL PLANNING COMMISSION

This map was created as part of a Regional Energy Planning Initiative with funding from the Vermont Public Service Department.

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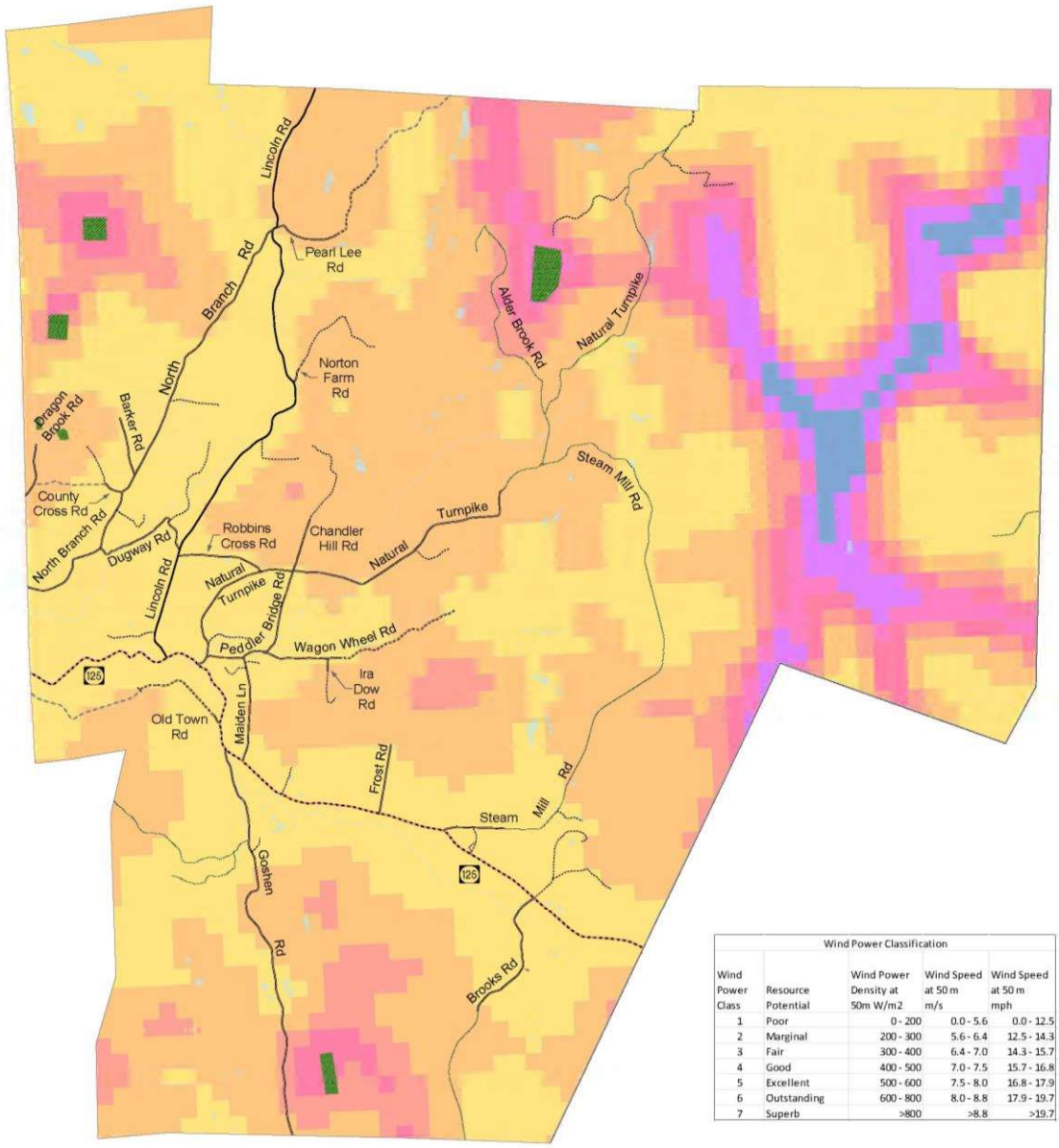
EP-Map 6a

Renewable Energy: Wind Power Resource at 50 m with Possible Community Wind Locations - Ripton



Wind Power Classification				
Wind Power Class	Resource Potential	Wind Power Density at 50m W/m2	Wind Speed at 50 m m/s	Wind Speed at 50 m mph
1	Poor	0 - 200	0.0 - 5.6	0.0 - 12.5
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	>800	>8.8	>19.7

Legend

Possible Community Wind Locations

Possible community wind locations identified by the Ripton Planning Commission.

The wind power resource data for this map was produced by TrueWind Solutions using the Mesomap system and historical weather data. It has been validated with available surface data by the National Renewable Energy Laboratory and wind energy meteorological consultants.

Wind Power Resource at 50 m

Wind Power Class

- Poor
- Marginal
- Fair
- Good
- Excellent
- Outstanding
- Superb

0 0.5 1 2 Miles

Addison County REGIONAL PLANNING COMMISSION

This map was created as part of a Regional Energy Planning Initiative with funding from the Vermont Public Service Department.

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EP-Map 6b

ARTICLE VI. UTILITIES, SERVICES, AND COMMUNITY FACILITIES

Goals

- Improve the energy efficiency and code compliance of town buildings.
- Retain the historic character of the town-owned buildings in the village historic district.
- Protect the town-owned buildings and their contents from water, mold, storm damage and fire.
- Store road sand and salt in an environmentally responsible way.
- Maintain the town cemeteries in an environmentally sensitive way.
- Identify land suitable for future town needs.
- Maintain a 5-year capital plan.
- Support the operation of a Village Post Office.

Policies

- Facilitate energy audits and recommend comprehensive retrofit modifications to Town buildings.
- Apply for or assist with grants for energy improvement projects.

A. Utilities

1. Water Supply and Wastewater Treatment

All Ripton households rely on private water and septic systems. There is no plan to make either of these available from a public system, and there is no significant industry requiring a public system. Middlebury College's Bread Loaf Campus maintains an underground reservoir and extensive leach fields to accommodate the water and septic requirements for up to 300 seasonal residents and students.

2. Solid Waste

Ripton provides a volunteer-staffed recycling drop-off at the Town Shed in the mornings on the first and third Saturday of each month, and in the evening of the first Wednesday of each month. Vermont Act 148 made recycling mandatory in Vermont as of July 2015 and composting of food waste mandatory as of July 2020. Food waste may be brought to the Addison County Solid Waste Management District (ACSWMD) transfer station on Rte. 7 if it isn't composted in the backyard.

Residents wishing home pick-up of trash or recycling may subscribe to one of several private services. Un-recycled trash is hauled to the ACSWMD transfer station. Ripton participates in the ACSWMD.

B. Public Protection, Health, and Safety

The primary providers of public protection, health, and safety for Ripton are the Vermont State Police New Haven barracks and the Ripton Volunteer Fire and First Response Department.

1. Police

The Vermont State Police, Addison County Sheriff's Department, and seasonally the Forest Service provide law enforcement. The Shelburne Police Department dispatches calls via the e-911 system. For routine patrols and speed enforcement Ripton contracts 25-30 hours per month with the Addison County Sheriff's Department. The Sheriff's Department also assists with enforcing ordinances and acts on complaints of illegal burning and dumping.

2. Fire and Rescue

Ripton Volunteer Fire and Rescue is a volunteer fire department and medical first response organization responding to various emergency calls including medical emergencies, building, vehicle and brush fires, motor vehicle crashes, hiker rescues, and hazardous material incidents. The department also assists with basement flooding, and traffic control for road flooding, downed power lines, and events. The department provides public fire safety education visits to Ripton Elementary and North Branch schools and performs fire extinguisher training for the Silver Towers Camp staff. The department responds to an average of 50 calls a year with past yearly call volumes ranging from 28 (2002) to 73 (2013). The department has mutual aid agreements with surrounding towns and provides and receives assistance for larger incidents such as building fires and large-scale flooding emergencies.

Medical first response staff operate at the Emergency Medical Technician level of certification or lower. Department medical responders initiate patient care until a transporting ambulance agency arrives to assume patient care and provide transport to a medical facility. Primary transporting agencies for Ripton are Middlebury Regional Emergency Medical Services (MREMS) and Bristol Rescue.

The department training program maintains fire and EMS continuing education requirements and strengthens current skill sets. Meetings are held once a week on Tuesdays. The meeting schedule for the month includes a general business meeting and monthly run of equipment, fire training night, medical training night, and officers' meeting. In the case of a 5th Tuesday in a month, vehicle mechanical checks are performed which occurs approximately quarterly.
The fire station at 25 Dugway Road is currently adequate for its approximately 25-member department. See a full description in Section C, 4.

The department has three vehicles, a 2020 Ford F550 Brush Truck and medical response vehicle, a 2,000-gallon 2005 Tanker, and a 1,000-gallon 1993 pumper.
The Town established a vehicle replacement fund in 2007 and adds $5,500 to it annually. A 2018-2019 fundraising campaign for a new utility vehicle raised $106,499 and allowed for a new vehicle purchase without spending down the vehicle replacement fund. The Fire Department plans to replace its 1993 pumper truck. A new pumper costs $600,000 - $800,000. The Department is looking into a used vehicle, but those prices are also high. The vehicle replacement fund balance of approximately $60,000 is not adequate to cover the costs.

3. Emergency Management

An Emergency Management Director and Emergency Services Representative are appointed annually with the Local Emergency Operation Plan (LEOP) update. The Selectboard chair is typically the Director. The Representative is typically a community member with emergency response experience. The Plan includes required elements related to emergency operations, resources, public warning, vulnerable populations, shelters, and contacts.

The Town of Ripton, Vermont Single Jurisdiction All-Hazards Mitigation Plan was adopted by the Town and approved by FEMA in August 2019. It is effective through August 19, 2024. The Plan must be updated and approved by FEMA every 5 years for the Town to be eligible for FEMA mitigation grant funding. The Mitigation Plan includes identification of hazards and statements that support hazard mitigation from the LEOP and the Town Plan.

Hazards that rank high or medium-high in probability of occurrence and hazard include winter storms/ice storms, flash floods, landslides, hazardous materials transport accidents, widespread power outages, and wildfires.

Public health emergencies, such as those experienced with COVID-19, also present a risk to the community, and resulted in changes of risk protocols and procedures.

In 2013 the Town worked with the Red Cross to establish an emergency shelter at the Ripton Elementary School. The Community House is also a designated shelter, though it is in an area at risk of flood. The Fire Station is an emergency operations center that offers showers, electricity and charging, and a place to get water during power outages. All were used during the 2023 storms.

4. Healthcare and Human Services

The primary health facility in the area is Porter Medical Center in Middlebury. Other health care organizations serving the county are the Counseling Service of Addison County, Addison County Home Health and Hospice, and the Open-Door Clinic-Emergency Health Services. Ripton residents may subscribe to emergency service by the Middlebury Regional EMS (MREMS).

Several public service agencies offer services to Ripton residents and ask for Town support through Ripton's annual budget. These include: Addison Central Teens (ACT), Addison County Home Health and Hospice, Addison County Parent/Child Center, Addison County Restorative Justice Services, Addison County River Watch Collaborative, Age Well, Charter House Coalition, Counseling Service of Addison County (CSAC), Elderly Services, Friends of the Ripton School (FORS), Green Up Vermont, Helping Overcome Poverty's Effects (HOPE), Homeward Bound, John Graham Housing and Services, Middlebury Regional EMS (MREMS), NeighborWorks of Western Vermont, Open Door Clinic, Otter Creek Child Care Center, Retired and Senior Volunteer Program (RSVP), Tri Valley Transit (TVT), Turning Point Center, Vermont Adult Learning, and WomenSafe. See the Town Report for a current list.

C. Town Facilities and Land

The Town of Ripton owns five buildings on 3 parcels of land, a parcel planned for a sand shed, an undevelopable parcel along the Dugway, and 4 cemeteries. All the parcels are small, and the Town is interested in acquiring land for public facilities, community gathering space, and a solar array. The Town may become owner of a 1-acre parcel on Route 125 through a buyout program for properties at risk of flooding or landslides.

1. Town Facilities

Three nineteenth century buildings, the Town Office, Community House, and the privately owned Ripton Community Church, are the public centerpiece of Ripton's Historic District. All have withstood several floods. But as the roadbed of Route 125 has been raised and storm frequency intensified, they are increasingly vulnerable to flood damage.

Applications for energy audits were submitted to the Municipal Energy Resilience Program (MERP) for the Town Office, Community House, and Fire Station. Recommendations will follow. Up to $500,000 per community is available for implementation.

- **The Town Office, 1131 Route 125, Ripton Historic District**

The Town Office building has served many functions since its construction as a Congregational church in the late 1830s. In 1868 the Town purchased it as a meeting house and moved it to its present location from a site near the existing Community House. In 1949, after outlying schools closed, the building was converted to the town's only school. In 1989 the Ripton School District transferred ownership to the Town for office space.

Currently, the first floor is the office of the town clerk, treasurer, selectboard administrator, listers and zoning administrator. It is the meeting space for the selectboard, planning/zoning board and cemetery commission. The vault for Town records is in the northwest corner. It has a fire-rated door but is vulnerable to flooding.

Engineering reports state that use of the second floor should be limited due to structural problems. A small room next to the second-floor landing is used by the Ripton Historical Society. A large room at the front of the building is storage and office space.

In 2019 the Selectboard included a discussion topic at the Town Meeting - "Town Office building - renovate, build a replica, or relocate?" More residents favored demolishing and building a replica than renovating. With the recognition of flood and landslide risk support has grown for moving the town office functions to a new location. The use and maintenance of the building would need to be addressed.

- **The Community House, 1283 Route 125, Ripton Historic District**

Built in 1866, the Community House has served as a Congregational Church, Methodist Church, community club, meeting hall, polling place, school gymnasium, library, and event space, including the Ripton Community Coffee House (RCCH), a popular folk music venue. The building is listed on the National Register of Historic Places. The building had a major renovation in 1976, a standing seam roof installed in 2003, and energy efficient lighting installed in 2008. The interior was painted in 2014 and the exterior in 2010. After water damage from frozen pipes in 2019, first floor flooring was replaced, insulation was improved, a mop sink was installed, one bathroom was made ADA compliant and another more so.

Heating and hot water equipment is in a small basement area with two sump pumps. The pumps drain to a ditch and culvert west of the building that flows to the Middlebury River. During floods, water backflows into the basement and damages mechanical equipment. New above ground space for mechanical equipment is recommended. Storage is limited. Additional storage space has been requested by RCCH and would be helpful for voting equipment.

- **The Town Shed, Peddlers Bridge Road**

This rudimentary metal building houses the recycling trailer on a 0.79-acre site in a floodplain. Road sand is currently still stored adjacent to the town shed, however in 2023 construction began for a new Sand Shed on the Lincoln Road on land that is not floodplain. After the sand pile is moved, recycling will continue at this site and the site will be cleaned and planted. A 2023 survey shows that the Town parcel does not include the riverbank. The riverbank owners will grant an easement for bank restoration.

- **The Ripton Fire and First Response Station, 25 Dugway Road**

The four-bay metal building with office and meeting space was completed in 2005 and is still adequate for Department needs. It is on a 2-acre parcel the Town acquired from the School District. A solar array to power Town buildings is being installed on the roof and grounds in 2023. The Ripton Energy Assistance Program (REAP) shed on the parcel may become available for RVFD or Town use.

- **New Sand Shed**

Sitework is underway for a sand shed to be constructed on a 0.78-acre parcel at 683 Lincoln Rd.

D. Town Land

2.81 acres, Dugway Road, between the road and the North Branch of the Middlebury River.

E. Ripton Cemeteries

Ripton's public cemeteries were nearly at capacity until land donations in 2015 expanded Cook and Galvin Cemeteries. The Cemetery Commission manages sales of plots for these two cemeteries and had both surveyed. The Commission is considering a "natural" burial area in Galvin Cemetery. They would like a storage space for maintenance tools. There are two private cemeteries, and some cremated remains are buried on private property.

- Cook Cemetery, 1.62 acres, Natural Turnpike
- Cushman Cemetery, 0.15 acres, North Branch Road
- Galvin Cemetery, 1.54 acres, Route 125
- Gee Cemetery, 0.06 acres, North Branch and Dugway Roads

ARTICLE VII. EDUCATION

Goals

- To support high quality education for elementary, middle, high school, and adult students.
- Support educational activities such as field trips and outdoor classroom experiences for all students.
- To support safe, affordable, high-quality childcare in Ripton.

Policies

- Support long-term planning for, and continued use of, the Ripton Elementary School.
- Permit childcare facilities as a home occupation in residential zones.
- Encourage summer and community use of existing educational facilities.

A. School Facilities

Ripton Elementary School

The current Ripton Elementary School (RES) was built and opened in 1989 to provide public education for students in grades kindergarten through 6th grade. It is located on 14.99 acres of land on the Lincoln Road about one mile north of Ripton's town center. The school is a vibrant town hub that is welcoming to all community members and hosts fun year-round events such as the Ripton Ridge Run, pizza bake fundraisers, school plays, bike-for-books, and social gatherings.

Ripton Elementary School was run by the town as an independent school district from its inception until 2017, after town residents voted to merge with six neighboring towns into the consolidated Addison Central School District (ACSD). Like many schools across the state and country, RES has been experiencing declining enrollment and increasing costs of education.

Ripton, Bridport, Cornwall, Middlebury, Salisbury, Shoreham, and Weybridge voters approved the creation of a new unified union school district on March 1, 2016, as a result of Act 46 legislation. Act 46 called for, and incentivized, statewide merging of school districts in an effort to ensure equal educational access to all students regardless of geographic location, or school size, at a fair cost to taxpayers, by consolidating school board oversight and sharing educational resources, administration and staff. ACSD became fully operational on July 1, 2017.

The ACSD School Board has thirteen elected members, one seat of which is held by a Ripton resident. All members are elected at large and represent the interests of the entire district student community, not just the town in which they reside. ACSD operates 6 other elementary schools across the district. In 2021, amidst the Covid-19 pandemic, and due to staffing and curriculum needs, ACSD moved all 6th graders into the Middlebury Union Middle School and closed the pre-kindergarten classroom in Ripton, which had operated since 1998.

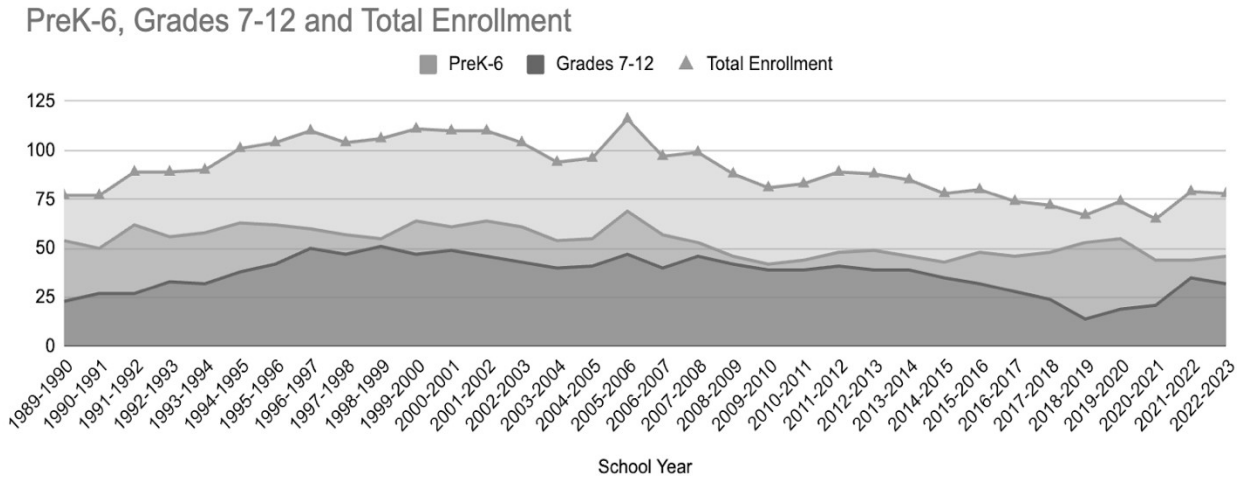
In 2019 Ripton Elementary School came under threat of closure because of its status as the smallest school in the district, despite it being one of the newest facilities under ACSD. In an effort to cut facilities costs and share school resources more efficiently and equitably, ACSD proposed, and was studying the impact of, closing several of the rural elementary schools and moving the district's youngest rural students to Middlebury.

Concerned residents in Ripton formed the non-profit citizen group Save Our Schools (SOS) and worked diligently to keep all the rural schools open via an ACSD charter change that would give member-communities more power in electing their board representatives and a final say on whether a town's elementary school should close. After much deliberation, Ripton town residents voted in January 2021 to secede from the district (and were supported by every other town, in a district wide vote required to allow a town to withdraw from ACSD) and set out to join another existing school district or work to create a new supervisory union district with the neighboring town of Lincoln, whose elementary school was also under threat of closure. After a multi-year process, an unexpected decision from the State Board of Education designated the newly created Ripton School District a stand-alone supervisory district. This being financially infeasible, due to our small size, coupled with a state-issued two-year moratorium on school closure, Ripton residents voted to rejoin the district in September of 2022.

Ripton Elementary School (RES) currently serves grades K-5 in multi-age classrooms. The school building was originally designed for 60 students, but provisions were made to expand to 90 without enlarging the building footprint. The school is outfitted with a 50kW photovoltaic solar array which was installed in 2013 and offsets a good portion of the school's electric usage. There is a large playground, a soccer field, a community garden, and wooded trails on-site.

Ripton students in grades 6, 7, and 8 attend Middlebury Union Middle School and those in grades 9 through 12 attend Middlebury Union High School. There were 46 elementary students, 12 middle school students and 17 high school students attending ACSD schools in 2022/2023. The ACSD accepts students who tuition from neighboring districts with school choice, such as a handful of students from the White River Valley Supervisory Union. Homeschooling in Ripton has seen a rise in recent years.

The following table shows school enrollment from 1989 to 2023.



School Year	PreK-6	Grades 7-12	Total Enrollment
1989-1990	54	23	77
1990-1991	50	27	77
1991-1992	62	27	89
1992-1993	56	33	89
1993-1994	58	32	90
1994-1995	63	38	101
1995-1996	62	42	104
1996-1997	60	50	110
1997-1998	57	47	104
1998-1999	55	51	106
1999-2000	64	47	111
2000-2001	61	49	110
2001-2002	64	46	110
2002-2003	61	43	104
2003-2004	54	40	94
2004-2005	55	41	96
2005-2006	69	47	116

School Year	PreK-6	Grades 7-12	Total Enrollment
2006-2007	57	40	97
2007-2008	53	46	99
2009-2010	42	39	81
2010-2011	44	39	83
2011-2012	48	41	89
2012-2013	49	39	88
2013-2014	46	39	85
2014-2015	43	35	78
2015-2016	48	32	80
2016-2017	46	28	74
2017-2018	48	24	72
2018-2019	53	14	67
2019-2020	55	19	74
2020-2021	44	21	65
	K-5	6-12	
2021-2022	44	35	79
2022-2023	46	32	78

Ripton Elementary School mission statement, educational beliefs, practices, and policies are clearly stated on the Ripton Elementary School ACSD website at: https://www.acsdvt.org/ripton.

There is currently no summer programming happening at RES, though there is a long history of summer programming and partnerships that served the community needs for educational pursuits and childcare

that will hopefully return in the future. The Ripton Elementary School is a designated Red Cross Emergency Shelter.

Friends Of Ripton School

Friends of Ripton School (FORS), is a not-for-profit fundraising group that supports Ripton Elementary School student enrichment and classroom activities. FORS meets every 4 to 8 weeks to plan events and to approve funding requests. Members typically are parents, but any interested community member may join. FORS' major fundraiser is the Ripton Ridge Run, an annual running and walking race that attracts about 200 participants with the help of about 75 community volunteers. (http://www.riptonridgerun.org).

North Branch School

The North Branch School, founded in 2001, is a non-profit, independent school serving middle school age children (grades 7 - 9). The school is officially recognized by the State of Vermont and meets or exceeds all licensing standards.

Middlebury College Bread Loaf Campus

The Middlebury College Bread Loaf Campus is home to the Middlebury School of English as well as several conferences. They provide a variety of lectures and events in their summer programs to which Ripton residents are welcome. Over 200 students are housed during the summer. Rikert Outdoor Center is a cross country ski area owned and operated by Middlebury College and located on the Middlebury College Bread Loaf Campus. It offers over 55 km of trails for skiers, snowshoers, fat-bikers, runners, and hikers, including cross country ski instruction to elementary school students. (For additional information see Article I section C - Land use and Middlebury College).

B. Childcare

While we encourage childcare in Ripton there are currently no licensed childcare providers operating in Ripton. Many residents choose to have their childcare closer to their employment.

ARTICLE VIII. HOUSING

Goals

- Allow for a variety of housing types in the Town Plan and UDB to meet the needs of all members of the community.
- Support the provision of suitable, safe, energy-efficient, affordable housing that is in keeping with the surrounding environment and located near existing town roads and facilities.
-

Policies

Safe housing:

- Encourage enforcement of Vermont Department of Health minimum health and safety standards.

- Encourage identification and improvement of substandard sewage disposal systems.
- Support fire department efforts for chimney and wood-burning safety with clearly marked 911 addresses and sufficient access for emergency vehicles.

Energy-efficient housing:
- Encourage innovative planning, design and construction of housing that minimizes cost, energy consumption, and environmental impact.
- Encourage construction that complies with Vermont Residential Building Energy Standards.

Affordable housing:
- Support policy that keeps affordable housing affordable for the long-term, particularly when there is public funding of the project.
- Encourage the preservation of existing safe and energy-efficient affordable housing that complies with zoning and septic regulations.
- Support new low-cost housing that meets the needs of residents.
- Monitor conversions of camps or seasonal housing to year-round housing.
- Facilitate the cooperation of public and private entities in planning and developing affordable housing.
- Support environmentally sound policies that reduce utility costs.
- Support transportation alternatives that make affordable housing viable in an outlying community such as Ripton.

Residential Rentals:
- Encourage home ownership and /or long-term rentals to limit the negative impact of short-term rentals on the availability of affordable housing and the detriment to the Town's social and community fabric.
- Encourage short term rentals to comply with VT Health Department regulations for licensed lodging establishments.

Housing in keeping with the surroundings:
- Encourage development that is compatible with community character and other land use concerns.
- Encourage preservation of historic structures.

Housing and natural resources:
- Provide for planned unit development in plans, bylaws, and subdivision regulations.
- Encourage location of development in areas with the least valuable or sensitive environmental characteristics.
- Maintain vegetation along stream banks to the greatest extent feasible to provide habitat, prevent erosion, and reduce the amount of pollutants entering surface waters.
- Establish and maintain flood erosion hazard districts along rivers and streams to protect property and natural resources.

Housing and cost to the municipality:
- Minimize the costs of new development to the municipality by discouraging development on class 4 roads and in remote areas.
- Discourage development on environmentally sensitive sites.

A. Current Housing Stock

(as generated from the 2023 Grand List and 2020 Census)

Current housing stock includes 253 single-family homes, 14 mobile homes, 3 duplexes, 1 commercial apartment, 15 accessory apartments, and 10 accessory dwelling units. There are also 39 properties classified as camps or seasonal dwellings. Approximately 18 properties are advertised as short-term rentals. Ten of those properties are single-family dwellings that are not owner-occupied. Twenty-one housing units are long-term rentals.

All residential water supply and waste disposal systems are individual.

Permits have been required for wastewater systems in Ripton since the mid-1980s, and since 2006 are granted by the State. Town permits for new house construction have been required since 1989. From 2015 - June 2023 permits were issued as follows. Not all the permits were completed:

- 12 new dwellings
- 2 replacements of a dwelling with a mobile home
- 1 replacement of a mobile home with a dwelling
- 1 replacement mobile home
- 1 replacement of a camp with a dwelling
- 2 vacation rental cabins
- 5 primitive camps

Commercial properties supply additional residential units. The Chipman Inn is a home as well as lodging. The Robert Frost Mountain Cabins property includes a home, accessory dwelling unit, and seven guest cottages. The Middlebury College Bread Loaf campus houses nearly 300 in the Inn and several residences. The Vermont Elks Silver Towers Camp houses staff and guests in the summer months.

The U.S. Census supplied the following statistics:

Housing Units	
1970	149
1980	281
1990	282
2000	283
2009-2013	263
2020	323

Occupied Units	
1990	175
2000	201
2009-2013	250
2020	238

Seasonal Units	
1990	36.5%
2000	22.3%
2009-2013	no data
2020	no data

Owner-occupied	
1990	74.4%
2000	78.6%
2009-2013	86%
2020	no data

Renter-occupied	
1990	24.6%
2000	21.4%
2009-2013	14%
2020	no data

B. Future Housing Need, Housing Costs and Affordability

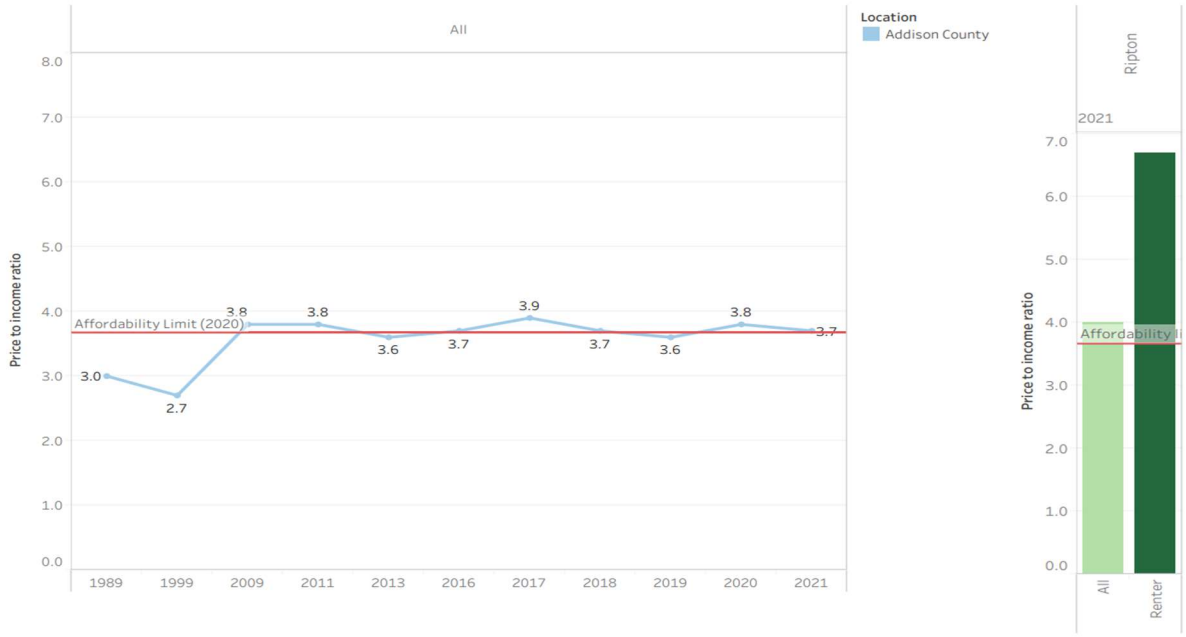
1. Future Housing Need

As our population ages, the existing housing stock and lack of services may not meet its needs. Currently we endeavor to attract a diverse population in an effort to maintain essential town services. These include our elementary school, volunteer fire department, and a host of other community-run initiatives. A wide range of long-term housing options must exist to draw people to our town.

2. Affordability

Affordable housing is that which a household making the county's median income could afford, if no more than 30 percent of household income is spent on mortgage, property tax, and insurance, or for rent and utilities. The 2021 median household income for Ripton and Addison County as a whole was $88,393 and $77,978 respectively. Broken down specifically amongst homeowners and renters, it was $87,455 and $47,144 respectively. Using the Price to Income Ratio based on the county's median income for 2021, home prices for both renting and ownership are unaffordable in Ripton. (Vermont Housing Data, https://housingdata.org/profile/housing-needs/home-price-affordability)

See table and description below.



Description: The price-to-income ratio is the ratio of a town's median non-vacation home price to the county's median household income. The "Affordability limit" is the price-to-income ratio when it takes exactly 30 percent of a household's income to cover monthly housing payments, assuming 5% down payment, and average interest rates, insurance premiums, taxes and closing costs. Towns with median prices above this limit are likely to be largely unaffordable for the average county resident looking to buy a home.

Current real estate trends highlight a significant imbalance between supply of homes for both sale and rent and the demand from consumers. Historically low inventory from 2021 to the date of this report, coupled with extreme increase in demand have had a negative impact on the affordability of homes in Addison County. Ripton, with its mountainous topography and limited ability to build out, generally has fewer available homes for sale or rent than the larger county. Empirical evidence suggests that attraction from potential homebuyers and renters has also exploded during this time period for Ripton in particular.

The standard definition of affordable housing does not account for rising consumer costs. Utility and transportation costs certainly relate to affordability in Ripton. Recent inflation in these costs, especially for those in relatively large homes and older housing, particularly those on fixed incomes, saw their living situations become far less affordable. Also, any assessment of affordable housing in Ripton must be

viewed in light of the town's rural nature and relative lack of developable land, public transportation, employers and services. In particular, land sales are infrequent and availability for development limited. Though a build-out study indicated that current zoning and private ownership allows the addition of 535 dwellings, steep slopes, wet soils, and lack of septic capacity makes this number unlikely. There is still a substantial amount of undeveloped land in the high and medium density residential zones, 2- and 5-acre lot sizes respectively, but much of it is held in large parcels and some of it is not developable.
For more information regarding future potential town development, see "Build Out Map" by Warren King - found at the Town Office.

Ultimately, ownership of large acreages of Ripton land by private citizens, the Forest Service (FS) and Middlebury College will cap Ripton population expansion significantly below that of many area towns. Not only do Middlebury College and FS lands provide exceptional recreational and open space opportunities, they do so at bargain rates to the Town in terms of required services.

ARTICLE IX. EMPLOYMENT AND ECONOMIC DEVELOPMENT

Goals

- Support locally based jobs while maintaining the rural character of Ripton.
- Encourage establishment of home occupations and small businesses, compatible with the surrounding land use, to reduce commuting costs.
- Continue to improve public transportation options and ride sharing to employment centers such as Middlebury.

Policies

- Support development of high-speed Internet and technology that has low impact on the environment and enables home occupations, remote work, and remote educational opportunities.
- Support development of local enterprises that create markets for locally produced goods and services.
- Support efforts to create more childcare opportunities.
- Encourage home occupations and support the opportunity for home occupations through zoning.
- Encourage small-scale agricultural businesses.
- Support forest products-based businesses.
- Support public transportation and ride sharing to employment centers.
- Encourage seasonal employment of Ripton residents at sites such as the Middlebury College Bread Loaf campus and Silver Towers Camp.
- Support the continuing operation of a Ripton Post Office.
- Consider the implications of an aging population and its needs.

A. Employment

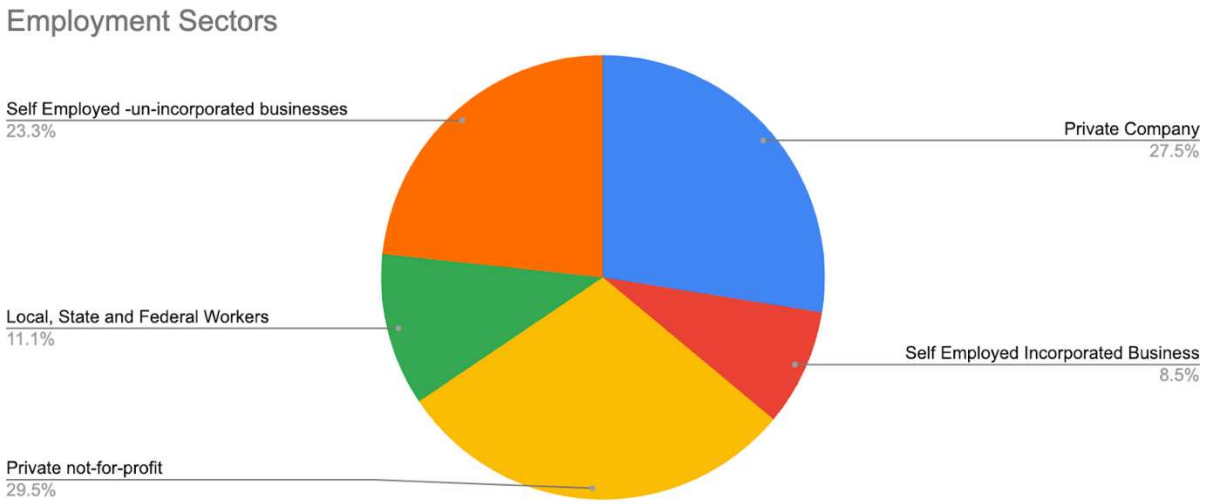
Ripton is a bedroom community of Middlebury and other larger centers. Because the great majority of the population works in Middlebury or other employment centers, residents have a strong interest in the overall health and diversity of the region's economy. This plan supports regional decision-making that engenders job opportunity while maintaining high environmental standards.

Middlebury College is the largest employer in Ripton during the summer months at the Bread Loaf School of English and during the winter months at the Rikert Outdoor Center, followed by the ASCD which employs educational staff at the Ripton Elementary School (RES). During the 2022/2023 academic year there were 6 full-time employees and 13 part-time or shared district employees at the RES, 8 of whom were Ripton residents. Additional employment in Ripton: Ripton Town Offices, the Ripton Post Office, the Country Store, and many private local businesses.

Ripton's population base has an estimated employment rate of 71.4% compared to 63.6% in Addison County, of which 67.6% commuted to work and 24.8% worked from home.

Workers are generally divided into the following sectors:

- 27.5% Private company workers.
- 8.5% Self-employed in own unincorporated businesses.
- 29.5% Private not-for-profit wage and salary worker.
- 11.1% Local, State and Federal workers.
- 23.3% Self Employed in own not incorporated businesses with unpaid family workers.



The largest Industry segments of employment are to be found in the Educational Services, and Health and Social Assistance at 31.8% followed by Construction at 18.4%.

*Data from the 2020 US Census Report and the 2021 American Community Survey

B. Economic Development

Recreation, tourism, education, home occupation, forest industries, construction trades, small-scale agriculture, two inns, and one retail establishment contribute to Ripton's economy. This plan supports the continuation of these activities, and expansion consistent with the town's rural nature and scenic character.

ARTICLE X. RELATIONSHIP OF PLAN TO NEIGHBORING TOWNS

Goals

To promote the vitality of Ripton as expressed in the Town Plan while preserving strong connections with our neighboring towns.

Policies

- Cooperate with the Addison County Regional Planning Commission and surrounding towns regarding planning efforts.
- Encourage partnerships with neighboring towns when mutually beneficial.
- Monitor neighboring Town Plans for possible impacts on Ripton.

The land along Ripton's borders is, for the most part, steep and mountainous; it is therefore unlikely to be developed. The U.S. Forest Service owns most of this land in Ripton and in neighboring towns, which include Middlebury, Bristol, Lincoln, Granville, Hancock, Goshen, and Salisbury. (See Conservation District on Map 9).

There are several recreational facilities in the towns bordering Ripton.

The Middlebury Snowbowl is a small student and family-oriented downhill ski facility located 1/2 mile east of Ripton on Route 125 in Hancock. In 2009 Middlebury College replaced the existing double chair lift up the "front" side of the mountain with a triple chair lift, while reducing the number of chairs so that the capacity of the lift remains unchanged. In 2014 a 120-foot long Sunkid Surface Conveyor Lift was installed to carry ski school students to the top of a small hill east of the base lodge.

In the summer of 2023, the Middlebury Snowbowl began replacing the existing "Sheehan" double chair lift, which runs up the "east" side of the mountain, with a quad chair lift. The number of chairs will be limited to keep the uphill carrying capacity the same. Additionally, the Snowbowl installed lighting for night skiing on the "east" side of the mountain, allowing for after school programming, public use, and team training opportunities.

The policy that delimits the skiable area now includes the forest from "boundary to boundary." The impact of these changes on the Town of Ripton is inconsequential.

The Moosalamoo Campground is a small "semi-primitive" camping facility, located 1/4 mile south of Ripton on the Goshen Road in Goshen. It is owned and operated by the U.S. Forest Service. There are nineteen campsites. The Forest Service has no plans for expansion.

Planners in neighboring towns do not expect any unusual growth in residential, commercial, or industrial development trends that might have an effect on Ripton. Nor does Ripton plan any development that might affect neighboring towns.

ARTICLE XI. IMPLEMENTATION PROGRAM FOR THE PLAN

Implementation of the Town Plan falls initially to the Ripton Planning Commission. As detailed in Article I, the Land Use portion of this plan, use of land is structured by zoning districts, which are defined and include the types of use, areas, and dimensional standards involved in each of the zones, all of which must conform to the Vermont Municipal and Regional Planning Act (Title 24 Vermont Statutes Annotated, Chapter 117). Implementation of this plan will include the Ripton Health Ordinance, Ripton Road Standards and Road Access Ordinance, any other ordinances in effect, the Unified Development Bylaw, which includes the former Flood Hazard Regulations, Ripton Zoning Bylaw, Fluvial Erosion Hazard Zone Bylaw and Subdivision Regulations, and Solar PV and Hydronic Siting Standards for Ripton.

Priority Tasks to Undertake 2023-2031

- Town Office and Community House building study
  Responsible: Selectboard
  Status update 2023: Ongoing, Town Office study done 2018-19

- Resolve plan for Old Town Road as an emergency connector.
  Responsible: Selectboard, Road Commissioner
  Cost and funding sources: Town budget and grants
  Status update 2023: Planning study complete and the town is working with other stakeholders to upgrade the road for emergency access, grant applications submitted.

- Revise Unified Development Bylaw
  Responsible: Planning Commission
  Cost and funding sources: Town budget

- Prepare a capital plan for Ripton.
  Responsible: Selectboard, Planning Commission
  Cost and funding sources: None required.

- Extend the Fluvial Erosion Hazard (FEH) map coverage to the North Branch and upper South Branch
  Responsible: Planning Commission
  Cost and funding sources: None required, at least initially.

- Confirm that Fluvial Erosion Hazard (FEH) District and the River Corridor Protection Plan are updated to conform to State requirements before expiration in October 2016
  Responsible: Planning Commission
  Cost and funding sources: None required.

- Examine possibilities for community solar projects.
  Responsible: Ripton Energy Committee, Selectboard, and “New-More Energy Group”
  Cost and funding sources: None initially

- Contingency planning for disaster relief for essential town services
  Responsible: Selectboard, Emergency Management Coordinator, RVFD
  Cost and funding sources: None required.

Status update 2023: Local Emergency Operation Plan is updated annually.

- Town land acquisition from Forest Service
  Responsible: Selectboard
  Cost and funding sources: None required.
  Status update 2023: An application was submitted to the Forest Service Small Tracts Program in 2022 for acquisition of a 58-acre parcel, a minimum of 4 years is anticipated for processing.

Town Maps 1-13

Map 1 - Historic Land Use
Map 2 - Lad Cover Types
Map 3 - Soil Septic Suitability & Private Water Well Yield
Map 4 - Landscape Slope
Map 5 - Biologically Significant Areas
Map 6 - Roads, Trails, Utilities, Facilities, and Education
Map 7 - Road Names and Transportation Volume
Map 8 - Transportation Safety Concerns
Map 9 - Land Use and Zoning Districts
Map 10 - Population Density
Map 11a - Forest Blocks and Habitat Connectors
Map 11b - Forest Blocks and Fragmentation
Map 12 - Flood Hazards
Map 13 - Landslide Risk

Map 1: Historic Land Use: Ripton Center 1942 - 2019
Town of Ripton, VT

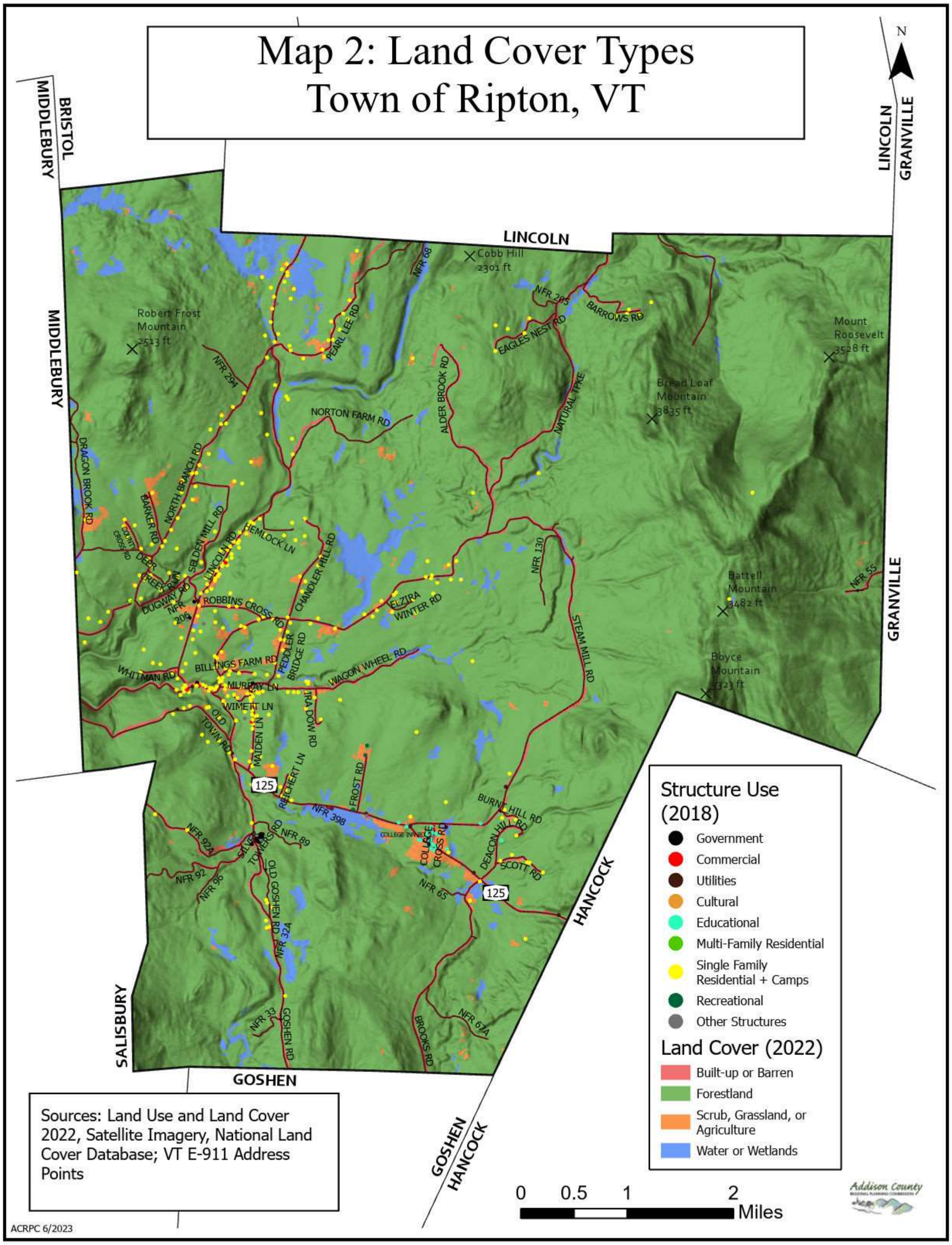
Source: USDA photo 8-8-42 DCC 224

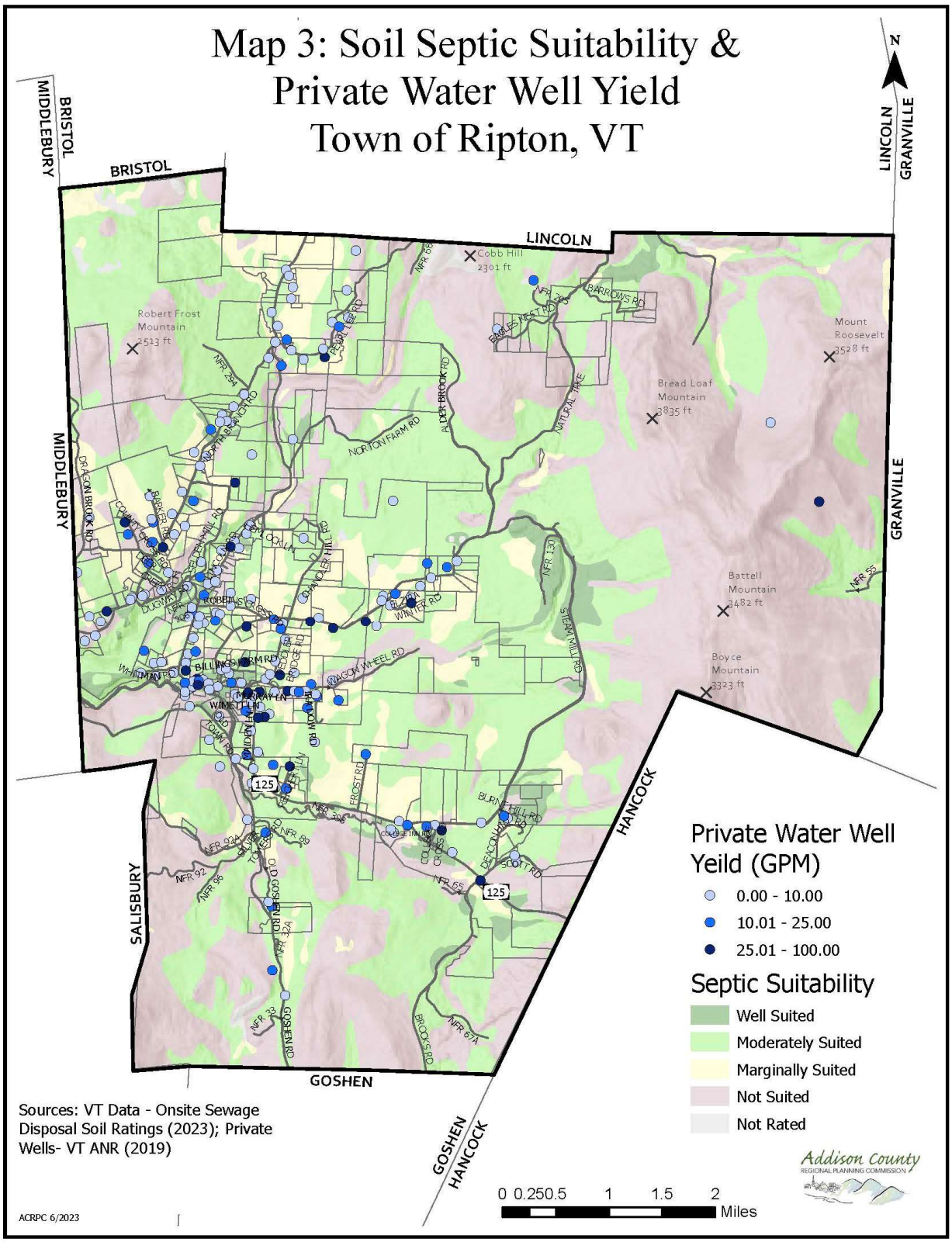
Ripton Center, 1942

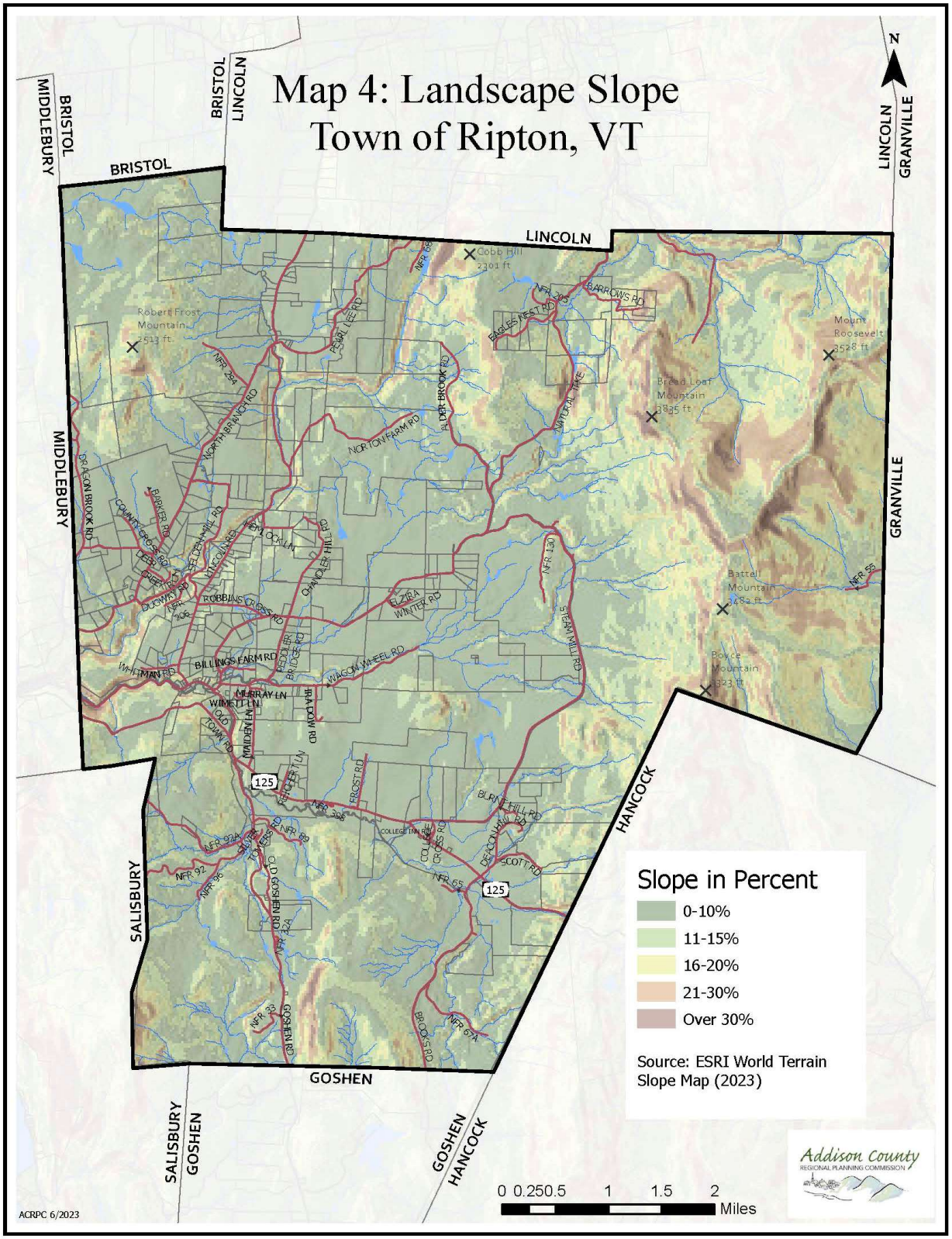
Ripton Center, 2019

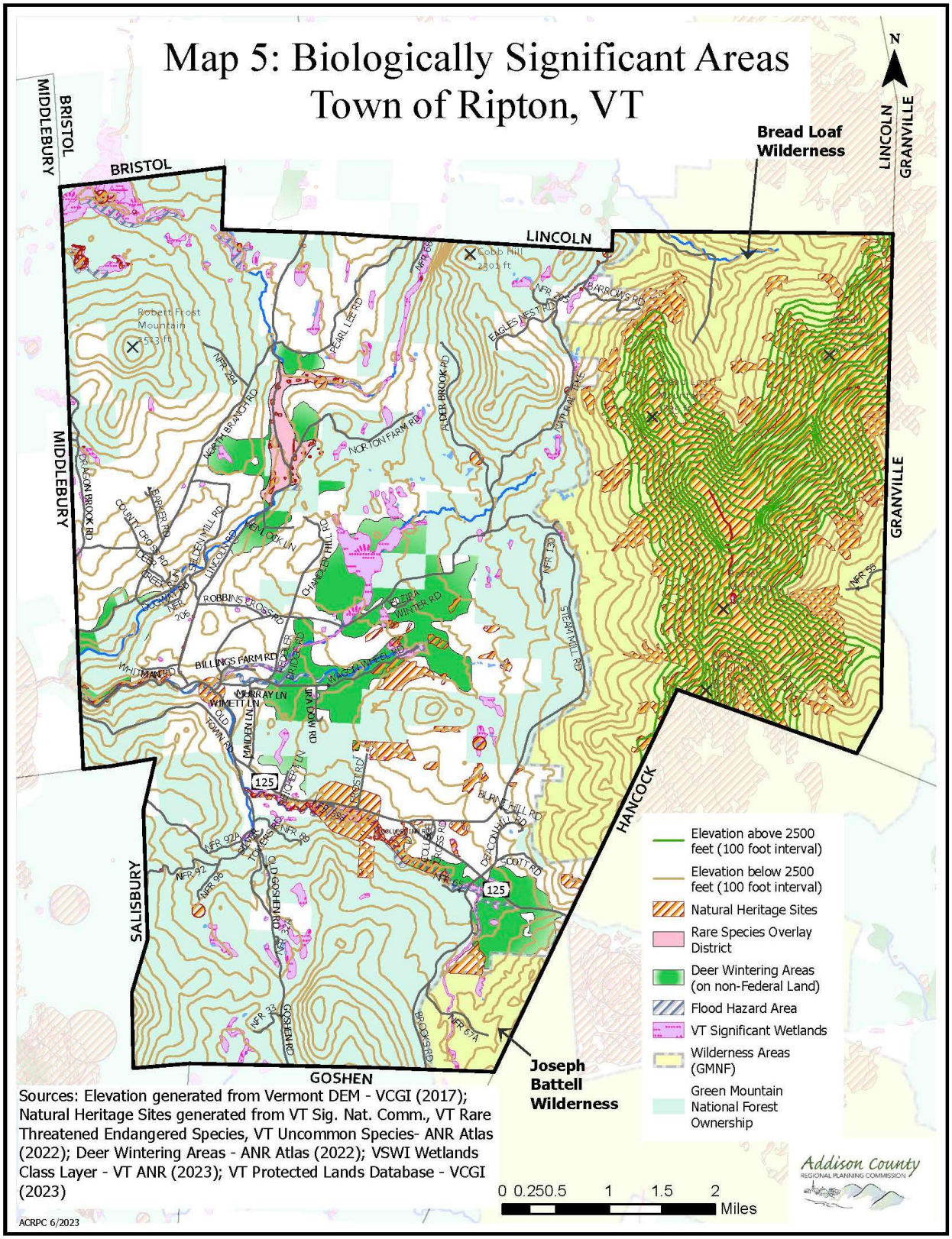
Source: 2019 NAIP Imagery

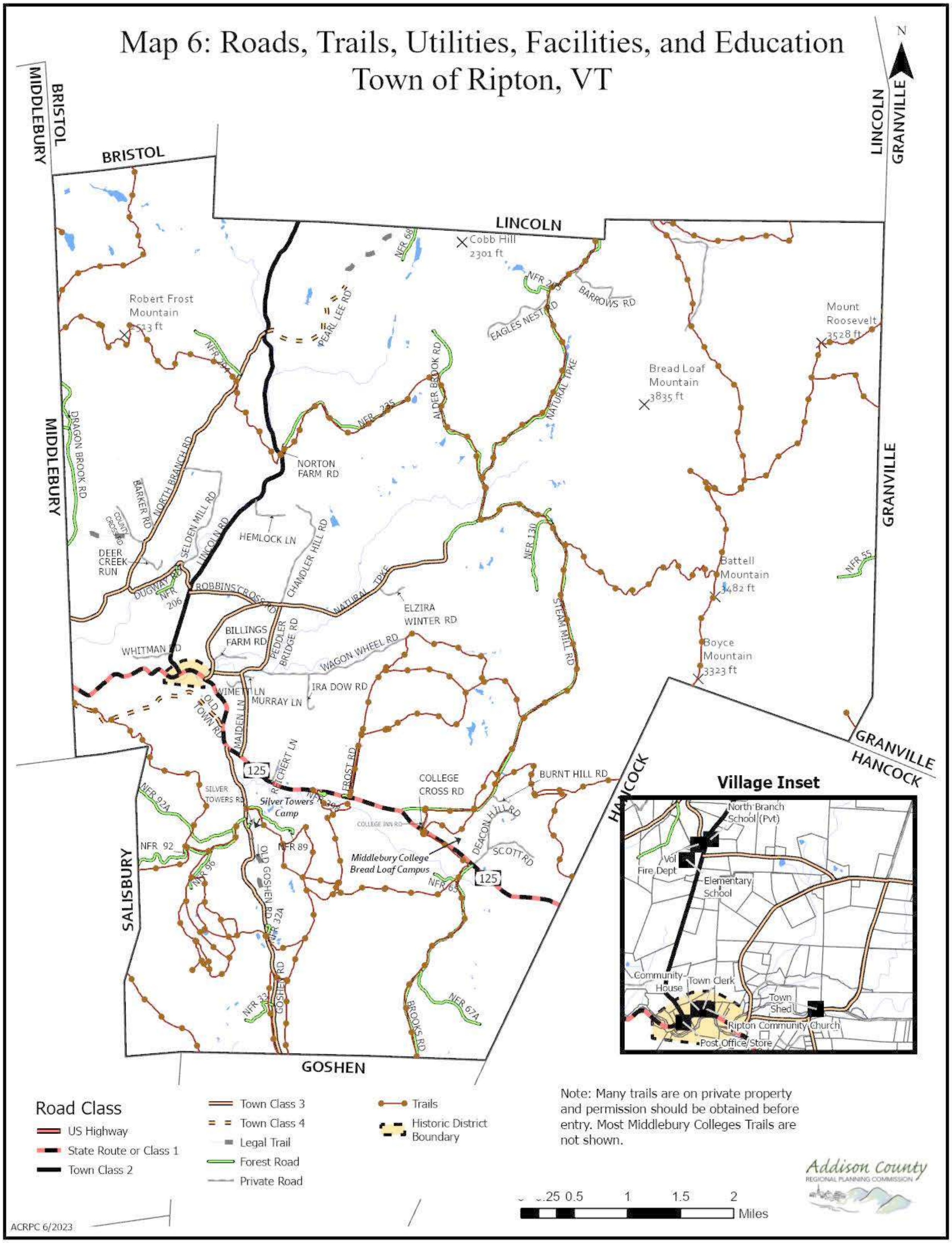
AORPC 6/2023

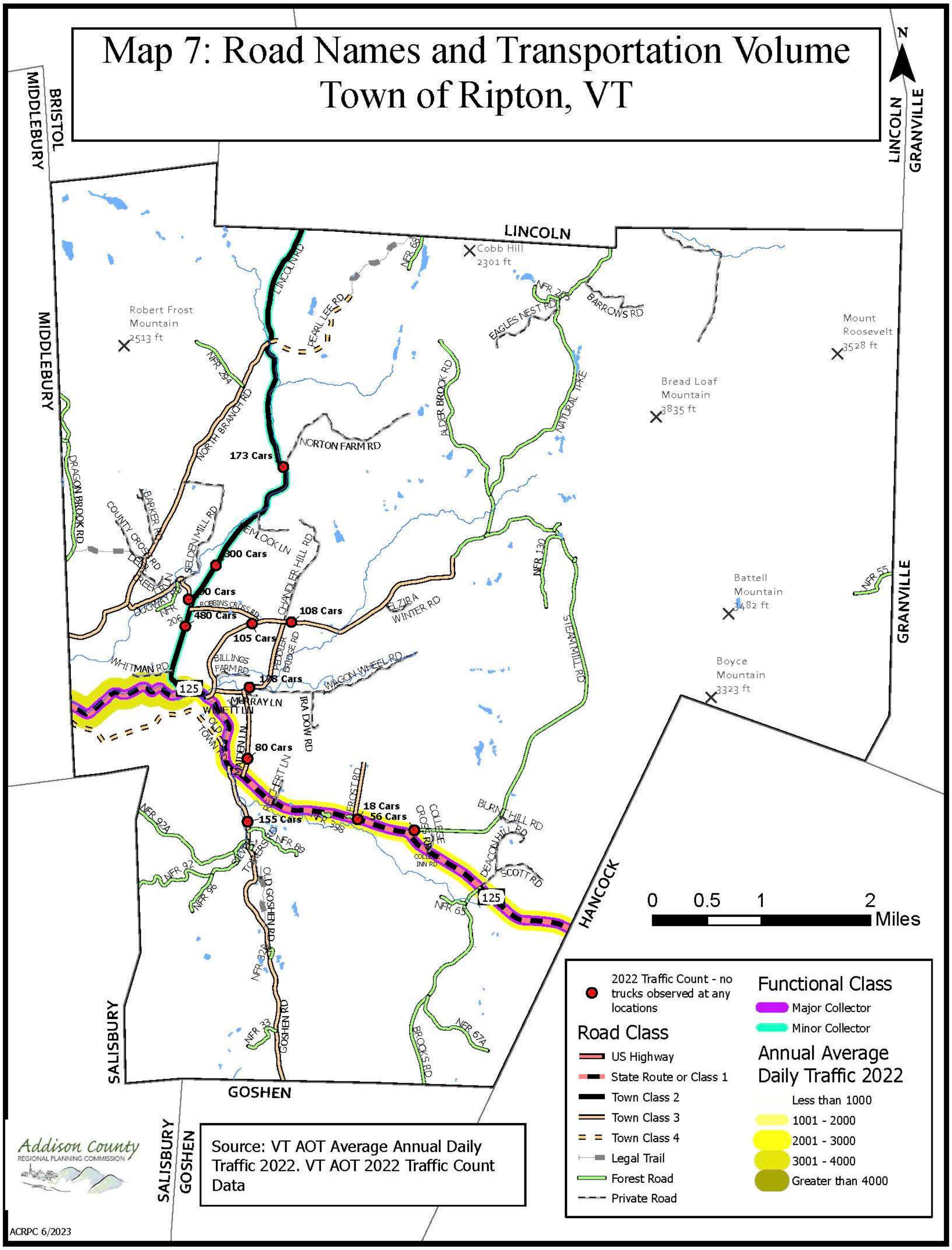

Map 2: Land Cover Types
Town of Ripton, VT
N
BRISTOL
MIDDLEBURY
LINCOLN
GRANVILLE
LINCOLN
MIDDLEBURY
SALISBURY
GOSHEN
HANCOCK
GOSHEN
HANCOCK
GRANVILLE
Robert Frost Mountain 2513 ft
Cobb Hill 2301 ft
Mount Roosevelt 3528 ft
Bread Loaf Mountain 3835 ft
Battell Mountain 3482 ft
Boyce Mountain 3323 ft
NFR 68
NFR 295
BARROWS RD
EAGLES NEST RD
PEARL LEE RD
NFR 294
NORTON FARM RD
ALDER BROOK RD
NATURAL TPKE
DRAGON BROOK RD
NORTH BRANCH RD
BARKER RD
SELDEN MILL RD
LINCOLN RD
HEMLOCK LN
CHANDLER HILL RD
NFR 130
NFR 55
DEER CREEK RUN
DUGWAY RD
NFR 206
ROBBINS CROSS RD
ELZIRA WINTER RD
STEAM MILL RD
BILLINGS FARM RD
PEDDLER BRIDGE RD
WAGON WHEEL RD
WHITMAN RD
MURRAY LN
WIMETT LN
OLD TOWN RD
MAIDEN LN
IRA DOW RD
FROST RD
REICHERT LN
125
NFR 398
BURNT HILL RD
DEACON HILL RD
COLLEGE CROSS RD
SCOTT RD
NFR 65
NFR 92A
NFR 92
NFR 96
NFR 89
TOWERS RD
OLD GOSHEN RD
NFR 32A
NFR 33
GOSHEN RD
BROOKS RD
NFR 67A
Structure Use (2018)
Government
Commercial
Utilities
Cultural
Educational
Multi-Family Residential
Single Family Residential + Camps
Recreational
Other Structures
Land Cover (2022)
Built-up or Barren
Forestland
Scrub, Grassland, or Agriculture
Water or Wetlands
0 0.5 1 2 Miles
Sources: Land Use and Land Cover 2022, Satellite Imagery, National Land Cover Database; VT E-911 Address Points
Addison County
ACRPC 6/2023

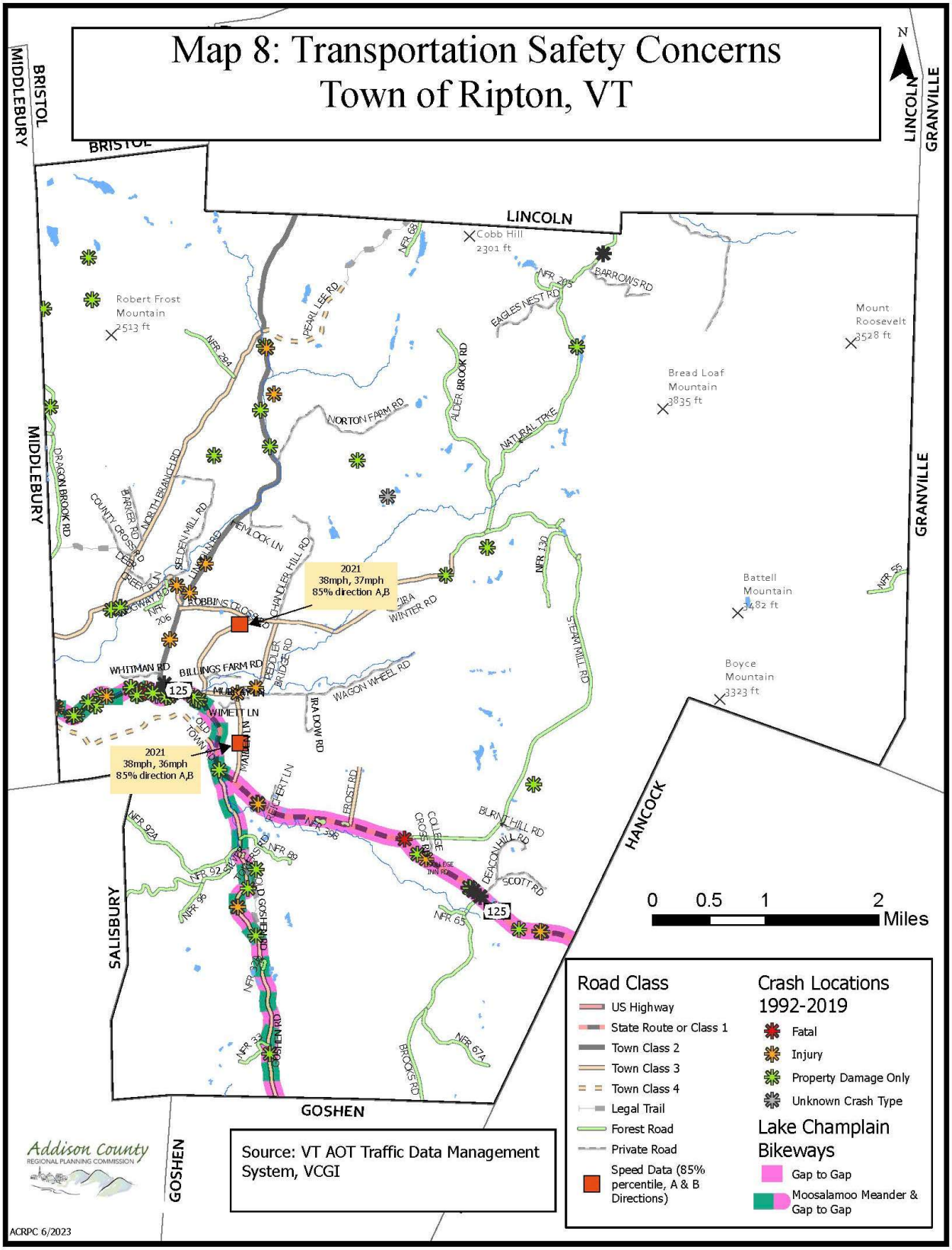

Map 3: Soil Septic Suitability &
Private Water Well Yield
Town of Ripton, VT
N
BRISTOL
MIDDLEBURY
LINCOLN
GRANVILLE
SALISBURY
HANCOCK
GOSHEN
Robert Frost Mountain 2513 ft
Cobb Hill 2301 ft
Mount Roosevelt 3528 ft
Bread Loaf Mountain 3835 ft
Battell Mountain 3482 ft
Boyce Mountain 3323 ft
Private Water Well Yeild (GPM)
0.00 - 10.00
10.01 - 25.00
25.01 - 100.00
Septic Suitability
Well Suited
Moderately Suited
Marginally Suited
Not Suited
Not Rated
Sources: VT Data - Onsite Sewage Disposal Soil Ratings (2023); Private Wells- VT ANR (2019)
ACRPC 6/2023
Addison County
REGIONAL PLANNING COMMISSION
0 0.250.5 1 1.5 2
Miles

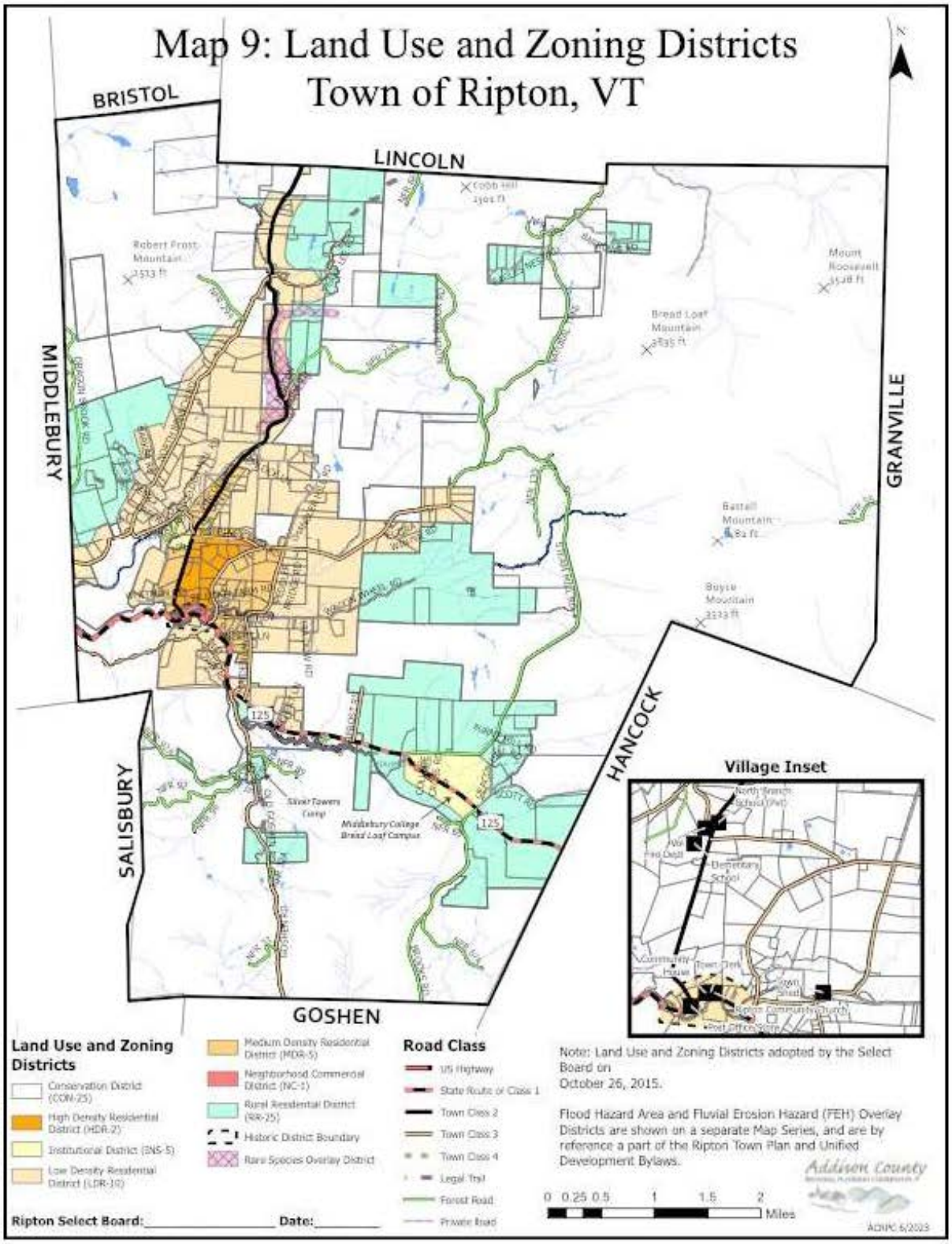

Map 4: Landscape Slope
Town of Ripton, VT
N
BRISTOL
MIDDLEBURY
LINCOLN
GRANVILLE
HANCOCK
SALISBURY
GOSHEN
Cobb Hill
2301 ft
Robert Frost
Mountain
2513 ft
Bread Loaf
Mountain
3835 ft
Mount
Roosevelt
3528 ft
Battell
Mountain
4482 ft
Boyce
Mountain
4323 ft
Slope in Percent
0-10%
11-15%
16-20%
21-30%
Over 30%
Source: ESRI World Terrain
Slope Map (2023)
Addison County
REGIONAL PLANNING COMMISSION
0 0.250.5 1 1.5 2
Miles
ACRPC 6/2023

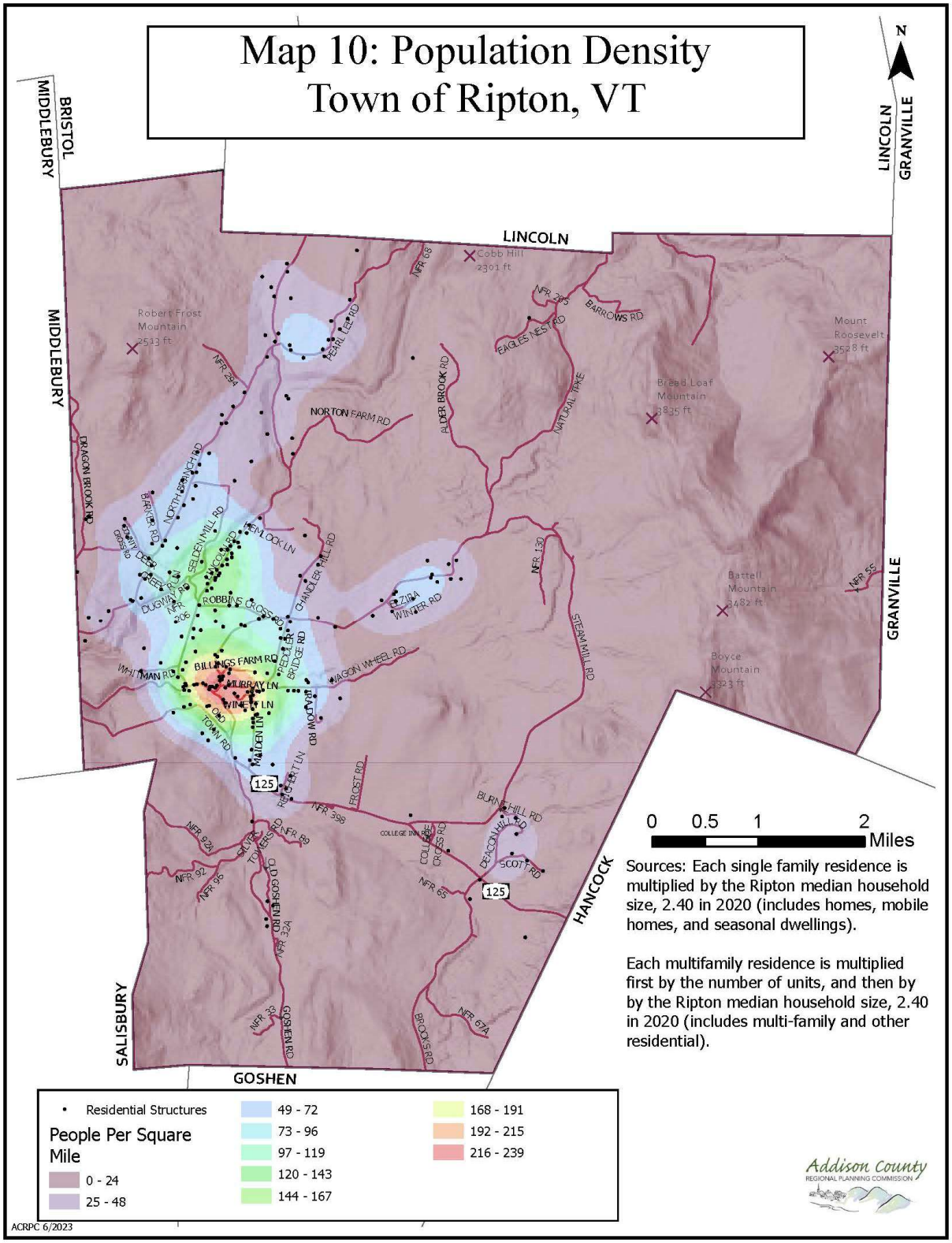

Map 5: Biologically Significant Areas
Town of Ripton, VT
N
Bread Loaf Wilderness
BRISTOL
MIDDLEBURY
LINCOLN
GRANVILLE
HANCOCK
SALISBURY
GOSHEN
Robert Frost Mountain 2573 ft
Cobb Hill 2301 ft
Elevation above 2500 feet (100 foot interval)
Elevation below 2500 feet (100 foot interval)
Natural Heritage Sites
Rare Species Overlay District
Deer Wintering Areas (on non-Federal Land)
Flood Hazard Area
VT Significant Wetlands
Wilderness Areas (GMNF)
Green Mountain National Forest Ownership
Joseph Battell Wilderness
Addison County
REGIONAL PLANNING COMMISSION
0 0.250.5 1 1.5 2
Miles
Sources: Elevation generated from Vermont DEM - VCGI (2017); Natural Heritage Sites generated from VT Sig. Nat. Comm., VT Rare Threatened Endangered Species, VT Uncommon Species- ANR Atlas (2022); Deer Wintering Areas - ANR Atlas (2022); VSWI Wetlands Class Layer - VT ANR (2023); VT Protected Lands Database - VCGI (2023)
ACRPC 6/2023


Map 6: Roads, Trails, Utilities, Facilities, and Education
Town of Ripton, VT
BRISTOL
MIDDLEBURY
LINCOLN
GRANVILLE
HANCOCK
SALISBURY
GOSHEN
Robert Frost Mountain
Cobb Hill 2301 ft
Mount Roosevelt 3528 ft
Bread Loaf Mountain 3835 ft
Battell Mountain 3482 ft
Boyce Mountain 3323 ft
NORTON FARM RD
HEMLOCK LN
ELZIRA WINTER RD
BILLINGS FARM RD
WHITMAN RD
IRA DOW RD
MURRAY LN
COLLEGE CROSS RD
BURNT HILL RD
SCOTT RD
Silver Towers Camp
Middlebury College Bread Loaf Campus
Village Inset
North Branch School (Pvt)
Vol Fire Dept
Elementary School
Community House
Town Clerk
Town Shed
Ripton Community Church
Post Office/Store
Road Class
US Highway
State Route or Class 1
Town Class 2
Town Class 3
Town Class 4
Legal Trail
Forest Road
Private Road
Trails
Historic District Boundary
Note: Many trails are on private property and permission should be obtained before entry. Most Middlebury Colleges Trails are not shown.
Miles
Addison County Regional Planning Commission
ACRPC 6/2023


Map 7: Road Names and Transportation Volume
Town of Ripton, VT
N
BRISTOL
MIDDLEBURY
LINCOLN
GRANVILLE
HANCOCK
GOSHEN
SALISBURY
Robert Frost Mountain 2513 ft
Cobb Hill 2301 ft
Mount Roosevelt 3528 ft
Bread Loaf Mountain 3835 ft
Battell Mountain 3482 ft
Boyce Mountain 3323 ft
LINCOLN RD
PEARL LEE RD
BARROWS RD
EAGLES NEST RD
NORTH BRANCH RD
NORTON FARM RD
ALDER BROOK RD
NATURAL TPKE
DRAGON BROOK RD
COUNTY CROSS RD
BARKER RD
SELDEN MILL RD
HEMLOCK LN
CHANDLER HILL RD
ELZIRA WINTER RD
ROBBINS CROSS RD
BILLINGS FARM RD
WHITMAN RD
WAGON WHEEL RD
MURRAY LN
IRA DOW RD
STEAM MILL RD
FROST RD
BURNT HILL RD
SCOTT RD
DEACON HILL RD
COLLEGE CROSS RD
OLD GOSHEN RD
GOSHEN RD
BROOKS RD
173 Cars
300 Cars
480 Cars
105 Cars
108 Cars
80 Cars
155 Cars
18 Cars
56 Cars
125
0 0.5 1 2 Miles
2022 Traffic Count - no trucks observed at any locations
Road Class
US Highway
State Route or Class 1
Town Class 2
Town Class 3
Town Class 4
Legal Trail
Forest Road
Private Road
Functional Class
Major Collector
Minor Collector
Annual Average Daily Traffic 2022
Less than 1000
1001 - 2000
2001 - 3000
3001 - 4000
Greater than 4000
Source: VT AOT Average Annual Daily Traffic 2022. VT AOT 2022 Traffic Count Data
Addison County
REGIONAL PLANNING COMMISSION
ACRPC 6/2023


Map 8: Transportation Safety Concerns
Town of Ripton, VT
N
BRISTOL
MIDDLEBURY
LINCOLN
GRANVILLE
HANCOCK
SALISBURY
GOSHEN
Cobb Hill
2301 ft
Robert Frost
Mountain
2513 ft
Bread Loaf
Mountain
3835 ft
Mount
Roosevelt
3528 ft
Battell
Mountain
3482 ft
Boyce
Mountain
3323 ft
2021
38mph, 37mph
85% direction A,B
2021
38mph, 36mph
85% direction A,B
0 0.5 1 2 Miles
Road Class
US Highway
State Route or Class 1
Town Class 2
Town Class 3
Town Class 4
Legal Trail
Forest Road
Private Road
Speed Data (85% percentile, A & B Directions)
Crash Locations
1992-2019
Fatal
Injury
Property Damage Only
Unknown Crash Type
Lake Champlain
Bikeways
Gap to Gap
Moosalamoo Meander & Gap to Gap
Source: VT AOT Traffic Data Management System, VCGI
Addison County
REGIONAL PLANNING COMMISSION
ACRPC 6/2023


Map 9: Land Use and Zoning Districts
Town of Ripton, VT
BRISTOL
LINCOLN
MIDDLEBURY
GRANVILLE
HANCOCK
SALISBURY
GOSHEN
Robert Frost Mountain
Mount Roosevelt
Bread Loaf Mountain
Bartell Mountain
Buyce Mountain
Silver Towers Camp
Middlebury College Bread Loaf Campus
Village Inset
Land Use and Zoning Districts
Conservation District (CON-25)
High Density Residential District (HDR-2)
Institutional District (INS-5)
Low Density Residential District (LDR-10)
Medium Density Residential District (MDR-5)
Neighborhood Commercial District (NC-1)
Rural Residential District (RR-25)
Historic District Boundary
Rare Species Overlay District
Road Class
US Highway
State Route or Class 1
Town Class 2
Town Class 3
Town Class 4
Legal Trail
Forest Road
Private Road
Note: Land Use and Zoning Districts adopted by the Select Board on
October 26, 2015.
Flood Hazard Area and Fluvial Erosion Hazard (FEH) Overlay Districts are shown on a separate Map Series, and are by reference a part of the Ripton Town Plan and Unified Development Bylaws.
0 0.25 0.5 1 1.5 2 Miles
Addison County
ACRPC 6/2023
Ripton Select Board:_____ Date:_____


Map 10: Population Density
Town of Ripton, VT
N
BRISTOL
MIDDLEBURY
LINCOLN
GRANVILLE
HANCOCK
SALISBURY
GOSHEN
Robert Frost Mountain 2513 ft
Cobb Hill 2301 ft
Bread Loaf Mountain 3835 ft
Mount Roosevelt 3528 ft
Battell Mountain 3482 ft
Boyce Mountain 3323 ft
NORTON FARM RD
ALDER BROOK RD
NATURAL TIKE
EAGLES NEST RD
BARROWS RD
PEARL LEE RD
DRAGON BROOK RD
NORTH RANCH RD
BARKER RD
SELDEN MILL RD
HEMLOCK LN
CHANDLER HILL RD
ROBBINS CROSS RD
ZIBA WINTER RD
STEAM MILL RD
BILLINGS FARM RD
MURRAY LN
WINEY LN
WAGON WHEEL RD
WHITMAN RD
OLD TOWN RD
MALDEN LN
BRIDGE RD
FROST RD
BURNT HILL RD
DEACON HILL RD
SCOTT RD
COLLEGE CROSS RD
COLLEGE INN RD
OLD GOSHEN RD
GOSHEN RD
BROOKS RD
125
0 0.5 1 2 Miles
Sources: Each single family residence is multiplied by the Ripton median household size, 2.40 in 2020 (includes homes, mobile homes, and seasonal dwellings).
Each multifamily residence is multiplied first by the number of units, and then by by the Ripton median household size, 2.40 in 2020 (includes multi-family and other residential).
Residential Structures
People Per Square Mile
0 - 24
25 - 48
49 - 72
73 - 96
97 - 119
120 - 143
144 - 167
168 - 191
192 - 215
216 - 239
Addison County
REGIONAL PLANNING COMMISSION
ACRPC 6/2023

MAP 11a

Forest Blocks and Habitat Connectors Ripton, VT

N

1:80,000

River, Streams and Lakes

Highest Priority Forest Blocks

Important Forest Blocks

Forest Habitat Connectors

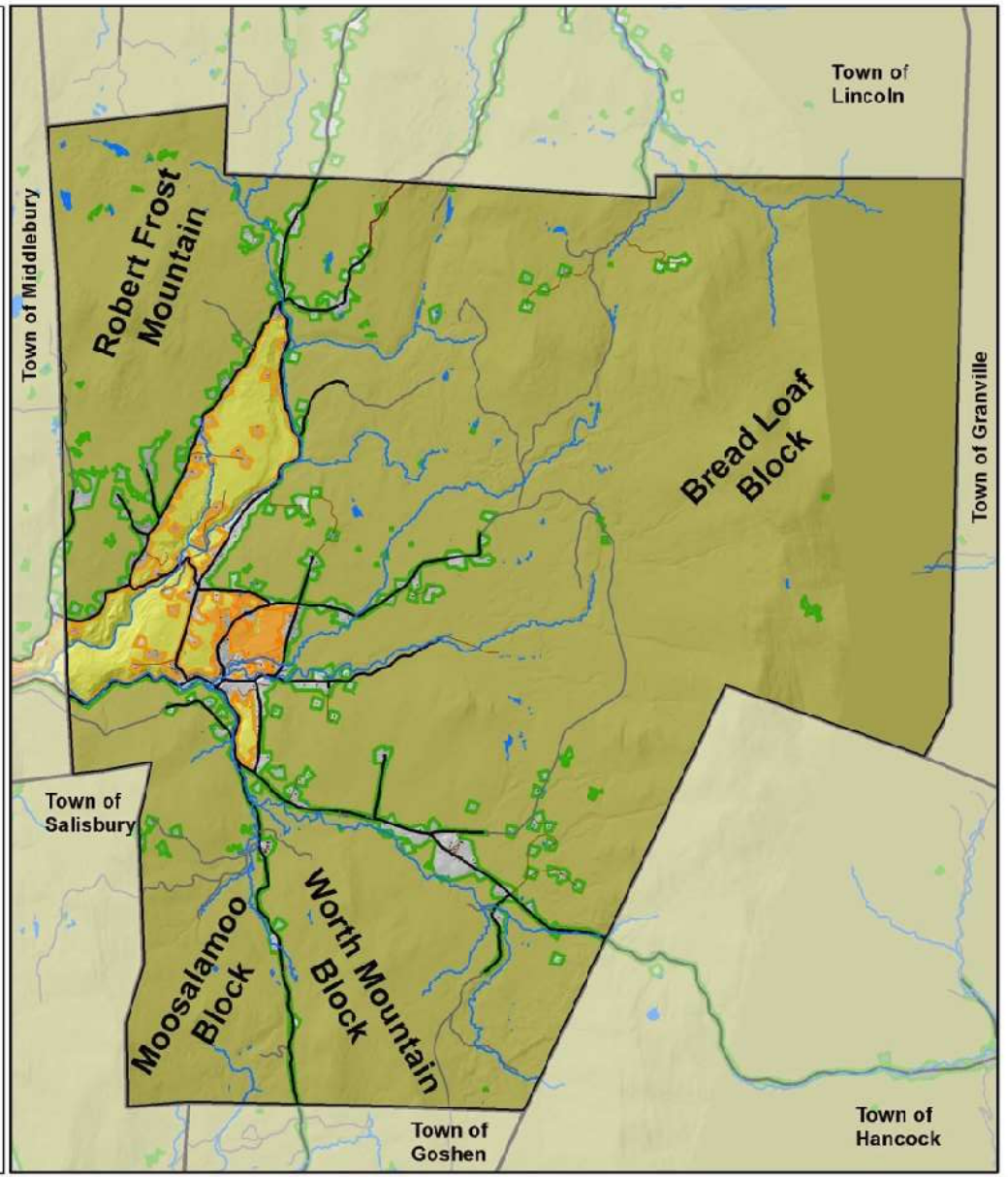
Forest blocks are contiguous forested areas of at least 20 acres, containing no (or few Class IV) roads and little or no human development for non-forest use.

Highest Priority Forest Blocks have been identified as the highest priority across the state for maintaining interior forest. These are the largest and/or highest ranked forest blocks from all biophysical regions that provide the foundation for interior forest blocks and associated ecological functions.

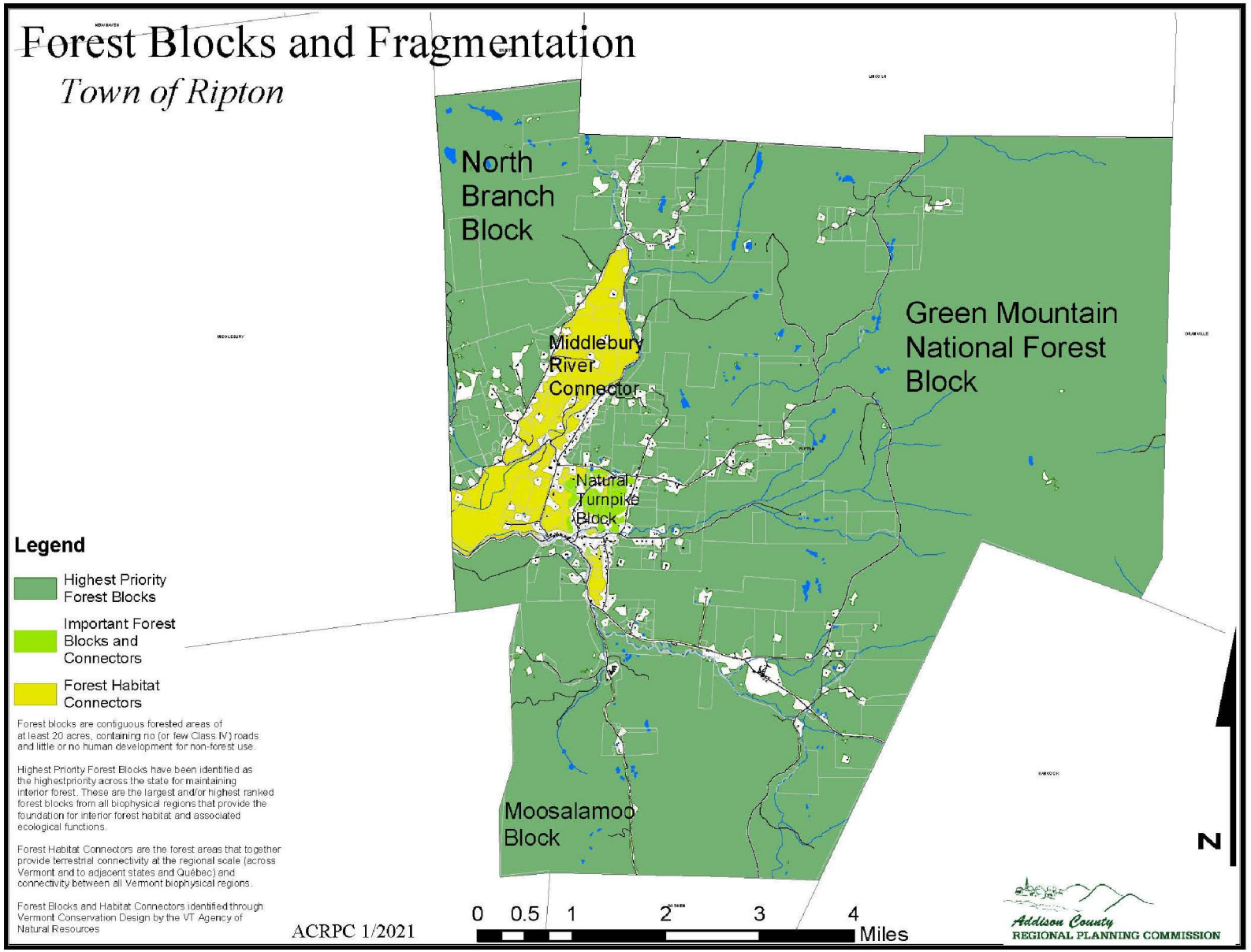
Forest Habitat Connectors are the forest areas that together provide terrestrial connectivity at the regional scale and connectivity between all Vermont biophysical regions.

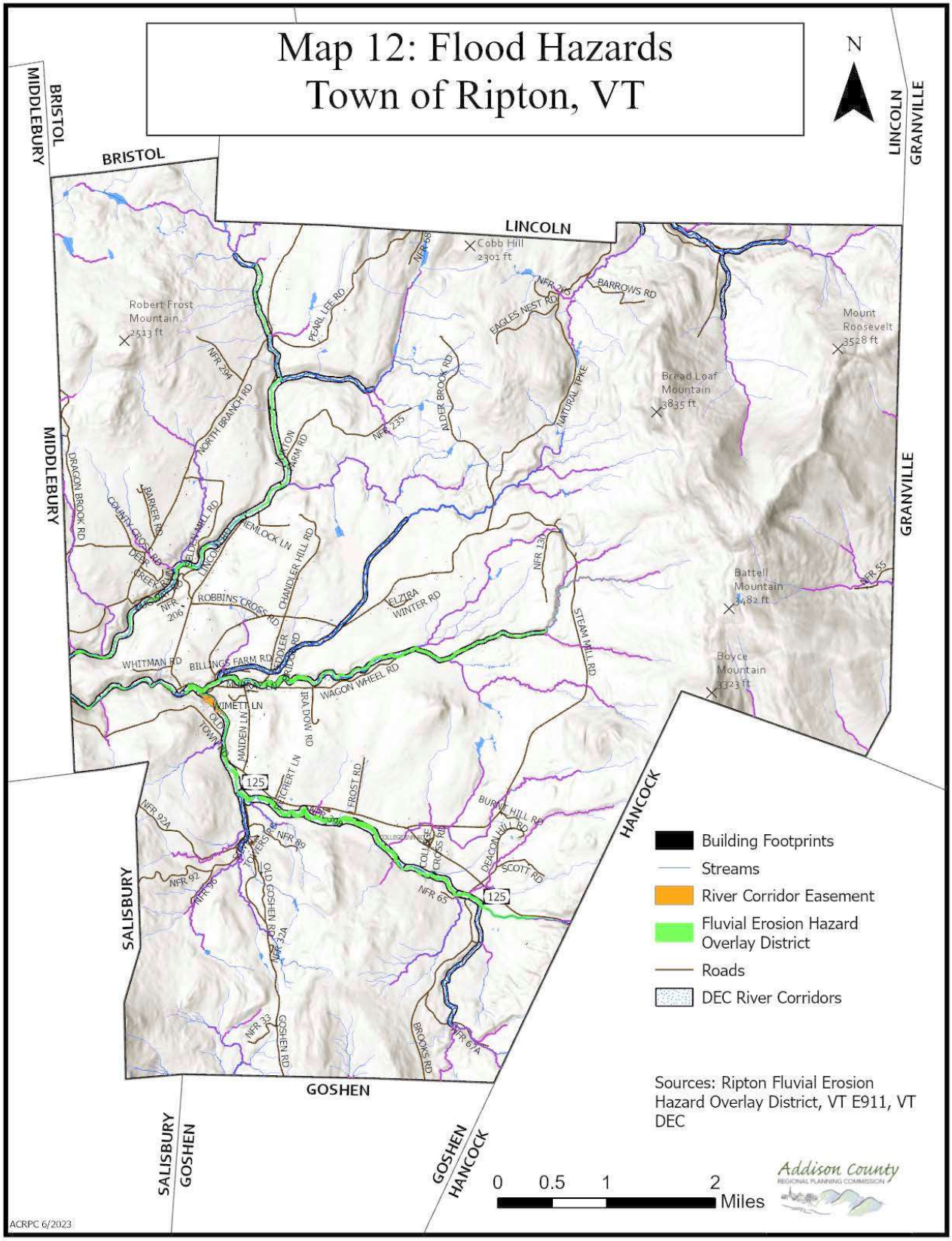
Forest Blocks and Habitat Connectors are identified through Vermont Conservation Design by the VT Agency of Natural Resources.

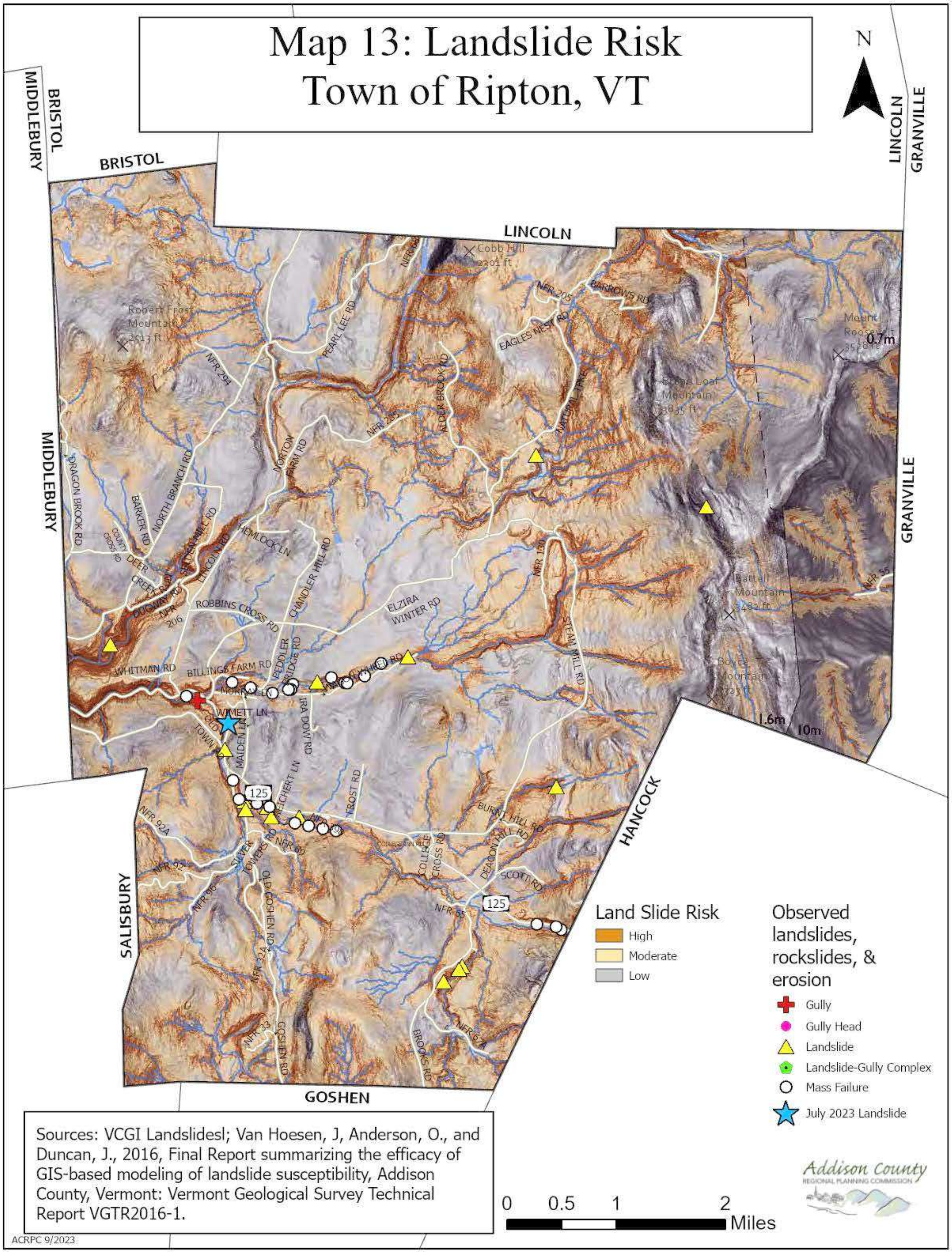
5/2020



MAP 11b


Forest Blocks and Fragmentation
Town of Ripton
North Branch Block
Middlebury River Connector
Natural Turnpike Block
Green Mountain National Forest Block
Moosalamoo Block
Legend
Highest Priority Forest Blocks
Important Forest Blocks and Connectors
Forest Habitat Connectors
Forest blocks are contiguous forested areas of at least 20 acres, containing no (or few Class IV) roads and little or no human development for non-forest use.
Highest Priority Forest Blocks have been identified as the highestpriority across the state for maintaining interior forest. These are the largest and/or highest ranked forest blocks from all biophysical regions that provide the foundation for interior forest habitat and associated ecological functions.
Forest Habitat Connectors are the forest areas that together provide terrestrial connectivity at the regional scale (across Vermont and to adjacent states and Québec) and connectivity between all Vermont biophysical regions.
Forest Blocks and Habitat Connectors identified through Vermont Conservation Design by the VT Agency of Natural Resources
ACRPC 1/2021
0 0.5 1 2 3 4
Miles
N
Addison County
REGIONAL PLANNING COMMISSION


Map 12: Flood Hazards
Town of Ripton, VT
N
BRISTOL
MIDDLEBURY
LINCOLN
GRANVILLE
SALISBURY
GOSHEN
HANCOCK
Cobb Hill
2301 ft
Robert Frost
Mountain
2513 ft
Bread Loaf
Mountain
3835 ft
Mount
Roosevelt
3528 ft
Battell
Mountain
3482 ft
Boyce
Mountain
3323 ft
BARROWS RD
EAGLES NEST RD
PEARL LEE RD
NORTH BRANCH RD
ALDER BROOK RD
NATURAL TPKE
DRAGON BROOK RD
COUNTY CROSS RD
BARKER RD
HEMLOCK LN
CHANDLER HILL RD
ROBBINS CROSS RD
ELZIRA
WINTER RD
STEAM MILL RD
WHITMAN RD
BILLINGS FARM RD
WAGON WHEEL RD
KIMETT LN
MAIDEN LN
FROST RD
BURNT HILL RD
COLLEGE
CROSS RD
DEACON HILL RD
SCOTT RD
OLD GOSHEN RD
BROOKS RD
NFR 55
125
Building Footprints
Streams
River Corridor Easement
Fluvial Erosion Hazard
Overlay District
Roads
DEC River Corridors
Sources: Ripton Fluvial Erosion
Hazard Overlay District, VT E911, VT
DEC
0 0.5 1 2
Miles
Addison County
REGIONAL PLANNING COMMISSION
ACRPC 6/2023


Map 13: Landslide Risk
Town of Ripton, VT
N
Land Slide Risk
High
Moderate
Low
Observed landslides, rockslides, & erosion
Gully
Gully Head
Landslide
Landslide-Gully Complex
Mass Failure
July 2023 Landslide
Sources: VCGI Landslidesl; Van Hoesen, J, Anderson, O., and Duncan, J., 2016, Final Report summarizing the efficacy of GIS-based modeling of landslide susceptibility, Addison County, Vermont: Vermont Geological Survey Technical Report VGTR2016-1.
0 0.5 1 2 Miles
ACRPC 9/2023
BRISTOL
MIDDLEBURY
LINCOLN
GRANVILLE
SALISBURY
GOSHEN
HANCOCK