2021 Plainfield Town Plan

Plainfield Planning Commission

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Plainfield Select Board

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Special Thanks to Susan Grimaldi for the cover painting, Bram Tobin for the photos, graphics and contributions and to the Conservation Committee.

The Plainfield Town Plan was first adopted in 1973

Revised and re-adopted in 1979, 1984, 1994, 2000, 2007 and 2021

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1. Introduction

1.1 The Planning Process

This document sets out the vision Plainfield residents have for the future of the town and provides a framework to achieve the community's goals and objectives over the next ten years. As a small-sized town close to two urban areas, Montpelier and Barre, Plainfield is more likely to be affected by outside development pressure than to generate growth or impacts affecting other towns. A Town Plan is important to protect the community's interests, retain local control, and encourage desired forms of growth and development. The plan itself has no regulatory authority, it merely expresses the town's consensus on the goals and objectives that regulations should strive to obtain.

The Town Plan is updated every five years to reflect new information and changing needs in the community. It can also be amended at any time to deal with unanticipated changes affecting the town. As the principal policy statement for the Town of Plainfield, it is intended as a guide upon which to base decisions about community issues.

The Plainfield Town Plan should be used for:

- providing information about the community
- serving as a basis for decisions regarding economic development, recreation, land conservation and development
- providing the framework for planning the future of the town
- guiding regulatory actions, such as zoning bylaws, and regulations regarding flood inundation, fluvial erosion, and subdivisions
- establishing a basis for the review of state and regional programs
- evaluating proposals affecting the community
- guiding Plainfield's relations with neighboring towns and the state

While this plan charts a direction for the town, it is up to its citizens to use the plan to shape Plainfield's future. Each chapter includes a Goal(s) which reflects a shared vision for the community accompanied by a table containing the following:

Strategy	Responsible Party	Priority
The next step needed to move toward the stated goal	Identifies the responsible party to guide efforts at the municipal level	Short term = within 1 year Near term = within 1-3 year Long term = within 5 year

This plan uses the statutory definition of "should", which means that "an activity is encouraged but not mandated." (24 VSA §4303(26)).

1.2 The Authority to Adopt the Town Plan

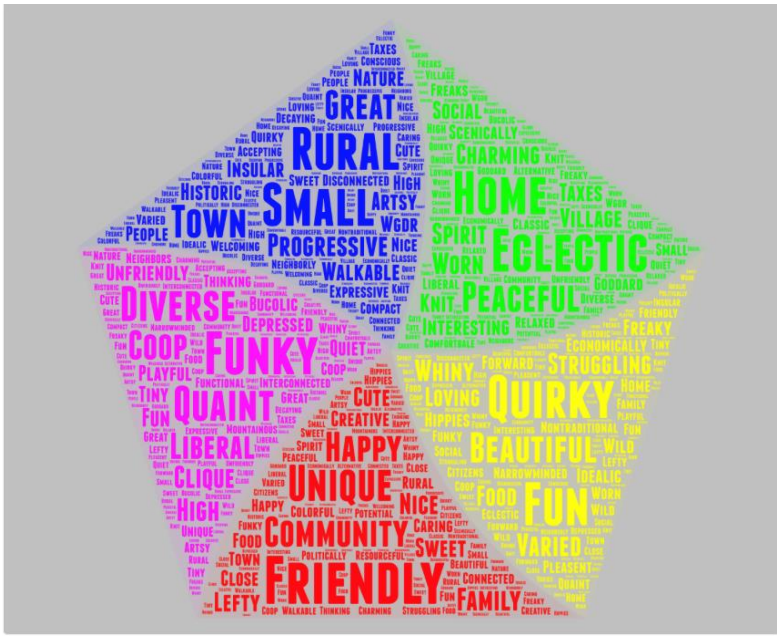
The Plainfield Town Plan was prepared in accordance with Title 24 of the Vermont Statutes Annotated: Chapter 117, The Vermont Municipal and Regional Planning Act.

1.3 Town Participation in Writing this Plan

The Planning Commission has relied on a variety of sources to produce the town plan. There has been constant communication with the Selectboard, the Town Clerk and Assistant Town Clerk, the Fire Department, the Water and Wastewater Commission, the Conservation Commission, the Highway Department, the Hazard Mitigation Committee in addition to tremendous input from the Central Vermont Regional Planning Commission. We have utilized maps and images from a variety of sources: Aerial Survey maps from University of Vermont Spatial Analysis Lab and Brett Engstrom's ecological survey, which was commissioned by the Planning Commission and the Conservation Commission. The Planning Commission also created a town survey on various issues.

TOWN SURVEY - WHAT THREE WORDS DESCRIBE PLAINFIELD?

The survey was created based on questions devised by the Planning Commission in combination with other queries in other Vermont Town Plans. This opinion poll is in no way a scientific representation of local opinions but rather a snapshot that gathers some opinions from a variety of interested parties. It is, yet another, resource which is combined with a vast amount of data derived from numerous sources and the Local, State and National level.



TOWN SURVEY RESULTS: WHAT SHOULD THE TOWN SLOGAN BE?

As the introduction to the survey states: A Town Plan is a reflection of the town's vision for itself going forward. Ideally developers of this document reflect the opinions of stakeholders and answer the question: What should the Town be like in the future? This is the fundamental question the planning Commission was tasked with answering.

TOWN SURVEY RESULTS: WHAT NEEDS TO CHANGE?

1.4 Coordination with Neighboring Towns

Plainfield shares a number of governmental and social interactions with the neighboring towns. The major link between Plainfield and Marshfield is their shared union school, Twinfield. This unites the two towns on a social and economic level since the largest share of the local tax revenue goes to the operation of the school. The water and wastewater system that serves the village of Plainfield also serves part of the town of Marshfield.

Plainfield is a member of the Central Vermont Regional Planning Commission (CVRPC). The town's fire and fast squad are part of a mutual aid system in Washington County. The Plainfield Planning Commission has worked with towns along the US Route 2 corridor and had developed a commuter van service in conjunction with the Wheels Transportation Network.

2. Community Character

2.1 Plainfield Today

Plainfield is a small, diverse town with a compact village straddling the Winooski River in its northwest corner. US Route 2, a major east-west artery, cuts through the upper village. In the lower village, gravel roads branch out into the town's hills, offering access to the beauty of Plainfield's open land and long-range views. At 13,500 acres, Plainfield is approximately half the size of neighboring towns.

Plainfield is home to a restaurant, a food co-op, an auto repair business, a bookstore, a furniture store, an antique business, a travel agency, a tattoo parlor, a biofuel recovery/processing/distribution business, a yoga studio, a law office, a clothing design firm, an acupuncturist, and a summer farmers' market. During growing season, the market is open on the lawn of Grace Methodist Church across from the Mill Street Park.

Some of the institutions that enrich community life are Goddard College, The Health Center, the Plainfield Coop's Community Center, the Cutler Library, and the Plainfield Historic Society. Popular annual events include Plainfield Old Home Days and the Halloween Parade.

Plainfield Village, over the past decade, has grown into a stable neighborhood, attractive to homeowners, renters, and entrepreneurs. New amenities include sidewalks and crosswalks, a public park, tree plantings and public gardens,

bicycle racks, an electric car charging station, historic markers, boat access to the Winooski River, and a Park & Ride. The Green Mountain Transportation Agency's US 2 Commuter offers daily public bus service from the Park & Ride at the east end of Main Street and from the Goddard College Parking lot.

In 2013, construction was completed on an information kiosk at Mill Street Park, and the Main Street Bridge was rewired with replicas of the original lampposts, creating a welcoming gateway into the lower village from US Route 2. There are plans to upgrade the water lines in the upper village.

The Historic Society has begun to place granite markers at historic sites in the village. Currently, there are two in place: one at the Washburn Park and one at the abandoned Montpelier-Wells River Railroad bed at the Park and Ride. Both commemorate buildings that formerly stood at those sites. (For additional information about the Historic Society, see Chapter 2: Community Character)

Since the 2014 Town Plan Plainfield has successfully managed a number of challenges to the town's infrastructure and economy.

- The Town Hall Opera House completed a successful renovation. The work is sparking a renewed interest in promoting the performing arts and an appreciation of the village's historic architecture. It now holds numerous civic events, plays and is available for other functions.
- Progress is being made regarding the US Route 2 Intersection safety issues. The town has had numerous meetings with Vermont Agency of Transportation over the past several years. The State has committed to a robust multi-million-dollar solution which involves lowering the grade the highway, removing the stairs/island and adding three-way traffic signaling. As of the fall of 2019 the State and the town are meeting with stakeholders. There will be a dedicated Selectboard meeting at the Opera house to formally announce the strategy. A hopeful timeline projects the project will begin in 2023. The work may close access to the lower Village for a time and how this impacts local businesses will be taken into account in the planning process.
- A major study of the Great Brook flooding situation has been completed resulting in securing funding for a redesign of the first bridge on Brook Road.
- Two troubling structures, both causing health and safety issues, were torn down. A house and garage located at 208 Cameron Road was in imminent danger of collapsing into the Great Brook upstream of the village and causing significant risk to bridges. The Town was able to secure Federal and State funding to purchase the property and remove the structures.

There are challenges in tackling a tough business environment in addition to increased expense for emergency services and planning for water, fire department and municipal building.

Enforcement of the noise ordinance and public parking regulations is a problem for the community. Speeding and pedestrian safety continue to be a concern in the lower village, on the back roads, and on US 2. Another major problem is flooding- particularly, the Great Brook. With support from Central Vermont Regional Planning Commission, the Town is addressing these issues.

This Town Plan, as did previous Town Plans, stress the importance of maintaining Plainfield's rural character-a landscape of hills, valleys, fields, and forests. Though only a few farms are still in business, agriculture is strongly supported by its citizens.

Plainfield values walkable diverse neighborhoods that are mixed-use, have enough public space, are developed in a context-appropriate way, and move toward sustainability with proper respect given to land owners.

2.2 Plainfield's Past

Plainfield's first visitors were most likely from the Abenaki and Cowasuck Native American tribes who traveled along the river. Surveyors employed by the colony of New York were probably among the first white settlers to pass through Plainfield in 1773. In 1788, Plainfield, a land grant left over from neighboring surveyed townships, was called St Andrew's Gore. The first settlement occurred in 1791. In 1797, the legislature granted the petition to incorporate the town as Plainfield, but it wasn't until 1867 that the village became incorporated.

In 1812, more than a dozen families had settled in the village and a commercial center was forming by the falls on the Winooski River, south of the Main Street Bridge. The falls provided the principal power source for Plainfield's mills. A sawmill and gristmill on Brook Road gave rise to a secondary commercial center called Perkinsville. In 1860 there were 157 dwellings in Plainfield-107 in the hills and 50 in the village. The typical farm size was 130 acres. Farmers worked with a pair of horses or oxen and grew diversified crops of wheat, rye, Indian corn, and oats.

A new era began in 1873 when the Montpelier and Wells River railroad track reached Plainfield. In 1889, the town mill cut between two and three million board feet of lumber a year and ground 600-800 bushels of grain a day with a work force of 30 men. Seventy percent of the land had been cleared. Stores for hardware, dry goods, paints, shoes, and groceries; and the services of blacksmiths, shoemakers, dressmakers, jewelers, veterinarians, mechanics and physicians were all available. The village hotel served overland East and West travelers and, in the summer, provided an overnight post for tourists on their way to the "Spring House" in Perkinsville. Several village homes were altered to provide housing for the mill and railroad workers. Rail cars shipped cheese, butter, potatoes, sheep, and cattle to the south. The town had a creamery, two farm machinery dealers, four builders, two livery stables, eleven merchants, and fourteen manufacturers, mechanics or artisans. The total town population was about 750 people.

Plainfield Village growth and prosperity continued into the twentieth century. Electricity came to the village in 1906. The town's first ice merchant and the first dentist set up trade in 1915. In 1916, F. J. Bancroft erected a sawmill beyond the railroad station to cut ash lumber for tennis stock and dowels. The Plainfield Garage opened in 1923 to service the new automobiles in town. The Goddard Seminary completed its move from Barre to Plainfield in 1938. The railroad ceased operation in 1956 when trucks started to replace trains in transporting milk to the market.

Historically Significant Sites

Several properties in Plainfield are listed on both the State and National Register of Historic Places. Plainfield Village is recognized as a Historic District on the National Register of Historic Places, as is Goddard College's Greatwood Campus.

Plainfield's Village Historic District represents an intact nineteenth century village. The historic significance is represented by the cohesiveness of the village as a whole rather than just the examples of a few outstanding individual buildings. There are a notable number of brick buildings derived from an early nineteenth century building tradition using locally sourced bricks. For more information, please see the attached Plainfield Historic District and Designated Village Center map.

Listings on both the State and the National Register acknowledge the importance of these village buildings and the need to preserve them, but do not restrict the possibilities for the property owners. However, the Town encourages property owners, when they renovate, to be sensitive to historic attributes. The town can provide information about the ways and means of maintaining the integrity of the original design.

Nearly 40 homes outside the village are listed on the State Register of Historic Places. There are also a number of historic barns remaining in Plainfield and most are considered an integral part of the rural landscape. Maintenance of these structures can be costly and is often neglected once the barn is no longer used for agricultural use. Historic sites throughout the Town also include LR Jones State Forest and the Fire Tower.

The history of Goddard College is intertwined with the Martin family, who settled in Plainfield in the early part of the 19th century. The brick house known as Allenwood, located on US Route 2 across from the present day Health Center, was built by a Martin in 1827. The first Martin at Greatwood farm, present site of Goddard, was William Shepard Martin, the uncle the builder of Allenwood. He moved to Plainfield from Marshfield in 1860 when he purchased the farmhouse that had been located near the intersection of US Route 2 and VT Route 214. By 1880, Martin had expanded the Greatwood farm to include 400 acres, including Allenwood and Littlewood farm across the Winooski. Martin was by any measure a man of great drive and intelligence. Martin represented Plainfield in the Legislature, was a Washington County senator and an associated judge. He formed close ties to Goddard Seminary in Barre while acting as a trustee for them. He died in 1902. At this time two of his sons William Shepard Martin Jr. and Orlando Martin took over the farm. Martin Jr. graduated from Tufts in 1893 and became president of Mead Morrison Manufacturing around 1895. He was often away in Boston, so Orlando largely took over managing the property that became known as Greatwood estate. In 1907-1908 Martin Jr. had the original farmhouse raised to make room for his summer house-the manor. Martin Jr. had US Route 2 and VT Route 214 moved to their present location to create more grounds for their estate. The barn (Haybarn Theater) that had been attached to the original farmhouse was also moved due to the disagreeable animal smells. Martin Jr. hired Boston architect James Kelly to design the manor reminiscent of the bungalow style of India. Around 1927 Martin Jr. hired Arthur Shurcliff to design the dry-laid stone wall enclosures for their rose gardens behind the manor. Martin Jr. also donated the stone and labor to build the stone walls at the Methodist Church around this time. Upon Martin Jr.'s death his wife sold the estate to Goddard Seminary. The estate was remodeled to create Goddard College.

Plainfield Historical Society

The Plainfield Historical Society (PHS) is a private, non-profit association, whose mission is to "collect, preserve, share and create materials that establish or illustrate the history of Plainfield, Vermont." In carrying out this mission, the Society helps to enrich and build community and is an important contributor to the cultural and social life of Plainfield.

In 1993, PHS published The Town of Plainfield, Vermont: A Pictorial History, 1870 – 1940 (second printing in 2008). It has also published a booklet containing a self-guided walking tour of Plainfield village (available at the Town Clerk's Office) and an annual wall calendar featuring different historic photos for each month. PHS organizes exhibits and presentations on local history at various locations in the village.

Unlike other local historical societies, the Plainfield Historical Society does not receive funding assistance from the Town. However, it had been allowed exclusive use of a small, one- room building owned by the Town (the village's first fire station) on US Route 2/School Street. This space was used to store artifacts and printed materials that have been donated to the Historical Society over the years. The collection now is stored in the Town Offices. The building is not equipped to display historic artifacts and serves as a repository for the Society's collection of local historical artifacts and records.

The Society meets monthly in the Cutler Library and stores some of its files there. However, since the library is small and crowded with materials, there is not adequate wall space to effectively display materials and information reflecting Plainfield's history.

2.3 Recent History

Consolidation is a common theme in Plainfield and throughout Vermont during the second half of the 20th century. Milk cans were replaced by bulk storage tanks, allowing farmers to keep their milk cool on site while waiting for pickup by milk tanker trucks. As the industry rushed to consolidate, small dairy farms failed and larger farms, willing to invest in technology, survived.

The Vermont legislature was going through a process of consolidation as well. In 1791, the Vermont Constitution established a House of Representatives consisting of one lawmaker for each of the State's 246 towns. Burlington had the same number of representatives as Plainfield. This system, which clearly favored small towns and rural interests, changed in 1964, to comply with the US Supreme Court Ruling that representation must be based on population. In 1965, Vermont lawmakers created a new 150- member House with districts based on population.

Plainfield government went through a consolidation as well. Plainfield Village and Plainfield Town had two separate governance structures with many overlapping interests and conflicts. In 1985, the Village Government was dissolved by Town Vote. There was also a statewide trend to replace individual schools with one large facility. Twinfield Union High School (TUS) was opened in the fall of 1970 for grades 9-12. Elementary classes were held at the schoolhouse in Marshfield for grades 1-8. In November of 1983 the state closed the Elementary School due to concerns the roof could not stand a snow load. All classes were held on the Goddard campus until the Spring of 1988 when the new elementary wing was opened creating the K-12 Twinfield Union School. More than any other shared resource, TUS creates a bond between the two towns, particularly through sports and cultural events.

One of the more significant developments over the past fifty years is the growth, decline and re- emergence of Goddard College. In the late 1960's, Goddard employed approximately 350 people; as it's student population peaked. Single-family homes were converted into apartments to provide student housing. During the school year, the village population doubled. Cultural and political differences between Goddard students and Plainfield residents were common.

The decline in Goddard's enrollment in the late 1970's had a negative economic impact on the town. However, many student apartments became part of the village's affordable housing infrastructure. The school introduced many out- of-state students to the area. Some decided to stay and purchase homes and land.

Plainfield Village has received designation by the Vermont Department of Housing and Community Development (ACCD) as a Designated Village Center. The designation provides owners of commercial buildings with resources to protect and improve the appearance, safety, and accessibility of historic

buildings. It also assists the Town with financing infrastructure improvements. With this designation, Plainfield is eligible for tax credits for community projects (25% for façade improvements; 50% for code improvements) and will be given priority status for certain grants (HUD, CBDG, and Municipal Planning) The Town is planning to regain this status following approval of this Town Plan, and a map of the designated village center is attached.

Plainfield Old Home Days is an annual celebration of the town's history. It is usually scheduled a week after Labor Day and includes two days of celebration. The Friday evening includes a show with various themes that showcases local talent. Photographs of 2018 shows can be found here. The Saturday features the Old Home Day Parade which has town residents and friends and local institutions. Photographs of 2018 parade can be found here. This is in addition to the annual impromptu Plainfield Halloween Parade.

2.4 Goals and Strategies

Community Character Goals:

- The Town shall foster appreciation for Plainfield's culture and history, its rural character, and its human and natural resources.
- Encourage economic development in keeping with Plainfield tradition of providing local services, while building on its well- earned reputation as a hub for artists and craftspeople.

Strategy	Responsible Party	Priority
Help land owners access programs with information/resources on how to make renovations compatible with the historic period of the structure (including barns).	Historical Society Zoning Administrator	Near Term
Support Plainfield revitalization. Friends of the Town Hall Opera House is one important group that promotes events at the newly restored structure. They have a website that describes their efforts. The Plainfield Historical Society is another important town organization. Their website is also available.	Selectboard	Near Term
Maintain Designated Village Center status in order to provide financial incentives for property owners to make building façade and code improvements, obtain grants, possible.	Planning Commission	Near Term
Continue to organize Old Home Day celebrations, seeking the widest possible community participation	Fire Department Selectboard Historical Society	Near Term
Encourage, through land use and housing goals and policies, a socially and economically diverse population that includes families with children, young adults who grew up in the community, senior citizens, and those new to town.	Planning Commission	Near Term
When appropriate the Town will exercise party status in the Act 250 development review process and other state regulatory proceedings to ensure that the Town's best interest.	Planning Commission Selectboard	Near Term

3 Natural Environment

3.1 Introduction

This chapter describes the natural environment of Plainfield and its various components and suggests ways to protect the town's natural resources while also supporting appropriate growth and development.

Residents of Plainfield are familiar with its most notable natural features: Spruce Mountain, with its remarkably conical slopes and high summit at 3,037 feet, is Plainfield's most dramatic natural feature, and one of its best-loved; the Winooski River flowing through the village on its way to Lake Champlain gives us the town's iconic waterfall at the site of an old dam; the Great Brook, renowned for its periodic flooding events, also provides great trout habitat; and, finally, Bancroft Pond, Plainfield's only natural pond.

However, many different natural communities climb in altitude from the Winooski River to the slopes of Spruce Mountain. Critical to maintaining the rural character of Plainfield is the recognition and protection of its abundant and diverse natural resources.

Plainfield recognized that habitat loss is the single greatest threat to biodiversity and that more information about the Plainfield's natural resources was necessary in order to protect them.

In 2015, An ecological inventory of the town was conducted by Brett Engstrom. The inventory identifies and describes the areas of highest ecological value in Plainfield. They include:

- significant natural communities,
- rare or uncommon species needing protection,
- large contiguous forest blocks,
- corridors that connect existing areas of significant wildlife habitat, and
- riparian areas critical for watershed health.

The inventory process entailed a landscape analysis of existing maps and data to choose sites to conduct further investigation through field visits. It also included public forums and interviews of local residents.

The inventory's mapping and documentation of sites with significant natural communities, species, and other natural features is intended to lead to their protection through education and regulation where appropriate, while at the same time providing guidance to landowners who wish to develop their property.

As part of the inventory, a map was produced showing which stream segments could most benefit from buffering, i.e. maintaining a naturally vegetated and undisturbed strip along the top of the stream bank at least 25 ft. in width. Such

a riparian buffer protects water quality by reducing the amount of erosion and filtering runoff before it reaches a stream, provides habitat, and regulates water temperature by shading the water surface.

Plainfield is home to at least four rare, threatened, or endangered species (3 plants and 1 animal), three of which are considered historical since they have not been observed in 25 or more years. Thirteen uncommon and/or locally significant species (10 plants and 3 animals) are now known to occur in Plainfield, and these are documented in the 2015 Ecological Inventory. Rare native species are an important part of Vermont's natural heritage. These species, most at risk of extinction, serve as barometers of the state of the environment.

Anyone with an interest in Plainfield's natural resources is strongly encouraged to read the valuable information contained in this report titled An Ecological Inventory of Plainfield, Vermont by Brett Engstrom, available on Plainfield town website.[1]

3.2 Physical Landscape

The Plainfield landscape can be divided into three regions: The eastern hills, the western hills, and the Winooski River Valley. The eastern hills have rather conical shapes and are underlain by granite bedrock. Spruce Mountain, Colby Hill, and the unnamed hill southwest of Spruce Mountain are the major peaks. The western hills are irregular in shape and are underlain by metamorphic bedrock such as phyllite, schist, and metamorphosed limestone. These hills, such as Maple Hill and Bartlett Hill, extend from the vicinity of Bancroft Pond westward to the Winooski River valley.

Many of the hills are elongated in a north-northeast direction, which is parallel to the layers observed in the bedrock. Throughout most of this area the depth to bedrock is least on the hilltops and greatest in the valley bottoms, with the average being around 10 to 20 feet. In the lower part of the Great Brook valley, the bedrock is buried under 90 to 120 feet of sediment. The Winooski River valley is relatively broad and flat. Bedrock is exposed here and there on the valley sides and at the falls in the village, although there are places where the bedrock is buried by up to 125 feet or more of sediment.

Several times over the last 1.8 million years our region was covered by large continental ice sheets that scraped away much of the loose soil and sediment as they advanced, leaving behind a variety of sedimentary deposits as they melted back. The last glacial advance reached its maximum extent about 24,000 years ago and covered all of New England, burying even the highest peaks in the Green Mountains. As the glacial ice-margin melted back through

[1]http://www.plainfieldvt.us/uploads/8/1/0/6/81063668/plainfield_ecological_inventory_2016__report_final.pdf

central Vermont a little over 14,000 years ago, several types of sediment were left behind and have served as the raw materials for the soils of the present day. The most common material is glacial till, which is material that drops in place as the glacier melts. This contains a mix of grain sizes, from boulders down to silt and clay. Much of the glacial till in the Plainfield area is rich in silt and a little clay and is quite hard when freshly exposed (a common name for this is "hardpan"). This sort of till is fairly resistant to erosion. Till which has less silt and more sand is very susceptible to erosion.

Besides the glacial till, there are three other main types of sedimentary deposits found in the town. These include ice-contact sand deposits which formed as sediment washed off the hills onto the remnants of the glacial ice in the valleys, sediment deposited in the vast lake which filled much of the Winooski River valley and the lower part of the Great Brook valley after the ice melted (this includes thick deposits of sand and silty clay), and stream deposits formed after the draining of the post-glacial lake (gravel, sand, and some silt). The gravel and sand which underlie much of the Lower Village are ancient stream deposits left behind by the Winooski River and Great Brook.

Slope and Elevation

Slope and elevation are important characteristics that determine the suitability of land for development; at higher elevations soils tend to be thinner, erosion more extensive, and vegetative cover sparser. Steep slopes (over 15%) and high elevations are generally unsuitable for many types of development, posing serious limitations to wastewater disposal systems and increasing the risk of soil erosion, storm water runoff and landslides. The steepness of the terrain can also significantly impact construction costs for a project. Water runoff from steep slopes or steep driveways can cause expensive damage to town roads as well as deposit silt in streams, harming aquatic life. For these reasons, development (including driveway construction) should not take place on steep slopes. Suitable land uses in areas of steep slopes and high elevations can include recreation, wildlife habitat, forestry and agriculture, provided the latter two follow best management practices to prevent soil erosion and that recreational trails are designed to minimize water runoff.

Steep slopes pose several land use and development challenges. They are more susceptible to erosion and high rates of runoff, particularly when cleared for construction, agriculture or forestry, and pose a risk to water quality when used for in-ground septic disposal.

Steeper slopes and hillsides are poorly suited for most types of development, posing serious limitations for site clearance, construction and the installation of infrastructure and utilities; and serious risks for stormwater runoff, slope failure, soil erosion, and the sedimentation of surface waters

The steepness of the land as determined by slope can restrict the viability of septic tank systems, building locations, utility and safety service, and road building. Slope is a factor taken into consideration when determining where development is permitted.

Agricultural Soils

Plainfield has seen a marked growth in agricultural enterprises since the previous town plan. The sole remaining dairy farm that ceased operations in 2012 has been revived by a younger generation of the same family, this time as an organic dairy operation. The longstanding vegetable operation at Littlewood Farm has seen new farmers stepping in to tend the fields and greenhouses. They've been joined by other vegetable farms, mostly organic, who sell either at on-site farmstands, to area co-ops and restaurants, or at area farmers' markets. One, however, sells their produce as far away as NYC. Several beef cattle farms also operate in town. Most sell grass-fed beef and a couple offer pigs and poultry—and maple syrup--as well. There is also a flower farm, a hemp growing operation and two horse stables in town.

The farms are a diverse mix, with some holding on-farm events to make visitors familiar with what they offer. What Plainfield's farms have in common, however, is that they are small and family-run and almost all are operated by people who live on the same land where they farm.

Cost and availability of land can be a formidable barrier to prospective farmers. In Plainfield, a number of non-farming landowners have made land available to farmers for vegetable growing operations, animal feed production and grazing; we could encourage this practice by compiling a list of landowners willing to make their land available for food production or animal grazing in exchange for a lease or other agreement.

The issue of food security has become critical in recent years, with numerous incidents of hospitalizations and deaths from food-borne illnesses across the country. The problem is often traced to water contamination of crops, but with the global scale of food production the source can be difficult to establish. Buying locally grown foods is an obvious solution, and having safe, sustainable food sources in our area is critical to the future health of Vermonters.

The Natural Resources Conservation Service of the U.S. Dept. of Agriculture (NRCS) has mapped soils with a prime, statewide or local rating for their agricultural potential (Farmland Classification Systems for Vermont Soils, USDA NRCS[2]). Prime soils have the best combination of physical and chemical characteristics for producing food, feed fiber, forage, and oilseed crops; soils with a statewide rating were been determined by various Vermont agencies

[2] https://efotg.sc.egov.usda.gov/references/public/VT/Important_Farmlands_Narrative-update-April2018-Final.pdf

working with the NRCS and UVM around the time of the passage of Act 250. Statewide soils typically have one or more limitations, such as slope, wetness or shallow depth to bedrock, but are nevertheless considered important farmland. The location of prime and statewide farmland soils is shown on the Natural Resources map in this report. Because these soils have relatively good drainage and level terrain, they are also at risk for development of residential subdivisions. Prime and state agricultural soils are a finite resource and must be protected for their potential in food production. It is vitally important that we protect productive farmland and the long-term viability of agriculture in Vermont by guiding development to avoid impacting our agricultural soils.

The Vermont's Current Use (or Use Value Appraisal) program sets a standard level at which land used for forestry or agriculture will be appraised for property taxes and reimburses towns for the difference between the amount a landowner enrolled in this program pays and what he/she would have normally paid the town in property taxes. In 2019, 65 parcels in Plainfield comprising approximately 5,630 acres were enrolled in the Use Value Appraisal program. This program reduces the pressure on large landowners to develop their land by allowing them to reduce their tax burden when they use the land for forestry or agriculture.

3.3 Forest Blocks and Habitat Connectivity

Large forested blocks, unfragmented by roads or development, are critical to the economic welfare of Plainfield as well as the well-being of its residents, human and animal. Contiguous forest habitat supports: viable populations of wide-ranging animals such as bear and bobcat, a viable forest economy, and recreational opportunities for the public. Large forest parcels also retain rainfall, slowing the passage of water across the land to impede flooding. Additionally, contiguous forest acts to maintain air quality by sequestering carbon in the atmosphere, helping to slow climate change. That our forests also offer scenic beauty, peace and enjoyment to those who view and visit them goes without saying.

However, forest cover in Vermont is decreasing for the first time in over 100 years, with the major factor being scattered rural development. The incremental clearing of trees for house sites and driveways eventually results in an expanse of forest being reduced to disconnected patches of woodland that are neither large enough to make forestry economically feasible nor to offer the core habitat required by many species of wildlife. The loss of forest cover can also negatively impact carbon absorption, water quality and the town's capability to withstand extreme rainfall events.

To address the increasing fragmentation of forest blocks in Vermont, the state passed Act 171 in 2016–An Act Related to Timber Harvesting, which requires town plans to identify key forest blocks and habitat connectors and put forward policies to protect valuable forest lands in the town from parcelization. This Act

is meant to protect both the ecological health and the economic value of Vermont forests. These concepts are not mutually exclusive: a professional forester can develop a management plan that encompasses multiple objectives, such as wildlife habitat, recreational opportunities, and timber production, depending on the landowner's wishes. Through the Use Value Appraisal program, popularly known as Current Use, owners of at least 25 acres of forest land get a reduction in their property taxes when they manage their woodlands under the guidance of a licensed forester. Sound forest management offers an economic return for landowners and, at the same time, an incentive for keeping large forest parcels free of development.

There are many places in town where a single type of forest spans several parcels. The owners of these parcels might find it advantageous to manage the forests cooperatively, thereby saving costs and maximizing the potential return from a resource that, if managed separately, might produce no return from logging at all. Additionally, there are more opportunities to improve wildlife habitat through forest management when contiguous parcels are managed cooperatively: wildlife doesn't recognize parcel boundaries, and wildlife corridors between feeding and shelter areas usually extend over property lines. Use of the information and maps of habitat blocks and significant natural communities contained in the Plainfield Ecological Inventory could guide contiguous landowners to cooperate in making land use decisions.

Zoning regulations should protect the larger forested blocks in Plainfield by requiring lot boundaries, development envelopes, and other infrastructure (driveways and utilities) to be located to avoid fragmentation of forestland in parcels greater than fifty acres, and to allow for ongoing forest management on the parcel(s). A forest overlay district for large forest blocks containing significant wildlife habitat could require a higher level of oversight for development proposals.

Connectivity

Habitat connectors can be forest blocks, road crossings repeatedly used by wildlife, or riparian areas that link larger patches of habitat in a landscape to allow for the movement and dispersal of animals and plants. This is especially important in landscapes where the native forest—the habitat that so many of our wildlife species are adapted to live in—is threatened by fragmentation due to development. Wildlife need to move across the landscape seasonally, seeking food or cover in different habitats or seeking partners during mating season.

Eastern Plainfield is part of a huge forest block of more than 45,000 acres, yet even this alone is not sufficient for species with large home ranges. For example, black bear in Vermont require between 10,000 and 20,000 acres each, and male bobcat have a home range of 17,280 acres each. Being able to access a multitude of forest blocks is necessary for these and other species to meet

their basic needs. Habitat connectors are an important means by which bear can travel between habitat, and access low elevation wetlands that serve as an important food source in the early spring. Many species migrate annually, seasonally, or even daily to find optimal feeding, denning, and breeding grounds; their movements regularly span town boundaries and habitat connectors, also called wildlife corridors, make this mobility possible. Connectivity also allows species to disperse between neighboring populations, which can reduce the likelihood of inbreeding.

Riparian areas are both critical habitat and wildlife corridors for aquatic and terrestrial wildlife species and play a key role in this overall network, providing multiple ecological benefits, including improving water quality and flood resiliency.

It is also important to protect sites used by wildlife to cross roads while traveling from one habitat block to another. The Plainfield ecological survey includes a map showing locations along town roads where wildlife crossings are common.

3.4 Surface Water

The rivers, streams and brooks of Plainfield are important features in Town. The Winooski, one of Vermont's largest rivers, flows east to west through Plainfield, interrupted by an old mill dam in the center of the village. The dam, and its waterfall, are a focal point in the village and are also the town's logo. There is a designated boat portage site located behind the Plainfield Coop, maintained by The Friends of the Winooski, used by canoers and kayakers to circumvent the dam. The river is used for swimming upstream of the town's wastewater treatment plant. Along the river are several high, unstable riverbanks that provide unique habitat for kingfishers and cliff and bank swallows.

The Great Brook is a tributary of the Winooski River, entering the Winooski just west of Plainfield Village. (The Great Brook, with its history and potential for flooding, is described in more detail in the following section, Climate, Resilience & Hazard Mitigation.) Potter Brook originates in the southeastern portion of L.R. Jones State Forest and flows in a northerly direction, eventually entering Nasmith Brook in Marshfield. Checkerberry Brook originates at Bancroft Pond and flows west for several miles to Great Brook. Mskaskek Brook originates on Spruce Mountain and flows northeast to the Great Brook. In addition, there are five unnamed tributaries to Great Brook and two unnamed tributaries to the Winooski River shown on the USGS topographic maps for Plainfield.

The largest body of water in Plainfield is Bancroft Pond, a 14-acre shallow pond located at the intersection of East Hill Road and Bancroft Pond Road. The shoreline of the pond is undeveloped except for a single camp on the north shore. The wetland areas adjacent to Bancroft Pond provide excellent wildlife

habitat. Ducks, geese, otter, beaver, snowshoe hare, and coyote are among the many species of birds and mammals in the wetlands and on the water of the pond. Uses of the pond include warm-water fishing, canoeing, bird watching, and in the winter, skating. The pond's depth varies due to beaver activity, i.e. dam construction that slows water passage into Checkerberry Brook, which leads into the Great Brook. The town, working with ANR, installed "beaver baffles" that regulate the water flow after an overflow washed out Fowler Road, entailing considerable town expense in reconstruction.

Surface water runoff can cause erosion and flooding during extreme rain events, which are anticipated to occur with increasing frequency. Managing this erosion and subsequent damage outside the larger watersheds will be an important part of the town's future infrastructure needs. (See Section 4, Climate, Resilience & Hazard Mitigation.) New driveways and road entrances should be designed to control runoff in order to minimize erosion and prevent damage to Town roads.

3.5 Groundwater

Most of the village, along with Goddard College, is connected to the municipal wastewater treatment plant on the Winooski River (See Section 8: Facilities, Utilities & Services); buildings and structures located outside of Plainfield's water and wastewater service area require dug or drilled wells and private septic systems. Private wells are dependent on groundwater sources, whose importance to town residents cannot be overstated. It should be a town priority to protect groundwater sources from depletion or pollution.

The amount of water supplied by a well can vary, depending on a variety of factors. Data from well reports filed with the Vermont Agency of Natural Resources for 275 wells drilled in Plainfield between 1967 and 2017 indicate an average depth of 262 feet with an average yield of 16 gallons/minute.

Failed or incorrectly installed septic systems, road salt, and illegal disposal of waste such as used oil, antifreeze, household chemicals, pesticides or household trash can cause contamination of nearby wells, streams, and groundwater, posing a health threat for humans and livestock. Although the responsibility for overseeing septic systems was taken over by the state on July 1, 2007, the town should continue to safeguard the health of its residents and the cleanliness of their drinking water by ensuring strict compliance with and enforcement of the state's water and wastewater regulations.

3.6 Other Riparian Resources

Riparian areas provide critical habitat, including wildlife corridors and access to open water for both wildlife and waterfowl. The variety of vegetation in riparian areas also protects aquatic species by shading the water surface to regulate its temperature, filtering pollutants, and stabilizing streambanks to prevent

erosion during flood events. Maintaining undisturbed vegetative buffers in these areas is vital in maximizing their ability to protect water quality.

An area in Plainfield identified as a significant need for enhanced riparian plantings is along the Great Brook. The Great Brook has been prone to damaging floods in the past decade. Notable events include July 2015, August 2011 (Irene), May 2011, and 1999 (Floyd). Instability of the banks of the Great Brook has led to mass failures along the banks, and damage to infrastructure downstream due to loose debris. A Milone and Macbroom geomorphic report states that the Great Brook has undergone historic downcutting due to encroachment, and meaning the brook will cause an increased number of landslides with the volume of water present.

Additional studies further identify the severity of bank instability and outline recommendations which should be evaluated and implemented. Additional locations identified for riparian plantings are included in the Ecological Inventory (see Section 3.1). Retention of forests and woodlands around headwater streams can absorb stormwater and slow the velocity of floodwaters entering tributaries.

Floodplains and River Corridors

Along with wetlands, floodplains (areas at risk of inundation) and river corridors (areas subject to fluvial erosion) can reduce the impact of flood events by retaining and dispersing the water flow over a greater area. (see Section 5 for more information on flood prevention and mitigation). Due to inundation and erosion hazards in these areas, and the subsequent risk of property damage and water pollution during flood events, development should be strictly controlled in compliance with flood hazard regulations in the town's zoning.

Wetlands and Vernal Pools

Wetlands are those areas of town inundated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands contain types of soils and plants that act as natural filters, removing many potential pollutants from runoff as it flows into streams, rivers, and ponds. The removal of nutrients, especially phosphorus, from water flowing into rivers and ponds, is one of the most beneficial water quality functions of wetlands in rural and agricultural areas.

Wetlands are among the most productive natural systems in Vermont and provide critically important habitat, food, and protection to numerous species of birds, mammals, amphibians, and fish. Common in the wetlands and adjacent waters of Plainfield are spring peepers, red-winged blackbirds, snipe, warblers, beavers, snowshoe hares, and many other species.

Forty-six of Plainfield's wetlands are included on the National Wetlands Inventory (NWI) maps, which were prepared by interpreting 1977 aerial photographs. These wetlands identified on the NWI maps are considered "significant" by the State of Vermont for the functions and values they provide and are protected under the Vermont Wetland Rules as "Class Two" wetlands. A new wetlands map was created for the town as part of the 2015 ecological inventory. It contains the wetlands found in the Vermont Significant Wetlands Inventory map layer (class 2 wetlands), plus all the new wetlands found through landscape analysis and documented during field work.

Wetlands are especially important in watersheds that are subject to flooding during storms. During storms, wetlands store water and slow down its rate of flow; they release that water slowly, thus lowering the flood peak and the volume of water flowing in the streams and rivers. By reducing the stream's volume and velocity, wetlands reduce stream bank erosion and thus help reduce the destruction of land and property.

In fall and winter or with the meltwater and runoff of winter and spring snow and rain, woodland depressions fill with water. Creating areas known as vernal pools. By late summer, vernal pools are generally dry. Their periodic drying keeps them free from populations of predatory fish. This reduced-predator environment supports local and regional biodiversity by serving as essential breeding, nursery, and feeding grounds for several species, such as spotted salamanders and wood frogs, and unique invertebrates, such as fairy shrimp, organisms which have evolved to use a temporary wetland where they are not eaten by fish. These organisms are the "obligate" vernal pool species, so called because they must use a vernal pool for various parts of their life cycle.

3.7 Other Biologically Significant Areas

The Triple Point Natural Area on VT Route 214 is primarily wetland and is a good example of a cedar swamp with some hardwoods and softwoods. Plant surveys have been done which demonstrate a diversity of native plant species, including leatherwood, and very few non-native invasive species.

Bald Hill as seen from East Hill Road is one of the town's most striking views, and its summit is a popular place for walkers, skiers, kite fliers, and others. The area's current owner generously allows this low impact recreation. It is connected to Plainfield's highest peak: Spruce Mountain.

Most of the mountain and the land surrounding Spruce Mountain is part of the Seyon Block of Groton State Forest, the largest state forest in Vermont; 633 acres of Groton State Forest are in Plainfield. The Vermont Department of Forests, Parks, and Recreation maintains a management plan for the Seyon Block that designates the "classification emphasis" for Spruce Mountain as "protection" (as opposed to timber management, recreation, wildlife, or special use).

A hike to the summit reveals a breathtaking view of the town's rural landscape, a panorama of forested hills and open fields. The State left the abandoned fire tower at the summit of Spruce Mountain to provide hikers with access to the stunning views of Vermont and New Hampshire. Like many high elevation trails in Vermont, during the spring and very wet periods the use of the trail is discouraged.

The L.R. Jones State Forest covers 642 acres in the eastern portion of town. The initial acquisition consisted of 450 acres purchased from three owners by the State of Vermont Board of Agriculture and Forestry in 1909. The State bought the rest of the parcel in the following three years. The forest ranges in elevation from 1,700 feet where Potter Brook leaves the parcel to over 2,700 feet on the southwest slope of Spruce Mountain. Much of the popular hiking trail to the summit of Spruce Mountain is located in the L.R. Jones forest. This state forest was the first in Vermont and is on the historic register.

Soils in the state forest range from somewhat poorly drained in the lower areas to well-drained at higher elevations. The area includes a variety of forest cover types and age classes which can be divided into two groups by their origins: natural stands and softwood plantations. The softwood plantations include stands of white pine, Norway spruce, red pine and Scotch pine. The natural forest communities include four typical mixes of trees: sugar maple, beech, and yellow birch; sugar maple; red spruce and yellow birch; and spruce and fir.

The state's management plan for the forest specifies three goals:

- protection and enhancement of the Spruce Mountain Trail;
- maintenance and improvement of wildlife habitat; and
- demonstration of "best management" forestry practices.

3.8 Air Quality

As in most of the state, Plainfield enjoys excellent air quality. Air pollutant concerns are limited mainly to emissions from traffic (mainly along US Route 2), and from woodstoves. Of greater concern and impact are the emissions coming from coal-fired industries out of state, which, through acid rain, have already had an effect on Vermont's forests. However, we should act to minimize local sources of air pollution by seeing that state regulations on outdoor burning and wood furnaces are strictly adhered to, and encouraging those who heat with wood to exchange their old stove for one of the newer, cleaner-burning models. Currently (fall 2019), Efficiency VT, together with some utility companies and local energy groups, are offering rebates to purchasers of woodstoves that meet the 2020 EPA emission standards.

3.9 Resource Extraction

The extraction of earth resources, including sand, gravel and stone, should be conducted in a manner that minimizes potential conflicts with properties in the

vicinity, avoids adverse impacts to ground and surface water quality, and includes a plan for site restoration. There is currently one stone extraction business operating in Plainfield.

3.10 Goals and Strategies

Goal 1: Promote the stewardship and sustainable use of Plainfield's natural resources for the benefit of current and future generations through the protection of significant natural communities, rare species and important ecological features.

Strategy	Responsible Party	Priority
Use the 2015 Ecological Inventory of Plainfield, along with its maps showing Plainfield's significant natural communities and species, to develop appropriate measures for their protection.	Conserv.Comm. Planning Comm.	Near Term (1-3 years)
Do outreach to landowners whose properties are shown by the 2015 Ecological Inventory of Plainfield to contain significant natural communities to work cooperatively on the protection of those resources.	Conserv.Comm. Planning Comm.	Near Term (1-3 years)
Continue to educate the general populace, via presentations and public events, about the valuable natural resource information contained in the Ecological Inventory of Plainfield.	Conserv.Comm. Planning Comm.	Ongoing
Control populations of exotic invasive species, including on Town properties.	Conserv.Comm.	Ongoing
A Town ordinance regulating the removal of roadside trees on Town roads should be developed which provides for removal only when they present a serious danger to the public and requiring consultation and	Selectboard, Tree Warden, Road Commissioner	Short Term (1 year)

approval by the Tree Warden before any roadside tree is removed.		

Goal 2: Protect natural resources including primary agricultural soils, wetlands, fluvial erosion hazard areas, riparian buffers, headwater streams, steep slopes and wildlife habitat using both educational and regulatory methods.

Strategy	Responsible Party	Priority
Establish and maintain conservation, forest and agricultural overlay areas in the zoning ordinance. Parcels within these special overlay areas would be of particular importance to the town and would be managed in a way that would protect their special values by creating siting standards for development and limiting uses as appropriate. By designing protection for specific natural features, the district's regulations might actually permit greater flexibility in lot sizes than would otherwise be available.	Conserv.Comm. Planning Comm.	Short Term (1 year)
Prioritize enhancement of riparian buffers along the Great Brook and continue planning efforts to identify improvements that will increase resilience of infrastructure in proximity to the river channel.	Conserv. Comm., Planning Comm., Selectboard	Ongoing

Goal 3: Promote responsible recreational use of Plainfield's natural resources for the health and well-being of its residents.

Strategy	Responsible Party	Priority
Develop and maintain trails in the Town Forest and promote their use for school education projects.	Conserv.Comm.	Ongoing
Emphasize the use of Class 4 roads as recreational trails valuable for hiking, horseback riding, bicycling, VAST trails and cross-country skiing and snowshoeing.	Conserv.Comm.	Ongoing
Support Cross Vermont Trail's efforts to extend the trail beyond the section through Plainfield.	Conserv.Comm.	Ongoing

Goal 4: Maintain the integrity of large intact forest blocks for wildlife habitat and sustainable forestry.

Strategy	Responsible Party	Priority
Promote the Current Use program and encourage landowner contact with the County Forester or consulting foresters to develop woodland management plans.	Conserv.Comm.	Near Term (1-3 years)
In forest blocks of over 50 acres, require buildings and driveways to be sited at the edge of forested areas, instead of fragmenting intact forest cover. Require provision for forest management activity so that access for forestry equipment isn't obstructed by residential development.	Planning Comm DRB	Near Term (1-3 years)

Help landowners find opportunities to manage large contiguous parcels cooperatively.	Conserv.Comm.	Near Term (1-3 years)
Use the Town Forest or cooperating landowners to demonstrate proper forest management and logging practices.	Conserv.Comm.	Near Term (1-3 years)
Inventory and map all existing conservation easements and properties in current use to be able to assess the total acreage and relative locations of both conserved and forester-managed lands for the purpose of maintaining wildlife habitat.	Conserv.Comm.	Near Term (1-3 years)

Goal 5: Identify and maintain connectivity between habitat blocks to facilitate movement of wildlife.

Strategy	Responsible Party	Priority
Maintain habitat-connected networks by restricting development where habitat blocks are close to one another and connected to other large habitat areas, not only within the town but throughout the entire region.	Planning Comm. Conserv.Comm.	Near Term (1-3 years)
Use information from the *Plainfield Ecological Inventory* to protect wildlife corridors and critical road crossings.	Planning Comm. Conserv.Comm.	Near Term (1-3 years)

Goal 6: Protect Plainfield's water resources and promote their responsible use to maintain and improve water quality and prevent erosion.

Strategy	Responsible Party	Priority
Use the *Plainfield Ecological Inventory* maps showing riparian areas most in need of buffering to work with landowners in these areas to develop good stream protection.	Conserv.Comm. Planning Comm.	Near Term (1-3 years)
Research and seek funding opportunities for repairing and preventing riparian erosion.	Conserv.Comm.	Near Term (1-3 years)
Review and amend zoning regulations to ensure that riparian buffer strips alongside all streams are maintained and that structures are not built in areas subject to flooding and fluvial erosion.	Planning Comm.	Near Term (1-3 years)
New driveways and road accesses should be designed, constructed and maintained to minimize runoff to prevent erosion and potential damage to Town roads.	Planning Comm. DRB	Sustained/ Ongoing
Promote public and private practices to reduce run-off from yards, farms, and roads into waterways.	Conserv. Comm with DRB	Long Term (5 years)

Goal 7: Support agriculture and promote new agricultural enterprises in accordance with best management practices.

Strategy	Responsible Party	Priority
Encourage the permanent protection of farmland and important natural resource areas through conservation easements or comparable deed restrictions, and by facilitating communication between interested landowners and conservation organizations (e.g. Vermont Land Trust or Vermont Housing and Conservation Board) that work to preserve Vermont's working landscape.	Conserv.Comm.	Long term (5 Years)
Maintain the potential of Plainfield's good agricultural soils to be used for farming at some time in the future by discouraging their destruction or development through the careful siting of building envelopes during subdivision review.	Conserv.Comm. Planning Comm. DRB	Long term (5 Years)
Promote new agricultural ventures by encouraging non-farming owners of agricultural land to participate in programs such as UVM's Land Link to match prospective farmers with available agricultural land.	Conserv.Comm.	Long term (5 Years)
Encourage events such as annual farm tours to boost local recognition of Plainfield's farms and community support for Plainfield's farmers.	Conserv.Comm.	Long term (5 Years)

4. Climate, Resilience, & Hazard Mitigation

4.1 Introduction

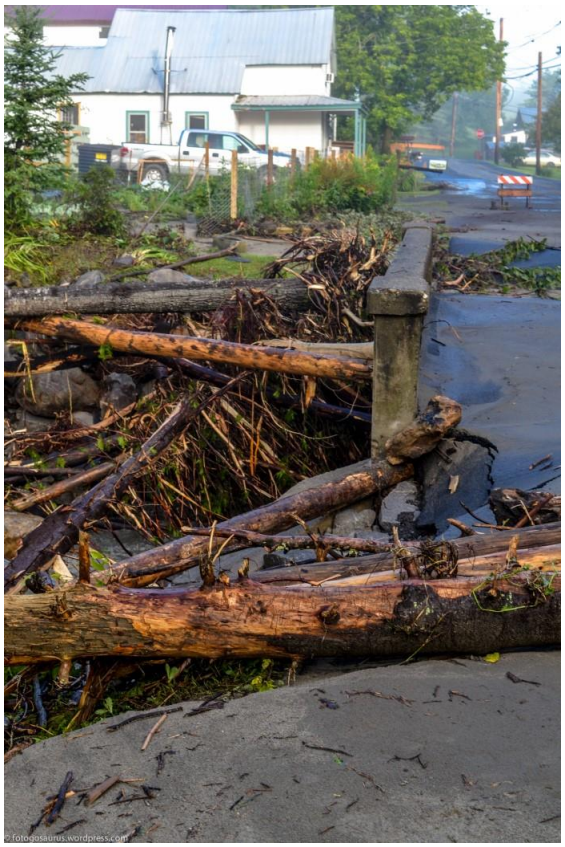
During the evening of May 26, 2011, a series of intense thunderstorms swept across central Vermont, resulting in a period of intense rainfall. The National Weather Service cooperative weather station at Plainfield had a storm total of 5.22 inches, the highest of all reported totals for this event. The rain began after 7PM and most of the total had fallen by midnight. As the snowpack had been heavy in the late winter and April and May had been very rainy, the ground was already saturated. The Great Brook responded rapidly to the downpour, cresting in the village sometime around 2AM.

The Winooski River took longer to respond, reaching its crest at Plainfield sometime between 6 and 7AM. Heavy erosion occurred on the banks of the streams in town, destabilizing the slopes in many locations. Erosion was especially severe along Great Brook from the village up to about Maxfield Road. This led to landslides, which in turn resulted in many trees falling into the brook. Damage in Plainfield and surrounding towns was extensive, with all of Plainfield's roads sustaining moderate to severe damage. The first bridge on the Brook Road (Town Highway Bridge 21) clogged with debris and washed out the Brook Road on the east side. A long stretch of Brook Road just downstream from the intersection with Fowler Road was washed out and took several weeks to repair.

The second flooding in 2011 was the result of Tropical Storm Irene. The rain began in Plainfield late on the evening of August 27th and ended around

midnight on the 28th. Although damage in Plainfield was quite limited in comparison to many towns in Vermont, 5.12 inches fell within 24 hours at Plainfield and the streams rose to dangerously high levels. The flow on the Great Brook peaked in the late afternoon of the 28th. A debris jam had begun to accumulate upstream of Town Highway Bridge 21 on the Brook Road, but it broke up and there was no repeat of the May washout. A small bridge higher up on the Brook Road (Bridge 13, the first one upstream of the Lee Road intersection) clogged with debris and sent water across the road. There were numerous washouts along the roads and several important culverts were washed out, but no major bridges went out. The banks of the Great Brook were again eroded and slopes were further destabilized.

Costs to the Town for road repairs from these two storms totaled $504,021. The costs from the May storm along Brook Road alone exceeded $184,652, the bulk of which was the cost of the major washout near the bottom of Fowler Road.



The May 2011 flooding event spurred the town into taking decisive action. An outcome was the formation of the Plainfield Hazard Mitigation Committee (PHMC) which is tasked with the study existing conditions and ways to manage the hazards, specifically those associated with the Great Brook. The town continues to work toward mitigating the damages caused by climate change and increasing community resilience to adverse weather events.

A significant flooding occurred in July of 2015. There was a logjam at the first bridge on Brook Road in the Village and major washouts of other vital arteries. The total cost of the damage was $330,000 with the town share being $22, 237. Thankfully the Plainfield was working with the engineers at Milone and Macbroom regarding redesign of the trouble bridge in the village from the 2011 event. Their analysis of 2015 storm can be found in Appendix A.4.

The town has undertaken a number of steps to mitigate the undersize bridge problem in addition to a number of other hazards. The results of the full 2016

Milone & Macbroom Bridge Alternative Analysis Report[3] will be the cornerstone of a new design study recently commissioned by the town. In January 2020, engineers from Milone & Macbroom presented four different bridge design alternatives to the Selectboard reflecting a variety of costs and remedies.

The town has been very active in alerting its citizens to the new reality of changing weather. In June of 2019 the PHMC sponsored a "State of the Climate 2019" with two prominent Vermont Scientists (Link to photos of that event[4]). The town has used Social Media warning about the Emerald Ash Borer threat to our forests. Plainfield has initiated two major projects on either side of the Winooski to stem erosion and sediment issues. This is on top of the work we are doing on our roads to help comply with the New General Road permit, which is designed to safeguard our waterways. This is in addition to monitoring some significant erosion concerns in various parts of the town. In order to have the best data we have commissioned various aerial surveys with state of the art equipment.

4.2 Past Occurrences and Future Trends

Damaging floods are known to have occurred in the Great Brook watershed prior to the 2011 event. Records indicate significant flood events occurred in July 1857, April and October of 1869, November 1927, September 1938, June 1973, June 1989 and August 1990.

Plainfield Flooding Occurrences, 1927-2015			
4/15-4/18/2015	Flash Flood	Washington County	Thunderstorms with heavy rainfall moved over northeast Washington County Vermont repeatedly for several hours. The Gunners Brook drainage basin in Barre and Plainfield received the brunt of the storm, with catastrophic flash flooding - DR-4178
6/25-7/11/2013	Flood	Washington County	Record rainfall in May and June saturated the ground and elevated water levels in rivers and streams, making the region vulnerable to flooding - DR-4140

[3] https://floodadvisory.files.wordpress.com/2016/01/greatbrookreport_front.
[4] https://floodadvisory.wordpress.com/2019/06/27/link-and-photos-state-of-the-climate/

Plainfield Flooding Occurrences, 1927-2015			
8/28/2011	Flash Flood (TS Irene)	Plainfield - Washington County	Winooski River crested at 19.05 feet in Montpelier– flood stage is at 15'; 5-7" of rain -DR 4022
5/26/2011	Flash Flood	Plainfield - Washington County	4" of rain; Montpelier gauge at 17.59' – DR4001
4/23-5/9/2011	Flash Flood	Washington County	DR 1995 – not a historical crest in Montpelier
8/2/2008	Flash Flood	Washington County	not a historical crest in Montpelier
7/11/2007	Flash Flood	Washington County	3-6" of rain in 2 hrs – DR 1715 - not a historical crest in Montpelier
6/26/2006	Flood	Washington County	3-4" of rain - not a historical crest in Montpelier
9/16/1999	Tropical Storm Floyd	Washington County	Montpelier flood gauge at 9.30 feet, 5-7" rain county wide DR 1307
6/17/1998	Flash Flood	Washington County	3-6" of rain over 2 day period - DR 1228 - not a historical crest in Montpelier
6/12/1996	Flash Flood	Plainfield	Data gap- $15k damage
8/5/1976	Flood	County Wide	Montpelier flood gauge at 12.31 feet – DR 518
6/30/1973	Flood	County Wide	Montpelier gauge at 17.55 ft DR 397
9/22/1938	Flood/Hurricane	County Wide	Montpelier flood gauge at 14.11 feet
11/03/1927	Flood	County Wide	Montpelier flood gauge at 27.10 feet

The United States Department of Agriculture issued a report in 2018 underscoring the trend towards a warmer, wetter climate for Vermont. An abstract of this study[5] reads:

> *Observed trends in climate over the historical record from 1901 through 2011 show that the mean annual temperature has increased across the region by 2.4°F, with an even greater warming during winter. Precipitation patterns also changed during this time, with a slight trend towards greater annual precipitation and a substantial increase in extreme precipitation events. Projected climate trends using downscaled global climate model data indicate a potential increase in mean annual temperatures of 3 to 8° F for the assessment area by 2100. Projections for fall and winter precipitation, and spring and summer precipitation projections vary by scenario.*

4.3 Significant Hazards

Significant rivers, streams and brooks run through Plainfield (as identified within the Surface Water section). The Winooski River is one of Vermont's largest; it flows east to west through Plainfield.

An additional source of flooding and alluvial erosion hazards to Plainfield is the Great Brook which bisects the town from south to north. Increased precipitation triggers landslides and flooding. Town resident and former PHMC member George Springston has written a detailed report documenting an inventory of landslide hazards along the Great Brook in addition to the definitive history of the water way. The town is following the conclusion, listed below, of the landslide report by incorporating rules into the new zoning regulations.

A carefully delineated Fluvial Erosion Hazard Zone will be a useful tool to help the Town of Plainfield undertake planning efforts so that the Town and its citizens can take steps to avoid the very real hazards along this stream. The landslide hazard zone as delineated here is a first step toward developing such a comprehensive Fluvial Erosion Hazard Zone.

The town, through the PHMC, has also been involved with working with University of Vermont in aerially photo documenting the woody debris in Great Brook in addition to advising on rebuilding two bridges in the village.

Additionally, the town has been working with Friends of the Winooski (FWR) and Central Vermont Regional Planning Commission (CVRPC) on mitigating other trouble spots. FWR and the town will be building a structure to stem the runoff from US Route 2 and the Health Center. FOW and the town have

[5] Source: Gen. Tech. Rep. NRS-173. Newtown Square PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 234 P. (url: https://www.nrs.fs.fed.us/pubs/55635)

commissioned engineers to tackle the crumbling hillside along Recreation Field Road.

Possible dam breaches compound the impacts of inundation flooding and associated fluvial erosion, To the east of Plainfield, on the Winooski, Green Mountain Power's Marshfield Dam #6. In the event of a lengthy storm event a dam failure would result in catastrophic flooding to the Winooski River Valley and specifically to the village of Plainfield.

Given Plainfield's landscape and due to the frequent and severe nature of flooding events, flooding and fluvial erosion are the worst natural hazard within the Town and mitigation efforts to reduce the impacts from these events is the priority. Additional hazards identified during the process of developing Plainfield's Local Hazard Mitigation Plan included: wild fires and forest fires, and winter storms/severe cold / ice storms.

4.4 Hazard Mitigation

To aid in the process of hazard mitigation the town has adopted a Local Hazard Mitigation Plan (LHMP). The Plan should be updated every 5-years and includes additional information about the hazards which are both possible and probable within the town. The LHMP is incorporated into the town plan by reference.

Vermont's Division of Emergency Management (VEM) encourages a collaborative approach to achieving mitigation at the local level through partnerships with Vermont Agency of Natural Resources, VTrans, Vermont Agency of Commerce and Community Development, Regional Planning Commissions, FEMA Region 1 and others. These agencies and organizations work together to provide assistance and resources to towns interested in pursuing hazard mitigation projects.

The Town of Plainfield understands that, in order to apply for FEMA funding for mitigation projects, a project must meet more formal FEMA benefit cost criteria. A project seeking FEMA funds would undergo a full benefit-cost analysis in the FEMA-approved format. The Town must also have a FEMA approved Local Hazard Mitigation Plan.

4.5 Proactive Water Management

The town of Plainfield has been proactive on water issues. It is currently working with the Friends of the Winooski (FOW) on a project to stabilize the banks along Rec Field Road. That work will be expanding in 2020 to include other areas that create sediment that drains into the Great Brook and Winooski. This is a follow-up to the Water Wise Woodlands project involving Plainfield and two neighboring towns (Cabot & Marshfield). That created educational events where stakeholders can learn best management practices for their land. There was a pancake breakfast information session held at Twinfield (link to photos[6]), in addition to a walking tour the three towns (link to photos of the Plainfield walk[7]) The town is also working with the Central Vermont Regional Planning Commission on a drainage project near the health center which will also prevent run-off and shore-up the eroding banks.

4.6 Goals and Strategies

Goals:

- Ensure that Plainfield Residents are aware of major hazards
- Ensure that First Responders are given the best equipment and information in regards to mitigating hazards
- Ensure that taxpayers are indemnified from problems at Marshfield Dam #6

Strategy	Responsible Party	Priority
Update communication system to assure that in the event of an emergency, communication between all departments and officials can be coordinated	Selectboard Emergency Management Director	Near Term
Replace and/or repair all bridges over Great Brook starting with the bridges at Mill Street and the next one up the Brook Road (# 20 & # 21)	Selectboard Road Foreman	Near Term

[6] https://plainfieldvt.wordpress.com/2019/04/07/pancake-breakfast/
[7] https://plainfieldvt.wordpress.com/2018/10/29/forest-walk-in-plainfield/

Strategy	Responsible Party	Priority
Purchase 25 foot buffer along Great Brook	Selectboard Planning Commission	Near Term
Install four larger culverts – one on each of the following roads: Lower, Gonyeau. Maxfield and Upper Roads	Selectboard Road Foreman	Near Term
Flood proof waste water treatment plant	Selectboard	Near Term
Select projects from Upper Winooski Corridor Plan [which ones? Enumerate?]	Selectboard CVRPC Friends of the Winooski	Near Term
Distribute public education materials about reducing wild fire risk	Selectboard Fire Department	Near Term
Provide training to residents on how to insulate homes (pipes, attics) for extreme cold spells [already being done by energy committee]	Selectboard Planning Commission Fire Department	Near Term
Upgrade electrical systems in municipal buildings and shelters to prevent surge/equipment damage from fluctuating current during ice and wind storms	Selectboard Fire Department	Near Term
Revise/adopt subdivision regulations, erosion control regulations, board of health regulations to improve floodplain management in community	Selectboard Planning Commission	Near Term
Work with elected officials, the State and FEMA to correct existing compliance issues and prevent any future NFIP compliance issues through continuous communications, training and education	Planning Commission VT Agency of Natural Rescources	Near Term

Strategy	Responsible Party	Priority
Update radio communication devices to provide reliable communication between Fire & Rescue Department, Town Clerk's Office, Water/Wastewater Department, and Emergency Operations Center at Town Hall/Opera House	Selectboard Emergency Management Director	Near Term
Insure that the town is fully compensated for extra training and resources expended due to problems at Marshfield Dam #6	Selectboard State Legislature	Near Term
Ensure the town is indemnified for damage caused by failure of Marshfield Dam #6	Selectboard State Legislature	Near Term

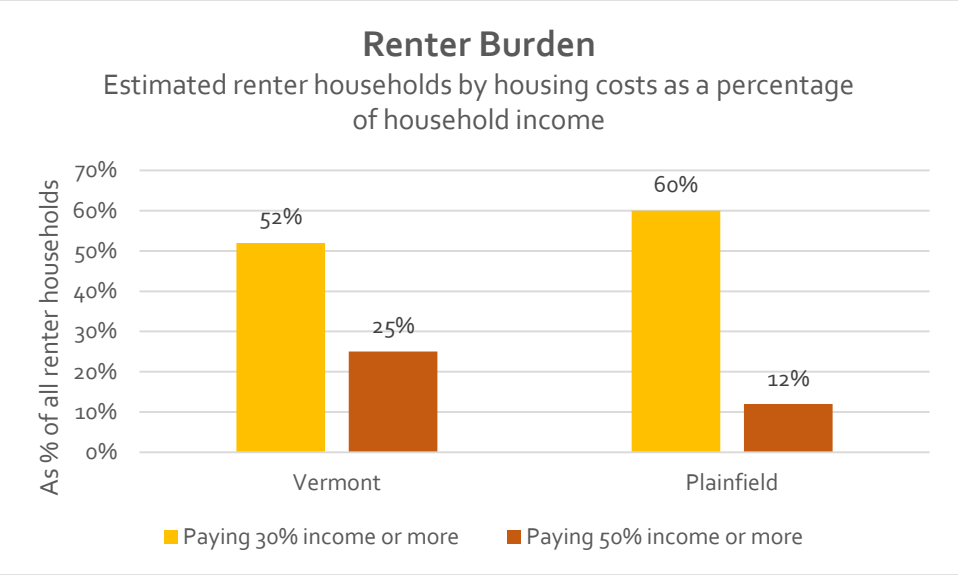
** Additional details about the prioritization of mitigation strategies, possible implementation resources, and more specific implementation timeframes are contained within the LHMP.*

5. Housing

Plainfield is a rural community with a traditional Vermont village surrounded by open countryside. Housing is concentrated in the upper and lower village and on hillsides and old farm fields. According to the Central Vermont Planning Commission's most recent data, Plainfield's housing stock consists of

- 401 owner occupied households,
- 148 renter occupied households and
- 111 vacant households.

By 2016, a steady increase in the population of Plainfield reached 1970's era highs of over 1,400 residents. According to Housingdata.org[8], currently the median primary home sale price in Plainfield is $161,000 and the median rent is $916 per month.



Source: US Census Bureau: American Community Survey 5-Year Estimates (Table B25070), US Decennial Census (for years 2010 and earlier)

National and state-wide trends in housing costs are highly problematic for many members of our community. In recent years housing costs are rising while household incomes are not increasing at a rate to keep up. The US Dept. of Housing and Development classifies families that spend more than 30% of their income on housing "cost burdened." According to the Vermont Housing Finance Agency, 36% of all Vermonters are cost burdened, a figure which includes homeowners and renters. According to Housing Data.org, in 2017 25% of Vermont renters and 12% of Plainfield renters were severely rent burdened, paying 50% or more of their income towards rent. Families who are cost-burdened experience deficiencies in basic life necessities such as food and

[8] https://www.housingdata.org/profile/homeownership-costs/calculator

health care. The impacts disproportionately affect the children of these households.

Senior citizens are faced with significant challenges as their physical needs change and they seek housing that is affordable and manageable. Suitable housing is often not available or is unaffordable for seniors wishing to downsize.

Barriers to entry for new home owners include income level, credit scores and available cash for down-payments. These barriers make it difficult for lower and even moderate income residents to afford to buy a home, despite the fact that in many cases the combined mortgage, tax and insurance payments to own a home can be less than the cost to rent a similar home. Home ownership tends to stabilize housing costs for families, which is critical if the rental prices continue to rise

Current zoning regulations allow for the construction of an accessory dwelling on the same parcel as the primary residence which can serve to increase overall housing density and create more housing options. There is increased interest nationally in small and unconventional housing options, including temporary dwellings such as yurts, mobile homes and permanent "tiny houses" that may offer some ways to overcome barriers to ownership and allow for lower-cost housing. The community should review zoning regulations in light of these new trends and consider how they could address present economic and social conditions.

In many cities and towns around the country internet platforms such as AirBnB have facilitated the propagation of short-term rentals, allowing property owners to rent out rooms or apartments on a day –to-day basis. For some homeowners this has provided the opportunity to augment income by renting spare rooms, converting existing spaces to rentable units or building new structures to rent. While the trend introduces new income opportunities to property owners, and may contribute to the local economy by encouraging commercial activity from visitors, some communities have also experienced a loss in the overall number of available long-term rental units, and an increase in rental costs resulting from scarcity.

Maintaining the quality of housing stock is important. The degradation of critical structural elements of a home such as roofs, siding, foundations, and insulation systems can precipitate compounding problems, causing housing values to drop, energy costs to increase and compromising health and safety. Vermont has unusually old housing stock, according to Michael Moser of the VT State Data Center; 26.7% of houses in Vermont were built more than 80 years ago, which is twice the national average. [Brave Little State Mar 8, 2019[9]] Programs such as Efficiency Vermont that offer information and financial

[9] https://www.vpr.org/post/why-does-vermont-have-such-housing-crunch

incentives to encourage maintenance of key aspects of housing stock should be further encouraged, and town residents should be kept informed about these resources.

Town policy should reflect the fact that high-quality, affordable housing is a fundamental building block of a healthy community and should work to counteract negative trends by encouraging the development of low- and moderate-income housing. Ongoing engagement with landlords around issues of affordability is critical in rural communities such as Plainfield where most rental housing is privately owned. Plainfield should also explore opportunities for the development of low- and moderate-income housing. Organizations such as the Vermont Housing Finance Agency and Downstreet offer resources and services around affordable housing for homeowners, renters and developers, as well as resources for home improvements and community engagement.

Generally, the goals for housing in Plainfield should be to ensure that the housing stock is of the quality, affordability, and variety to promote community health. Without housing that is desirable and affordable at all income levels, it is difficult to attract people and business and maintain a vibrant, healthy community.

Goals and Strategies

Goals: Ensure the availability of safe and affordable housing for all Plainfield residents and plan for sufficient growth to accommodate all housing needs. Locate new housing in ways that minimize the negative impacts as much as possible.

Strategy	Responsible Party	Priority
Investigate and pursue sources of funding for village revitalization efforts.	Selectboard	Near Term (within 1-3 years)
Promote the use of Town revolving loan funds and other funding sources for the preservation of historic houses.	Selectboard Revolving Fund Committee Historical Society	Near Term (within 1-3 years)

Strategy	Responsible Party	Priority
Encourage a variety of housing types to meet the needs of senior citizens and a diversity of social and income groups.	Planning Commission Selectboard	Near Term (within 1-3 year)
Encourage, through land use and housing goals and policies, a socially and economically diverse population that includes families with children, young adults who grew up in the community, senior citizens, and those new to town.	Planning Commission	Near Term (within 1-3 years)
Consider handicapped accessibility in site plan reviews of housing developments.	Development Review Board	Near Term (within 1-3 years)
The use of Planned Unit Developments (PUDs) should be encouraged to be used where it is possible to do so.	Development Review Board	Near Term (within 1-3 year)
Monitor new development trends in light of village centered growth goals and revisit zoning regulations to assure regulations are appropriate and effective.	Planning Commission	Ongoing
Regularly monitor population and housing estimates along with annual permit data to identify correlation between housing development and population growth.	Planning Commission	Long Term

6. Energy

In order to plan for the long-term energy security of our Town, we must first understand that it is not energy itself that we want or need, but the services that energy provides: we need heat for our homes; we want safe and inexpensive transportation; we need light for our work place, village streets and home. The energy security of Plainfield depends on being able to provide these energy services consistently, sustainably and affordably to the townspeople.

6.1 Thermal Energy

Plainfield, like most of Vermont, relies mostly on fossil fuels such as oil, kerosene, and propane for heat and hot water. (See Chart 6.1.) There are more than a dozen companies that compete to provide this service in Plainfield. Alternative thermal energy such as solar and geothermal is not widespread. Nearly 40% of Plainfield residents identify wood (either chunk or pellet) as their primary source of heat; however, wood provides a significant source of thermal energy as a supplemental heat source in many other homes.

The overall Energy Mix in Plainfield is similar to that in Vermont statewide. (See Chart 6.2.) The Department of Public Service has a set of Residential and Commercial Building Energy Standards that, when used in new construction and renovations, will save money for the owners of the building and lower the carbon footprint of the town. Promoting the use of these standards will be a benefit to individual owners and the town.

In 2012, Goddard College applied for permits to build a wood chip heat plant to provide thermal energy to many of its buildings on campus. Through a long permitting process, construction was completed in late 2018. This wood chip heat plant provides Goddard College with 3 million BTUs and displaces 50,000 gallons of oil. The wood used is sourced from within a 30-mile radius, and will help Goddard achieve its goal of carbon-neutral by 2020.

6.2 Transportation

As documented in Section 8.3, Plainfield residents have a public transportation option. In 2010, a commuter bus service was established, providing five trips between St Johnsbury and Montpelier on weekdays. The US Route 2 commuter bus stops at the Plainfield Park & Ride and in front of Goddard College. This service was initially funded by a Congestion Mitigation Air Quality (CMAQ) grant, which provided federal funding to cover 80% of the net cost of the service. The remaining service costs are covered by passenger fares and the 20% net local match from the towns served by the route, including Plainfield. The CMAQ grant ended in 2013 and the route transitioned to another source of 80% net funding. However, as in previous years, GMTA will continue to request the remaining 20% match from the towns served by the commuter route. In

2012, the US 2 Commuter saw a 30% ridership increase from 2011— equaling 19,056 riders.

Plainfield does not have a gas station, however a gas station just over the town line in Marshfield provides gasoline, diesel, kerosene, and 20-pound propane cylinders. Plainfield has a Bio-Diesel filling station, Black Bear Biodiesel on US Route 2.

In 2015, Bob Atchinson (Energy Coordinator) and the Energy Team were able to install an electric car charging station in the Mill Street Park next to the information kiosk. While free to users, a donation box was set up next to it so that users may support this effort. This project was funded by two $1,000 grants. By early 2018, the charging station had provided drivers with 1,396 kWh of charge (400 miles of emission free driving). Total donations brought in

$189.02 in the first two years, averaging a $0.135 cost per kilowatt hour. The town pays electric bills associated with the charging station.

6.3 Electricity

In Vermont, electricity accounts for approximately 40% of energy consumption. The village of Plainfield's electricity is supplied by Green Mountain Power (GMP), which is owned by Gaz Métro, a Quebec company. In the rest of town, power is supplied by the Washington Electric Co-op (WEC), which owns and operates the Wrightsville hydroelectric generating station, on the North Branch of the Winooski River. A methane generation facility in Coventry provides about 64% of the electricity needs for WEC customers (2017). In 2008, GMP and the town of Plainfield explored the possibility of joint ownership of a small hydro power facility at Batchelder Mills, however that project never materialized. Wind power has never been utilized on any large scale in Plainfield, however according to the Vermont Wind Energy Atlas and maps provided by Central Vermont Regional Planning Commission (see Appendix), there is potential for wind energy near Spruce Mountain. There are no large-scale solar farms in Plainfield; however, there are several homeowner installations.

September of 2015 brought construction of a solar array on the park-and-ride lot. The array's capacity is 9.9 kW, and as of 2018, it had generated 31,150 kWh. This amount of energy equates to about $4,984 that Plainfield saved from purchasing the equivalent from local utilities.

Energy generation and transmission systems that are linked to the electrical grid are preempted from local land use regulation. They are instead regulated

by the Public Utility Commission (PUC) under 30 V.S.A. Section 248 (Section 248 review). These include net metered distributed energy installations, as well more commercial, utility-scale generation, transmission and distribution facilities. The PUC must consider project conformance with municipal and regional plans prior to issuing a Certificate of Public Good. The town does not have statutory party status in PUC (Section 248) proceedings, but does receive notice of most applications (petitions) before the board. The town may participate informally by providing comments on a proposed project, or request more formal status as an intervener with rights to participate and appeal. Town participation in the state's review process, based on adopted community standards under this plan, is the best way to ensure that local conservation and development objectives are considered and weighed by the Public Service Board.

It is Plainfield's intent to apply for a determination of energy compliance from the Central Vermont Regional Planning Commission with this plan. An affirmative determination would give Plainfield's Town Plan substantial deference under Section 248, allowing this plan's language to be applied as written in siting cases. In order to achieve this goal, the Town's Planning Commission has partnered with CVRPC in order to write an enhanced energy plan, which may be found in the appendix of this plan. The enhanced energy plan includes tables, maps, and targets that will guide renewable energy generation in Plainfield to help meet the State's renewable energy goals.

6.4 Energy Efficiency

In 2017, Plainfield participated in the Button-Up Vermont campaign as a "Hero" community. 42 households and small businesses signed up for free energy analyses by Montpelier Construction and Energy Smart.

In 2016, the Plainfield Energy Team purchased a FLIR infrared camera to assist in diagnosing building heat losses. This tool has been useful to the Energy Team in conducting field assessments of residential and municipal buildings. The Energy Team also has continued to track electric bills for the municipal building and has worked with Efficiency Vermont and Shelter Construction for audit services.

In 2013, the Plainfield Energy Team successfully promoted a municipal street light changeover in the lower village from high-pressure sodium to LEDs. The Team plans to expand the project to the upper village. LEDs use less energy, provide a better quality of light (which improves vehicle and pedestrian safety) and are Dark Sky Friendly.

In 2012, Plainfield voters approved the creation of a Property Assessed Clean Energy (PACE) District. Through PACE, homeowners may qualify for financing to complete energy-related projects (weatherization, more efficient oil heat equipment, solar hot water, etc.). The loan is paid back through an assessment

on the homeowner's property tax bill. The assessment stays with the property if it is sold and the financing can be extended for a longer period than typical loans. More than 30 Vermont towns have passed similar measures.

In 2011, the Plainfield Energy Team received a $3,000 grant from the Vermont Energy & Climate Action Network (VECAN) to weatherize a portion of the Town Hall. The VECAN grant program is funded from a Federal Earmark obtained by Senator Bernie Sanders (I-VT). The Plainfield Energy Team has also highlighted ways homeowners can become more energy efficient.

In 2009, volunteers conducted nearly three dozen home energy visits. These visits helped educate Plainfield residents about energy usage. The Team installed low-flow showerheads and aerators to reduce water consumption, as well as compact fluorescent light bulbs, pipe insulation, water heater jackets, and thermostats.

6.5 Goals and Strategies

Goals:

- Increase energy efficiency of municipal and non-municipal buildings.
- Move energy generation away fossil fuels and towards renewables.
- Preserve character and viability of land and facilities impacted by energy generation.
- Promote wider understanding of energy usage and efficiency issues within the community.

Strategy	Responsible Party	Priority
Energy efficiency and conservation should be a primary consideration in new municipal construction projects, equipment purchases and operations. In addition, all non- municipal (i.e. – residential and commercial) construction and renovation should be encouraged to comply with the department of Public Service Residential and Commercial Building Energy Standards.	Selectboard, Energy Coordinator, Zoning Administrator	Near Term

Strategy	Responsible Party	Priority
Encourage the increased use of local and regional clean, renewable, environmentally sound energy sources and technologies as they become available.	Selectboard, Energy Coordinator, Zoning Administrator	Near Term
Energy facilities, including solar arrays and other generation facilities, transmission and distribution lines, accessory structures, and access roads should be located so as to minimize and mitigate adverse impacts to agricultural land, waterways, and significant natural communities as well as property in the village zoned for housing.	Planning Commission, Selectboard	Near Term
Encourage the use of public transportation systems and multi-modal alternative transportation systems.	Energy Coordinator	Near Term
Minimize the adverse impacts of energy production on public health, safety and welfare, the town's historic and planned pattern of development, environmentally sensitive areas, and Plainfield's natural and cultural resources. Enact adopted plan policies and community standards for energy development, resource protection and land conservation.	Conservation Commission, Development Review Board, Energy Coordinator	Near Term
Promote energy efficient development, the use of renewable energy, and the	Energy Coordinator	Near Term

Strategy	Responsible Party	Priority
weatherization of existing structures.		
Promote community energy literacy, and provide information about available energy assistance and incentive programs, state energy codes and energy system permitting, and voluntary, cooperative purchasing agreements to reduce the costs of acquiring and installing small-scale renewable energy systems for individual homes.	Energy Coordinator	Near Term
Provide financial assistance through the Town's revolving loan fund to help people buy more efficient, cleaner-burning wood stoves for home heating.	Revolving Fund Short Term Committee	Near Term
Explore future possibilities for hydro-electric generation in Energy Near Term	Energy Coordinator	Near Term

7. Transportation

7.1 The Road System

The village of Plainfield is bisected by US Route 2, which connects towns between St. Johnsbury and Burlington and is a northern connecting route between I-89 and I-91/I-93. It is an important corridor for Plainfield commuters as well as for commercial trucks and tourist travel. As a result, there is an increasingly large number of vehicles traveling through the village center.

According to VTrans traffic studies, between 1986 and 1998 traffic volumes have increased more than 50% on US Route 2 and VT Route 214. In 1994, a proposal to build a bypass routing commercial and through traffic around the village center had polarized opinions in town. When presented to voters in both Plainfield and Marshfield, it was approved in Plainfield and rejected by Marshfield and consequently tabled at VTrans.

In 1997–1998, VTrans adopted new Vermont Design Standards that allow the roadway to be tailored to village settings, with reduced speeds and narrower lane widths. These standards are meant to encompass a variety of traffic calming solutions. US Route 2 functions more as a Village Main Street than a highway where it passes through built-up areas.

The paved roads leading in and out of the village are Class 2 roads. There are no plans at the present to extend the amount of paved road surface in town.

The Brook Road often serves as the most direct route from Cabot, Marshfield and Danville to the Orange/East Barre area and the valley towns of Chelsea, Tunbridge, and Sharon. In the mid-1990s, the town removed the paved surface on much of the Brook Road because it was too difficult and expensive to maintain.

The Middle and Lower Roads serve the same purpose between Plainfield and Barre. Heavier use of these roads, along with increased instances of speeding vehicles, creates both unsafe conditions and nuisance from excessive dust. In 2000, the Select Board established and posted a 35 mph speed limit on all town roads outside the village. The speed limit in the lower village is 25 mph; on US 2 the limit is 30 mph.

The remaining secondary roads are Class 3 gravel roads. There is no long-range road repair/rebuild schedule and repairs are made as needed. This existing method of maintaining Class 3 roads is adequate, and all secondary roads are in good condition. Their culverts and drainage ditches are on a maintenance schedule that ensures that they are kept in good condition. Class 4 Roads receive no regular summer maintenance and are not plowed in the winter.

7.2 US Route 2 & Main Street Intersection

There are two separate Construction projects that involved the US Route 2 "Blinking Light Intersection". The first is a pedestrian bridge that would connect the lower and upper villages. In addition to the bridge the build out would include a sidewalk that would give direct access from the village to the newly refurbished Town Hall Opera House. The second, more significant project involves a redesign of US Route 2 as it traverses the intersection with Plainfield Village.

7.2a. Pedestrian Bridge

The town secured funding through the Agency of Transportation to build a pedestrian bridge and sidewalk. This improvement will overcome the lack of sight distance from the northeast, permitting safe pedestrian crossing of US Route 2, while safely merging vehicle traffic onto US Route 2. It will allow easy pedestrian and highway traffic access to the town's lower and upper villages and to both the historic Town Hall/Opera House and to the town and Opera House parking lots opposite the Town Hall. Improvement of this intersection is critical to maintaining connectivity between the upper and lower villages and to the future of this landmark public building as the venue for the town's annual meeting and as well as a popular dance and performance space. The Town provides the service of cleaning both the upper and lower village sidewalks during the winter. There is still no safe route between the upper and the lower village due to lack of a crosswalk on US Route 2. The planned pedestrian bridge will solve this decades old problem.

By working with CVRPC the town secured a grant through AOT to plan and construct a pedestrian bridge walk-way leading from Mill Street Park to the small apartment building which also houses a Yoga Studio and a Law Office. The project officially began in 2015 but there have been some construction delays. The original plan called for an independent bridge running parallel to the existing traffic structure. That has been modified to local the pedestrian walkway directly on to the outside of the existing structure. The plans call for the new expanse to include a sidewalk which will extend to the refurbished Town Hall Opera House. Construction is supposed to commence in 2020.

Considerable progress has been made towards resolving safety concerns identified in the 2014 plan regarding foot traffic between the lower and upper village, which requires a safe passageway across busy US Route 2. Building on the results of a sidewalk study conducted by Broadreach Associates in 2013, the Town applied for and received a VTrans Bike/Ped grant to implement Phase One of that study: to construct a pedestrian walkway from the northern edge of the Mill Street over the Winooski River on the south side of the Main Street bridge, with a sidewalk proceeding west along the south side of US Route 2 to a point opposite the Plainfield Town Hall Opera House where a safe pedestrian crossing to the sidewalk on the north side of US Route 2 can be made.

A community advisory committee consisting of Laura Ziegler, Tim Phillips, David Diamantis, Betsy Ziegler, Karl Bissex, and David Strong was established to assist the Selectboard with the design and implementation of this project. The Advisory Committee was active for the first three years of the project.

In 2015, after a competitive bidding process, Pat Travers of Staff Sterling Management, LLC was hired by the Town as Local Project Manager and the Dufresne Group was hired by the Town as Project Engineers, with Andrea Day as Consulting Engineer. Two years into the project, due to engineering and historic preservation concerns, the original concept of a standalone pedestrian bridge was rejected in favor of a five-foot wide cantilevered extension to the existing concrete bridge. Final engineering plans for the modification of the existing bridge were approved by VTrans in the Fall of 2019, along with contract specifications.

Advertisement for construction and procurement of a construction inspector is planned for early 2020 and construction is expected to be completed by the summer of 2020. $510,660 in State and Federal funds have been earmarked for this project, along with $78,540 in local funds.

The Main Pedestrian Bridge and Sidewalk Project will make pedestrian circulation between the upper and lower village safe and convenient. The project includes a pedestrian-activated signal at the US Route 2 crossing. This will help insure safe passage between the area on the south side of US Route 2, where parking for the Town Hall Opera House is available, and the north side of US Route 2 where the town's historic performance and meeting space is located.

7.2b. "Blinking Light" Intersection Redesign

In 2004, the Central Vermont Regional Planning Commission contracted with DuBois & King to prepare a study of the US Route 2 and Main Street intersection and presented options for reconfiguring the intersection at a public meeting. The study was completed in 2005 and called for a T intersection with signaling. Given the problems with the grade of the highway the State has embarked on a more ambitious fix to the problems of lack of visibility and high traffic volumes. The new plan calls for a significant lowering of US Route 2, an elimination of the traffic island and the installation of a three-way traffic signal.

A stakeholders meeting was held during a Selectboard Meeting at the Town Hall Operahouse in September of 2019. It was hosted by Erin Parizo the project manager at the Vermont Agency of Transportation. Also on hand was the lead designer, Gary Goyette of the engineering firm Stantec. It was a lively discussion that highlighted the challenges facing residents and property owners. The central challenge is the proposed closure of access from the village to US Route 2 during a multi-month construction period. This presents hardships for property owners, businesses, emergency services and school

buses. There are also a number of issues regarding modifications to existing structures and rights of way. Unlike many construction projects this multi-million dollar endeavor will be fully paid for by State and Federal dollars.

Although there are no direct costs to the local taxpayer regarding construction there is a significant amount of water/wastewater piping that will be effected. This expense is borne by the local taxpayer. The town is weighing costs and keeping the discussion ongoing. The State will NOT proceed unless the town is on board. Nothing was formally decided and a dialogue is ongoing. The possible timetable is 2023 which coincides with a major paving/rebuilding of the section of US Route 2 between Plainfield and Marshfield.

7.3 Public Transportation

While recognizing that the automobile will remain the primary mode of transportation for most people for the foreseeable future, the town supports alternative transportation.

In the last few years, Plainfield residents have had a public transportation option. In April of 2010, commuter bus service was established by Green Mountain Transit Authority (GMTA) and Rural Community Transportation (RCT), providing five trips a day between St. Johnsbury and Montpelier during peak commuting hours. Bus stops are located at the Plainfield Park and Ride, on US Route 2 at the Post Office, and in the upper parking lot of Goddard College. In addition to Plainfield, the route includes stops in East Montpelier, Marshfield, West Danville and Danville.

The US Route 2 Commuter bus service provides accessible and affordable transportation for those traveling long distance for employment and education, as well as basic mobility for those who are transit dependent. Additionally, the service removes vehicles from the corridor, thereby reducing air-pollution and wear and tear on US Route 2 and feeder roads. The route not only serves the single corridor, but enables transfers to/from the Waterbury Commuter, Burlington Link Express, Montpelier Hospital Hill, City Commuter, Montpelier Circulator routes and Jay-Lyn Shuttle.

By October 2012, approximately 280 Plainfield riders used GMTA and RCT commuter transport. In addition to the regular runs during the morning and afternoon commuting hours an additional mid- day round trip between Marshfield and Montpelier has been added which includes stops in Plainfield. Ridership on RCT US Route 2 service peaked in 2013 at 12,986 rides and saw declines in most subsequent years with ridership in 2019 reaching 9,660. Despite this trend, in 2019 the RCT made improvements to the bus used on the route, and expect an increase in ridership as a result. Schedules can be found at www.gmtaride.org. The RCT portion of the route is funded with a federal CMAQ grant with RCT covering the remaining 10% with local match dollars.

GMTA is a nonprofit transportation company, offering door-to-door service for seniors and persons with disabilities. GMTA provides ongoing individual medical and daily needs transportation service to those who qualify for Medicaid, Elderly and Disabled funds or both. Qualifying individuals include Medicaid clients, those 60 years of age or older and people with disabilities. GMTA offers individuals the scheduling and payment of rides which are provided through GMTA volunteer drivers or bus service. Trips include coordinated service to local and long distance medical care facilities, dialysis and radiation treatments, meal site programs, senior centers, adult day care, pharmacy and shopping locations. In 2012, 38 Plainfield residents were provided a total of 2,774 trips and 20,475 miles driven.

7.4 Road Maintenance and Access Management

Plainfield manages 26.33 miles of class 3 roads with a three-person highway crew. For plowing, the Town uses 2 large trucks and one pick-up. The Town garage is located on Cameron road on a roughly 1.5-acre campus. The main building is surrounded by two large sand-piles (one is used/maintained exclusively by the town of Marshfield), a culvert storage area, an outbuilding with two bays and a large rear lean-to for plow storage. This addition to the outbuilding was completed late in 2019 and give more capacity for storage in the main building during the summer. The grader and the trucks are housed in this area. In addition, the town has a loader, a backhoe and a chipper which are utilized on a variety of projects.

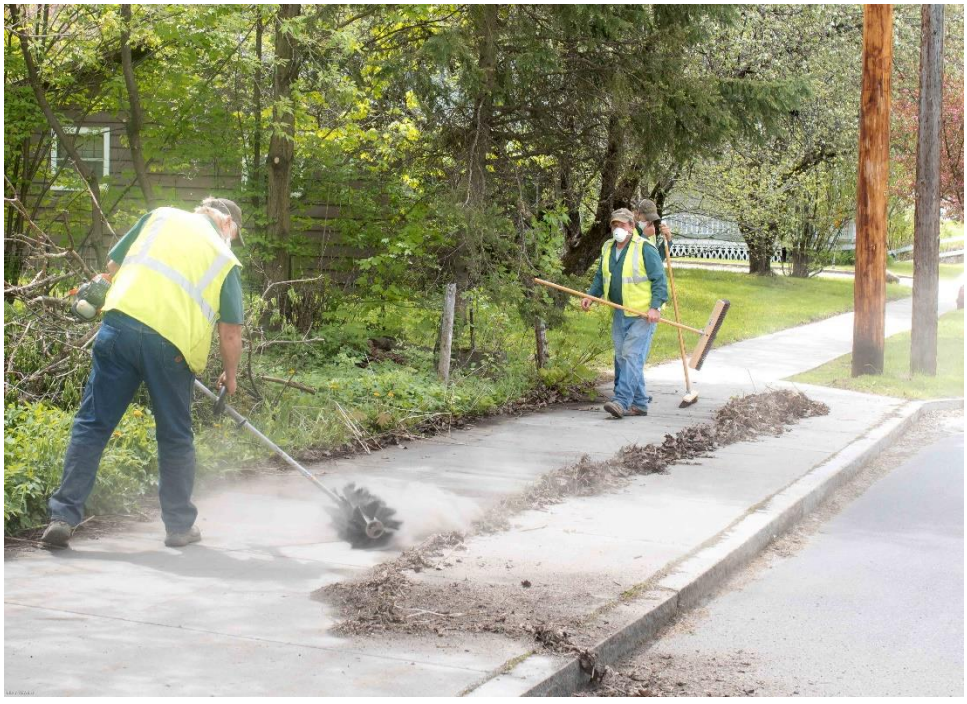
The Vermont Legislature passed Act 64 in 2016 which has impacted Plainfield's road maintenance. The "Clean Water Act" seeks to mitigate pollution in Lake Champlain and requires new protocols to stem run-off. Part of the regulatory process involves a "Municipal Road General Permit" in which the state assesses town's progress in upgrading roadways. The highway department has been working with Central Vermont Regional Planning in mapping potential trouble spots. In the 2018/2019 calendar year there have been numerous projects that directly address the problems including work on Lower, Middle and Recreation Field Roads. In addition, the town is undertaking a project near the Health Center that addresses the sediment issue. All these efforts will help improve the general welfare of the transportation infrastructure as the work involves replacing culverts and improving drainage.

Road maintenance costs will be increasing in the coming decades due to a number of factors. Weather forecasters are predicting more rain and wind and an extension of mud season. The Plainfield Highway Department is adjusting to these changes and anticipating more "out of season" thawing and freezing on the roads. Unfortunately, Plainfield is anticipating higher expenses in labor and materials. As of 2019 the costs of gravel and stone have been increasing and we expect this trend to continue. Since the 2014 Town Plan the Highway Department budget has increased roughly 12%.

On other fronts the town has upgraded road signage which includes new Stop and Parking signs outside of the village. There has been an additional radar sign added at a Brook Road location. It is portable and might be moved to address speeding in other areas. The town is considering increasing its current inventory of two devices. We are also instituting a regular schedule for line painting and equipment repair.

7.5 Pedestrian, Bicycle, and Trails

Over the past 20 years, multiple projects have been undertaken to improve pedestrian traffic throughout the village. In the mid-1990s, sidewalks were constructed along the northern side of US Route 2 from the Town Hall to the Post Office. In 2001, the construction of the park on Mill Street included a brick patterned circle at the intersection with Main Street that had the intended effect of slowing traffic by narrowing the over-wide intersection and making the pedestrian crossing shorter and safer. The old, uneven sidewalks in the lower village were rebuilt in 2007- 2008 adding granite curbing, "bump outs", and pedestrian crossings on both Main and Mill Street. The granite curbing gives pedestrians an extra margin of safety, and the Town contracts with a private operator to keep village sidewalks plowed in the winter. As part of, the 2007-8 sidewalk construction project, a sidewalk between the US Route 2 intersection and the Marshfield town line (Maple Valley Cafe) was also proposed and designed but eventually that section was dropped from the project. The Town continues working hard on improving pedestrian traffic through the village. The intersection improvement project, outlined in Section 8.2, is the most significant project that will mediate the ongoing problem of pedestrian and bike access between US Route 2 and the lower village.



The town also commissioned a study that proposes a walkway that completes a rectangle around the traditional heart of the village. It would close a loop between the sidewalks on Main and Mill streets that currently end at Creamery Street and Brook Road.

Eventually the town would like to resurface the path that runs in front of the Health Center on US Route 2 between the Post Office and the VT Route 214 intersection. This formerly gravel path used by Goddard students to access the village is now grown over with grass. Priority has been given to US Route 2 intersection remediation at the entrance to the lower village.

Outside of the village, there are many informal trails along old logging roads on private property. Consideration should always be shown to landowners who allow the public to use their property for recreation, whether it's walking, hunting, skiing or snowmobiling. On public land, there are trails in the Town Forest and through L.R. Jones state forest. Spruce Mountain and the new connector trail to Seyon Lodge are important recreation assets, of course, for winter and summer use.

Biking

There is a local active mountain bike club, called Riders in Plainfield and Marshfield, that builds trails locally on public and private land and is are available for partnerships to build trail networks. It is a chapter of the VT Mountain Bike Association; Sarah Galbraith is the current president and contact person.

Mountain biking is a new offering at Twinfield School, with an after-school and summer program available to students. School trails are open to the public.

Cross Vermont Trail

The former rail bed through the village reverted to private ownership when rail service through Plainfield ended in the 1950s; however, the Cross Vermont Trail Association (CVTA) is working with landowners to close the gaps in the trail through Plainfield. After years of efforts, the CVTA has obtained funding and permitting to build a bridge over the Winooski River in 2020, which will be a critical link in the trail, allowing cyclists to commute to and from Montpelier without needing to travel on US Route 2. The Plainfield Conservation Fund facilitated the purchase of two parcels of land in town along the trail. Further landowner permissions along the railbed route in Marshfield would also allow people to cycle from Plainfield to the Groton State Forest and further to the Connecticut River.

The Cross Vermont Trail can bring tourism and visitors to Plainfield, serve as an alternative transportation method (safe biking off of US Route 2), and be an important recreation asset for locals. It offers a route for biking, running, walking, and fat biking (winter mountain biking), skiing, snowshoeing, and

bikepacking (bike touring on quiet roads and trails, and camping along the way where there are provisions), which is booming in popularity nationwide right now. The town should support the Cross VT Trail Association as much as possible in its goal to connect trail sections to create a safe, enjoyable travel route for cyclists and other non-motorists through Plainfield and beyond in both directions.

7.6 Park and Ride & Parking

The Park and Ride, located at the east end of the lower village, has approximately 20 parking spaces. Facilities and services at the Park and Ride include a US Route 2 Commuter bus stop, a bus shelter, a bike rack, an historic monument, and a recreation trail head. Recent improvements include paving, pavement markings, and LED lighting.

There are 53 designated on-street parking spaces in the lower village, Plainfield's primary retail and residential area. Of these, 26 are on Main Street between Mill and Creamery, and 27 on Mill Street between Main and the Great Brook. Two of the spaces on Main Street are in front of the Municipal Building and are designated for Municipal Building parking.

There are 18 off-street parking spaces in the town- owned lot between the Municipal Building, the Fire Station, and the village cemetery. Of those, 6 are designated for the Plainfield Food Co-op, while the remainder are reserved for the visitors or staff in the Municipal Building and the Plainfield.

There is usually enough parking available to meet the needs of the Municipal Building and the Co-op, except when there is an emergency call at the Fire Station. There is a widespread perception that the number of parking spaces available along Mill Street and lower Main is inadequate for current use by tenants and by patrons of local restaurants and stores.

Limited downtown parking makes it difficult for people to attend regularly scheduled activities at the Grace Methodist Church at the corner of Main and Mill. The town Park & Ride and the Recreation Field Parking Lot, while offering ample parking opportunities, are not used for overflow parking because they are located some distance from the village amenities. Improved street lighting at these lots should entice people to use them.

The Municipal Facilities Study Committee views public parking in the lower village as a priority issue. On-street public parking does not meet current needs. Parking is already allowed on both sides of village thoroughfares, so additional public parking space near the village center can only be provided at off-street locations.

The significant parking need in the upper village is for more parking in the vicinity of the Town Hall. More parking spaces in this area will improve access to the small businesses clustered around the intersection of Main Street and US

Route 2. The Town parking lot opposite Town Hall (.21-acres) can currently hold 10 - 12 vehicles. According to a local excavation contractor, there is enough land to extend this parking area to create enough parking for another 8 - 10 vehicles. There are properties in the vicinity of the Town Hall that could be used for parking with appropriate arrangements.

To accommodate snow plowing, overnight parking is not allowed on the public streets in the village during the winter, except at the parking area facing the Mill Street Park. Those cars must be moved by early morning to accommodate plowing. The Town encourages people to use the Park & Ride and the Recreation Field parking lot for overnight parking during the winter months.

7.7 Rail & Air

The nearest railroad passenger service is Amtrak, which is located in Montpelier Junction. The nearest major commercial airport is the Burlington International Airport, which is 50 miles away. There is limited commercial aviation located at the Knapp Airport in Berlin, where the runways and infrastructure have recently been improved with the hope that more commercial regional service will become available soon.

7.8 Goal and Strategies

Goals:

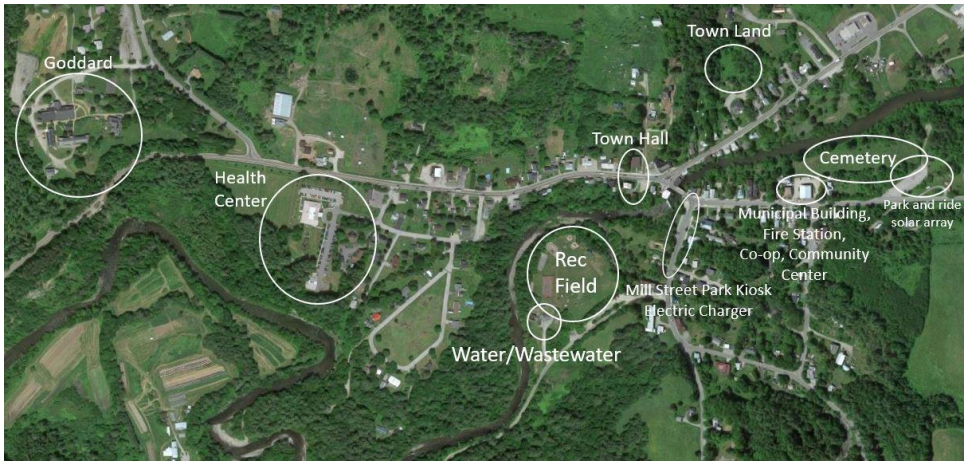
- Maintain safe and efficient road system that provides adequate access to rural locations in town.
- Promote public and alternative modes of transportation in order to minimize fuel consumption, transportation costs, and pollution and to strengthen local economic systems. Protect the scenic and rural character of the Town's roads. Support and encourage alternative transportation modes, such as bus, bicycles, and walking.

Strategy	Responsible Party	Priority
Develop a policy for traffic management on US 2 and village roads that supports the economic health of village businesses, as well as the safety and well-being of village residents. Create safer pedestrian access from US Route 2 through the village.	Selectboard	Near Term

Strategy	Responsible Party	Priority
Coordinate new driveways and curb cuts with the Fire Department, the Zoning Administrator, and Road Foreman in the permit process.	Fire Dept., Road Foreman, Zoning Admin, Planning Commission	Near Term
Ensure that new driveways provide adequate emergency vehicle access or that a waiver of responsibility is agreed upon with First Responders in the case of limited access.	Fire Dept., Road Foreman, Zoning Admin, Planning Commission	Near Term
A Town ordinance regulating the removal of roadside trees on Town roads should be developed which provides for removal only when they present a serious danger to the public and requiring consultation and approval by the Tree Warden before any roadside tree is removed.	Selectboard, Tree Warden,	Near Term
Construct and maintain roads so that the impacts of storm water runoff on nearby streams are minimized and that historic stone walls are left in place.	Selectboard	Near Term
Implement traffic calming measures identified in the 2013 study prepared by Broadreach Planning and Design.	Selectboard	Near Term
Maintain traffic control signs and devices.	Selectboard	Near Term
Build sidewalks on Creamery Street and on the Brook Road in the lower village over time as funding becomes available.	Selectboard	Near Term

Strategy	Responsible Party	Priority
With assistance from CVRPC and VTrans, implement the recommendations in the 2013 Broadreach Planning and Design study for safe pedestrian connections and mobility between the lower and upper village and along US Route 2.	Selectboard	Near Term
Support Cross Vermont Trail's efforts to extend the trail beyond the section from Route 14 to Country Club Road through Plainfield.	Conservation Commission	Near Term
Emphasize the use of Class 4 roads as recreational trails valuable for hiking, horseback riding, bicycling, VAST trails and cross-country skiing and snowshoeing.	Conservation Commission	Near Term
Consider downgrading appropriate Class 4 roads to Town Trail status for low- impact recreational use only (no motorized vehicles except for snowmobiles on approved VAST trails).	Selectboard, Conservation Commission	Long Term
Follow the principles of Vermont's Complete Street law to safely accommodate all transportation system users regardless of modes of transportation (walking, biking, or use of transit).	Selectboard	Near Term

8. Facilities, Utilities, Services & Resources



8.1 Municipal Buildings & Services

- Cemeteries:
  - Village Cemetery 2 Acres
  - Plainmont Cemetery 8.6 Acres
  - Kinney Cemetery 0.03 Acres
  - Center Cemetery 1.6 Acres
  - Bisson Cemetery 0.5 Acres
- Municipal Building 0.098 Acres
- Fire House 0.48 Acres
- Trustee Building 0.02 Acres
- Town Hall Opera House 0.19 Acres
- Town Hall Parking Lot 0.16 Acres
- Town Garage 1.43 Acres
- Pull Off & Gravel Pit 10.01 Acres
- Park & Ride, Solar Array, Water Station 2 Acres
- US Route 2 Area Behind Old School House 2 Acres
- Water/Wastewater Plant 1.25 Acres
- Town Hall Opera House

The vision the community holds for the Plainfield Town Hall Opera House is to maintain and improve its function as the centerpiece of local democracy, to create a venue that enriches the cultural and economic life of the Town, and to maintain its historic integrity. Careful planning and creative initiative is necessary on the part of the Town and the community to fulfill this vision. In addition, the Plainfield Town Hall Opera House has recently been designated by the select board to serve as an emergency operations center for the town. To fulfill this function, a plan needs to be developed for outfitting it with emergency supplies, communications equipment, and an electrical generator capable of servicing the entire building.

Actions called for in the 2014 Town Plan with respect to the Town Hall Opera House have all been undertaken either by the municipality or by the non-profit organization that manages the facility on the town's behalf. Through this partnership, work is proceeding to "upgrade the Town Hall Opera House into a facility suitable for cultural and municipal events" (quoting from page 45 of the 2014 plan). This work includes steps to provide "additional parking space for events at the Town Hall" (quoting from page 44), and to "promote and manage the Town Hall as a regional center for the arts as well as a venue for private and community celebrations and activities" (quoting from page 61).

Background - The Plainfield Town Hall Opera House is part of the Plainfield Village Historic District, which was established in 1979 and is listed on the National Register of Historic Places. Built in 1841 as a Universalist Church, it was remodeled into a community meeting and performance space and conveyed to the people of Plainfield in 1911. The gable end of the building, a traditional Greek Revival façade with pediment and pilasters, is a highly visible contributor to the streetscape along US Route 2 in Plainfield. The building, which scales back in height as it extends back toward Harvey Hill, has a small space at the entry-level and a large hall upstairs.

When the building's use was changed from a church to an opera house/meeting hall, granite steps which once ran the entire width of the building were removed and the building was raised several feet to make a useable ground floor area out of the former cellar. A hall 40 feet long by 38 feet wide with hardwood flooring was created out of the former nave, and a proscenium stage 14-feet deep was constructed in the former sanctuary. 18-foot high walls and ceiling were decorated with pressed tin. A three-tiered balcony the width of the building was installed opposite the stage which provides seating for up to fifty people. There is area enough for comfortably seating another 125 people on the main floor, which means it can accommodate an occupancy of 175 with ease. (It is rated for a maximum occupancy of 245).

This is an attractive and appropriately-sized space for private parties, large community gatherings and for regional theater. In addition to annual Town Meetings and other community gatherings, amateur and professional theatrical productions have drawn people to the Plainfield Town Hall Opera House from Plainfield and the surrounding area for more than a century. In the early days, the Nellie Gill Players, a professional acting company which put on shows throughout Vermont each summer for many years, was based at the Plainfield Town Hall Opera House. The Plainfield Little Theater, which Nellie Gill helped to found, has mounted productions there off and on since the 1930s. In the 1940s, the space was also used as a local movie house. In those days it also contained a local lock-up. In 1950, the first floor was remodeled to serve as municipal office space. In 1970, the town purchased a quarter-acre lot across the street which was cleared to create an area big enough for parking up to 12 cars. In 2005, municipal offices were relocated to ampler quarters on Main

Street in the lower village, making the entire building available once more for exclusive use as a performance and meeting space.

Of the many changes which have occurred in Plainfield since the opening of the Town Hall Opera House, motorized traffic along High Street, which became a section of federal highway US Route 2, has had the biggest impact on the facility. Dramatic increases in the volume and speed of vehicular traffic both on US Route 2 and on Main Street, combined with the building's proximity to a

blind curve some 150 feet to the northeast, has significantly compromised the once-easy pedestrian access from the nearby lower village area, the most densely-populated part of town.

When municipal offices moved out of the Town Hall Opera House it became difficult for the Town Clerk to oversee the building's rental operation and maintenance. Periodic flooding of the lower level created a mold problem. When an inspection of the building in 2011 revealed significant structural deficits, the select board was forced to immediately close the building to the public.

In 2012, upon the recommendation of a citizen's advisory committee, the community decided to restore the building and, after an extensive three-year renovation which included major work to the entire structure from the roof beams to the basement joists, it was re-opened. New electric wiring was installed throughout, along with a high-efficiency baseboard hot water heating system. The attic and the upper half of the exterior walls were insulated. Drainage was installed around the building's perimeter to prevent water infiltration from creating another mold problem. A kitchen was added on the entry level, along with a small office/ticket booth and a water fountain. In the process of constructing a retaining wall in the back of the building, a foundation was poured to accommodate future expansion for a backstage dressing room and storage space. Approximately $200,000 of this $350,000 renovation and rehabilitation project was paid for by grants and private contributions.

As the Town Hall Opera House underwent major repairs, the select board, with the help of community volunteers, took steps to assure the successful operation and upkeep of the building in the future. It appointed an advisory committee to oversee the building's restoration and plan for its reopening. A reserve fund for capital improvements for the Town Hall Opera House was established by voters at Plainfield's 2014 Town Meeting, funded by the transfer of $10,000 from surplus funds annually.

Planning for capital improvements for the building was done during this time. A $71,000 rehabilitation grant the town received from the Vermont Housing and Conservation Board (VHCB) in 2013 was conditioned on the town developing a management plan for the property that included an inventory of capital needs and a budget for ongoing maintenance. This plan was prepared and adopted by the select board in January, 2014, and revised in 2016. Two of the items on this list have been accomplished to date: in 2016, the old corrugated metal roof was replaced by a new standing seam roof and rafter, trim and cornice repair work was done; in 2017, the building's exterior was painted (front and sides). The construction of a rear addition and refinishing the hardwood flooring are pending projects.

The VHCB grant came with another requirement regarding off-site improvements. Due to the limited availability of dedicated parking, and

pedestrian safety concerns at crossing US Route 2 – factors which inhibit access and use of the facility – the town was mandated to develop plans to address those issues, as well. In response, the select board prepared and adopted a "Preliminary Parking and Pedestrian Access Improvement Plan" in March, 2014. Ways to expand parking for attendees at events the Plainfield Town Hall Opera House ever identified, and a plan that had been developed in 2013 to make pedestrian egress easier and safer was endorsed.

The town's parking and pedestrian improvement plan acknowledged that the existing parking lot was inadequate for even small audiences of fifty people and recommended property adjacent to the town lot be acquired to expand parking opportunities. It also recommended that an engineering plan to expand the existing lot to the south and east be prepared. In August, 2018, the non-profit Friends of the Plainfield Town Hall Opera House, Inc. purchased the property in question, and it is in the process of clearing it to create the additional parking area called for in the plan. An engineering study of the expansion of the original lot has yet to be undertaken.

Regarding pedestrian safety, the parking and pedestrian improvement plan called for the town to seek funding to implement a conceptual plan that had been developed for an AOT-approved pedestrian crossing on US Route 2 in the vicinity of the Town Hall Opera House, and a sidewalk on the south side of roadways leading from the lower village to a point opposite the Opera House. Funding from the AOT Bike/Ped Program was awarded for that project in 2015, and supplemented in 2017. Project construction is anticipated to begin in the fall of 2020.

Future plans - Changes in the appearance of the Town Hall Opera House are subject to an historic preservation easement co-held by the VHCB and the Preservation Trust of Vermont. This requires that the town follow federal standards for the rehabilitation of historic buildings for any renovation, restoration, addition, or alteration to the property.

Two projects subject to these guidelines are planned for the near future. One is the construction of a 2 and one-half story addition to the rear of the building, to be used as a backstage area for performers and storage. Approval has already been received for this project, which will be undertaken by the Friends of the Plainfield Town Hall Opera House starting in 2020 or 2021. Another project involves altering the appearance and landscaping of the front yard of the building.

As the Town's "Community Center" and a major municipal landmark on a busy roadway, the appearance of Plainfield's Town Hall Opera House, including its front yard, provides the public an impression of our community's sense of pride. Several of the improvements that have been made on the lower level of the building – such as moving the heating system to the west side of building and upgrading the electrical service – have had the beneficial result of removing the

exhaust vents and electrical conduits that marred the appearance of the front of the building.

One remaining visual eyesore is the electric generator, which is housed in a large grey metal box to the east of the building entrance. This generator, which was purchased with Homeland Security grant funds in 2003 or 2004, is not only out of place but is undersized to provide for the electrical needs of the entire building in case of an emergency. A new generator big enough to handle the building's electric load needs to be installed behind the building, above the retaining wall at a cost of approximately $10,000.

Another unsightly feature in the front of the building is a crumbling section of a low wall composed of 4"-6" diameter field-stones embedded in concrete that borders the sidewalk on US Route 2 and encloses the yard. The wall in front is much shorter than it was originally – it's only a foot tall – due to increases in the height of the road over the years. The town intends to have a landscaping plan prepared for the property which may include a recommendation to remove that front section of wall, subject to the approval of the historic easement holders.

The presence of a handicapped parking spot in the yard next to the front wall also detracts from the appearance of the front of the building. When the crosswalk is installed on US Route 2 between the Town Hall Opera House and the sidewalk in front of the parking area, and the parking area is expanded, accessible parking can be relocated from the front yard and incorporated into the parking lot. This will permit that area to be incorporated into an overall landscaping plan for the front of the building.

Beginning in 2017, the town contracted with the Friends of the Town Hall Opera House to manage the rental and promotion of the building on its behalf. The Friends of the Town Hall Opera House also curates programs, upgrades stage lighting, provides the hall with a grand piano for performances, and assists the town with grants and private fundraising for improvements to the facility. The town has reason to be proud of the work it and community volunteers are doing to revitalize and improve its unique, historic performance and civic space.

Municipal Building

In August of 2005, the Town Clerk's Office moved to the new Municipal Building at 149 Main Street in the village. The Town purchased and renovated the building, which had previously been used as a Methodist Meeting House, a general store, and for residential housing. Built in 1819, it is one of the oldest buildings on Main Street. The first floor of the Municipal Building provides space for the Town offices and a public meeting space for the Select Board and other groups (including the Conservation Commission, Planning Commission, Development Review Board, Recreation Committee, Sewer & Water Commission, Plainfield Town Hall Revitalization Committee, Hazard Mitigation Committee, Revolving Loan Committee, Fuel Assistance Committee, and

Social Concerns Committee). The second floor provides rental incomes office space. It was rented to the Washington Northeast Supervisory Union until they left in late 2019.

The town is in the process of trying to secure a new tenant. This might be an opportunity to implement some of the recommendations from the 2013 Municipal Facility Study. That structural and architectural overview identified the following needs: a new roof, level second story floors; enlarge meeting room space; create a separate office for the zoning administrator; construct an interior stairway to the basement (so it can be used as storage space). Since the time of the study another problem has been identified and remediated. Mold, carried into the area from items from the old building, began to take hold. This was addressed in 2015 and there have not been further problems. The delay in implementing the remodeling has been hampered by the significant cost, nearly $500,000. Once again the vacating of the second floor might be an opportunity to revive the discussion.

The Town owns 2 acres and a right of way behind the old high school building on US Route 2. The deed stipulates that the land could be used for municipal offices.

Municipal Government and Administration Resources

Plainfield has always encouraged its citizens to participate in town government. Boards and commissions often have vacancies, as most people's daily schedules leave little time for meetings. However, the community has several ways of keeping citizens aware of government functions: Select Board meetings are televised on the public access channel CVTV; Select Board minutes, articles about planning, conservation and energy commission meetings and/or projects appear regularly on the Town maintains a website as well as a presence on Front Porch Forum and Facebook. The Town posts notices of public forums and special hearings at the Town Clerk's office, the Post Office, the Plainfield Co-Op, and the Mill Street Park Information Kiosk.

Village Trustee Building

The Village Trustee Building, located on Route 2/School Street, is a small riverside structure that was Plainfield's first firehouse in 1911. Later it became the offices of the village government until the merger in 1982. It is now the home to the Plainfield Historical Society (PHS).

The building is in poor shape needing a new roof, a back wall repair, window replacement and the asbestos insulation in the ceiling removed. The committee sought bids and had several on- site visits by contractors. A grant was received by the town of Plainfield for a portion of the cost for the asbestos abatement. In addition, it was discovered that there are several large steel beams that cantilever the building over the Winooski River that provide more stabilization than had previously been known, making it possible to proceed with a possible renovation project. The committee is currently in the planning stages of pursuing grants available to municipalities for renovating buildings that are deemed historic.

If this proves unsuccessful the building will become dilapidated and need to be removed within the next 10 years. If we obtain the necessary funding this site would become an historic, public place where a permanent display of Plainfield's history, along with genealogical records, could be housed. For more information about the Historical Society see Chapter 2: Community Character.

Cemeteries

Plainfield has 5 cemeteries, 4 of which are within the town's boundaries. The 5th cemetery, Plain-Mont Cemetery, is on US Route 2 in East Montpelier just at the East Montpelier and Plainfield town line:

- Center Cemetery – located in the Bartlett Hill area of town on Bartlett Road
- Village Cemetery – located off Main Street behind the Fire Station.
- Bisson Cemetery – located on Lower Road about a mile from the Barre line.
- Kinney Cemetery – located on East Hill Road, about half a mile beyond the former junction with Cameron Road.

Only the Plain-Mont and Center Cemeteries have plots for sale at this time; the Plain-Mont has expansion capacity across US Route 2 that has yet to be developed. At the current rate of usage, that capacity is sufficient for 100 years.

Town Garage

The Town Garage is located off Cameron Road on 2 acres of land purchased from the Bartlett family. A prefabricated steel garage building was erected to replace the old wooden town shed located nearby on Brook Road over a decade ago. In addition, there is a small shed for storing equipment. The main building is at capacity. Presently the town is engaging in building a lean to in back of the storage shed to handle excess storage. Although a new main building is not presently necessary it would be prudent to begin a long process of planning for excess capacity in the future.

The town garage site also houses space for culvert storage, sand and salt piles. The town has an agreement with the neighboring town of Marshfield to store some of their road sand and salt. In the past these commodities were easy to locate but in recent years there have been shortages causing increasing expense for hauling. A long term strategy should be employed to offset ever rising costs. Perhaps working more closely with neighboring towns would be a solution.

Village Street Lighting

58 town owned lights make up Plainfield's municipal lighting system. In 2013, taking advantage of Efficiency Vermont's rebate program, the Select Board approved a change-over from High Pressure Sodium to LEDs lights, starting in the lower village. LEDs are more efficient, last longer, and require less maintenance. Presently all the town street lighting has been replaced by LED fixtures.

Water Supply & Waste Water Treatment

The Plainfield water and wastewater districts were created in 1968 to serve what was then the Village of Plainfield, located in the towns of Plainfield and Marshfield. The original water and sewer lines continue to serve some Marshfield customers, even though the Village formally merged with the Town of Plainfield in 1984. The water and wastewater systems have been maintained and upgraded with user fees. The Plainfield Water and Wastewater Commission has adopted regulations that allow for steady new growth and expansion in the village district by allocating a certain percentage of unreserved wastewater plant capacity for new growth each year for the next twenty years.

There are approximately 383 water connections, including Goddard College and the Northwood development off of VT Route 214. The water main running along VT Route 214 was replaced with a larger, four-inch diameter pipe in 2001.

Much of this infrastructure is approaching 50 years of age and increased maintenance and replacement costs should be anticipated. Households purchase 60,000 gallons of water per year at a flat rate. An additional fee is charged for every thousand gallons a household uses above 30,000 gallons in 6 months. Water rates have been and continue to be below the state average.

The town has been progressively increasing water rates instead of having one large price increase. This added revenue is needed to allow for improvements and future growth. A capital fund for long-term repairs and replacement will help keep costs stable. The Water Department chlorinates the water to kill bacteria. Fluoride supplements were removed from the water supply in March 2009. As required by state law, the Department monitors water quality daily.

The main source of Plainfield Village's water is six springs on Maple Hill in Marshfield. The Source Protection Area for the spring system covers 47 acres. This is an area designated by the State of Vermont where contamination could impact our public water supplies from potential pollution. In 1994, the Town of Plainfield purchased 14 acres immediately surrounding the springs in order to protect them from contamination. The remaining 33 acres in the Wellhead Protection Area are privately owned. The Marshfield Town Land Use and Zoning Map has designated most of this area as the Plainfield Village Watershed Area.

The second source, used for back-up purposes, is the Hood Well points, located at the base of Maple Hill, adjacent to the cemetery. A 14-acre Source

Protection Area surrounds the site in order to protect the well from potential contamination. This second Source Protection Area is partly in Marshfield and partly in Plainfield.

The town developed a Source Protection Plan for these water sources that the Vermont Department of Environmental Conservation approved in 1995. The Plan uses the Source Protection areas to identify threats to the water supplies and includes a management and contingency plan to prevent the sources from becoming contaminated. This plan is updated every three years.

All residents, but especially landowners living within the Source Protection Areas for the two water supplies, are urged to dispose of household's wastes and chemicals with care. For example, used motor oil and leftover paint should never be dumped out on the ground, but taken to appropriate trash facilities. Very small quantities of such chemicals can contaminate thousands of gallons of water in an underground aquifer. Underground fuel storage tanks should be carefully monitored and leaks prevented. In-ground septic tanks should be checked and pumped on a regular schedule.

The Plainfield Wastewater Department operates a wastewater treatment plant located between the recreation field and the Winooski River in Plainfield Village. The original plant was built in 1968 with a combination of state and federal funds. Goddard College helped finance the plant in exchange for rights to 22 percent of the plant's capacity. The original plant was designed to last 20 years, and it was replaced in 1999 after being in service for 29 years. The new plant is approximately halfway through its expected service life.

The Water and Waste Water Commission has started to put money in a reserve fund dedicated to future replacement costs. How much those costs will be will depend on the regulations and technology in place at the time of replacement. There are currently 353.5 sewer connections, including the Goddard College campus and the Northwood development off VT Route 214 in East Montpelier.

In 1999, the Town built a new wastewater treatment plant. Aided by a 50% federal grant, the Town bonded for the cost, but only the ratepayers of the sewer system pay back the bond. The new plant increased the capacity of the plant from 100,000 gallons a day to 125,000 gallons a day. The new plant uses an ultraviolet light system to disinfect the treated discharge to the Winooski River.

The Plainfield Water and Wastewater Commission voted to phase-in new hookups to the wastewater plant as allowed in the Wastewater Allocation Ordinance. Plainfield has no obligation to provide additional hookups to Marshfield residents living near Plainfield's village area, although the Select Board voted in 2006 to adopt an amended wastewater ordinance that extends the district to areas within 500 feet of existing water and sewer lines, which allowed a couple sites in Marshfield to obtain sewer hookups.

The Commission designated a certain amount of reserve plant capacity to be available for new connections or expansions each year for the next twenty years with an extra amount designated for the first year of the new plant's operation. Any allocation that remains unused at the end of each year is added to the total available for subsequent years.

The town no longer applies sludge to agricultural fields. Now all sludge is hauled away, usually to the Barre City municipal wastewater plant where it is combined with the much larger volume of sludge from that plant. In 2002, Barre City had a contract with a Canadian firm to haul away the de-watered sludge and compost it in Canada. The costs for sludge hauling and disposal have been increasing rapidly, adding significantly to the operating cost of Plainfield's wastewater disposal.

During the past five years the Water Department has repaired more than a dozen water leaks. The water loss for these leaks ranged from three thousand gallons a day to three hundred thousand gallons a day. The department has replaced about a thousand feet of water line to facilitate some of these repairs. That is after the water line replacement project that was completed five years ago. All the meters in town have been replaced and consequentially had to make repairs and replace some defective valves resulting from that project. The Town has developed an asset management plan that is in final draft form that will be using as a guideline going forward.

Recently, the Department continues to maintain and upgrade the existing infrastructure by:

- Accessing and checking operability of the gate valves and curb stops in the system and making repairs as necessary.
- Repairing and uncovering about a dozen manholes.
- Replacing about five hundred feet of wastewater lines and adding a manhole.
- Cleaning different sections of service lines if the system every year. There have been additional cleanings necessitated by blockages from excessive amounts of grease, wipes, paper towels, dental floss, cigarettes, contraception and feminine hygiene products.

The Department is currently in process of doing a twenty-year evaluation of the waste water system. The majority of the service lines connected to the facility are more than fifty years old and are in need of upgrade and replacement.

The results of this study should give direction for necessary upgrades and repairs necessary to be compliant with new regulations and keep the system operational and safe for the community. The facility equipment and storage space also will need to be upgraded to allow for safety and effective storage.

In the near future, 500ft of sewer line and manhole work is planned and the Department is still working to identify those lines that are most vulnerable and will be replacing sections as needed to minimize infiltration. Over the next five years, replacement of water lines on School Street, Brook Road and Barre Hill Road will be completed. The hydrants on the water system will also need to be repaired or replaced due to age and operation concerns.

Solid Waste Program

Since the passage of Act 78 in 1987 in Vermont, progress has been made in establishing sanitary landfills and in reducing the toxicity and amount of waste disposed. While hundreds of unlined landfills once dotted the state, currently one large double-lined landfill in Coventry handles the majority of Vermont's solid waste. The first State Solid Waste Management Plan was adopted in 1989, revised in 2001, and then readopted in 2006. In 2007, a legislative mandate required ANR to evaluate the effectiveness of the solid waste plan and to develop a new vision for materials management.

That effort led to the framework for a new law in addition to Act 78 (which remains in effect), resulting in Vermont's Universal Recycling law (adopted as Act 148) which was unanimously passed by the legislature in 2012. Act 148 is designed to reduce waste and increase recycling and organics diversion through disposal bans and convenience standards that require statewide collection of certain materials at the curb and at drop-off facilities. The law incentivizes reduction and diversion through variable rate pricing, or "pay-as-you-throw," and encourages investments in recycling and organics collection and management. Implementation of the law has been phased in over nearly a decade, allowing time to establish collection services and expand processing facilities for managing these materials.

The Town of Plainfield is a member of the Central Vermont Solid Waste Management District (CVSWMD), which covers a 19-town area in central Vermont. As a member of the CVSWMD, Plainfield benefits include the development of a Solid Waste Implementation Plan, which is critical in order to fulfill State solid waste planning requirements. The State requires that the plan be based upon performance standards for managing materials, implementation of appropriate ordinances, public participation opportunities, and conformance with certain state plans.

In 2003, CVSWMD formally adopted a Zero Waste approach to managing discarded and unwanted resources that are typically referred to as waste materials. In April 2019, CVSWMD adopted a Strategic Plan which re-affirmed CVSWMD's mission, purpose and Zero Waste philosophy, updated the organization's guiding principles, and articulated specific deliverables and activities to provide education, advocacy, and services for residents and businesses in reducing and managing solid waste.

Plainfield will continue to actively participate in universal recycling efforts, carefully considering which may be appropriate for implementation on a local level. While developing new programming, CVSWMD continues to provide recycling and household hazardous waste collection services to Plainfield residents and small business owners, collecting hazardous items, including mercury thermometers, fluorescent light bulbs, heavy metal batteries, pesticides, and herbicides.

The State of Vermont Solid Waste Program Disposal and Diversion Report (2018) estimates that, in 2017, Vermonters generated 5.54 pounds per person per day of municipal solid waste. Of the MSW which is generated, 1.88 pounds per person per day (33.8%) is reused, recycled or composted (i.e., diverted from the landfill); and 3.67 pounds per person per day (66.1%) is disposed of. While Vermonters continue to generate more MSW each year, a higher percentage of that material is being diverted. Based on the state Disposal and Diversion Report pounds per person per day estimates, Plainfield generates an estimated 6,886 tons of municipal solid waste per year, of which approximately 2,327 tons are diverted and 4,551 tons are disposed of per year.

CVSWMD offers an array of waste-reduction programming, on-site consulting, free presentations and workshops, and much more. CVSWMD is a union municipality, not a trash and recycling hauler. CVSWMD provide services and a facility otherwise unavailable in our communities, such as:

- School zero waste programs
- The ARCC in Barre City, where hard-to-recycle materials find a home
- Waste reduction grants

The School Zero Waste Program offers high quality classroom educational programming and technical assistance to schools in the CVSWMD, including technical assistance to divert food scraps. As of April 2019, all of the public schools in the CVSWMD service area are diverting food waste to composting facilities or managing food waste on the school premises. Twinfield School hires an outside hauler to divert food scraps at an organics facility.

CVSWMD provides its member communities with convenient opportunities to divert or dispose of materials that are not recycled or collected in the traditional transfer station/depot model. Each year, CVSWMD holds numerous Household Hazardous Waste (HHW) events to collect hazardous and other special waste items, including paint, batteries, and fluorescent bulbs.

CVSWMD also provides grants to municipalities or schools including annual Green-Up Day grants, School Zero Waste Grants, Municipal Services Program Grants, and Emergency Municipal Solid Waste Response Program Grants. An additional grant program -- Organizational Waste Reduction & Reuse Grants – is available to businesses, institutions, or community groups to support recycling or reuse initiatives.

Many residents contract with private haulers to dispose of their waste and to pick up materials for recycling. Others haul their waste and materials for recycling to transfer stations in nearby towns or use Saturday "fast trash" services in Plainfield village or elsewhere. Waste is transported and disposed at the Waste USA landfill in Coventry, Vermont. Many Plainfield residents' compost food and yard waste at home.

As a member of the Central Vermont Solid Waste Management District, Plainfield plays an active role in addressing the region's solid waste management responsibilities and problems. Plainfield expects to continue to participate in the Central Vermont Solid Waste Management District to achieve solid waste management goals and does not anticipate a crisis in the management of its solid waste. The Town does not anticipate that a regional landfill will be sited in Plainfield due to traffic issues related to increasing truck traffic from either US Route 2 through the lower village or over the rural dirt roads from the Barre side of Plainfield.

8.2 Emergency Services

Fire & Rescue

The Plainfield Fire Station, at one time the Congregational Church and, at a later time, the High School gym, has been the home of the Plainfield Volunteer Fire Department since 1972. The two open garage bays have been used for Town Meeting on at least two occasions – most recently in March 2012, after the Town Hall was closed for repairs. However, since the Fire Station does not meet ADA or fire safety standards for public assemblies, it can only be used for Town Meetings in an emergency situation. When used as a meeting space, the garage has a capacity for 240 people.

Dispatch services have risen a staggering 270% from 2012 to 2019 and the trend seems unending. Ambulance service increased over 25% in the same period. Cost ballooned exponentially despite the low, 2%, rate of inflation for these 7 years.

A serious consideration should be given to sharing space and equipment with other departments. The Selectboard might initiate a discussion with the neighboring towns and their emergency chiefs to assess needs for the future.

In the event the Fire and Rescue Department moves to a new site, suggestions for public use for the current building are: Town Recreation Center; Town Meeting Hall; Senior Center; business incubator.

Plainfield Volunteer Fire and Rescue, founded over a century ago, provides fire protection and Fast-Squad medical emergency response services to the Town. According to the 2017 Town Report, Fire and Rescue responded to nearly a call every day, ranging from fire calls, calls for medical assistance, traffic accidents, to occasional hazmat situations. Plainfield Volunteer Fire and Rescue even

stepped in to rescue goats and their babies from rapidly rising flood waters in the May 2011 flood.

Plainfield is a member of the Capital Mutual Fire Aid System. This agreement allows departments within the system the ability to call in resources from other towns in the event of emergencies. Plainfield also has an automatic response agreement with adjacent East Montpelier and Marshfield.

The nearest HAZMAT Response Vehicle is located approximately 47 miles away at the IBM Facility in Essex Junction. The nearest HazMat decontamination, rescue and mass care trailers are located at Barre City and Berlin Fire Departments.

For medical emergency services of greater complexity than Plainfield's Fast Squad can handle, Plainfield contracts with the East Montpelier Fire Department ambulance service which responded to seventy-five calls in Plainfield in 2017 (declining each year from a high of 100 calls in 2013). Plainfield Volunteer Fire and Rescue's work is much appreciated and, with the Town's support, a new fire truck was put into service in September 2018.

The Plainfield Fire Warden, regulates open burning in the town by issuing burning permits ("Permits to Kindle Fire"), educating town residents about safe open burning practices, and maintains a relationship with Plainfield Volunteer Fire and Rescue as Second Assistant Chief, and with the Vermont Department of Forest Parks, and Recreation. The Fire Warden is responsible for wildland fire suppression in the town and may ask the state for technical assistance and

specialized equipment. The Town Fire Warden issues between 100 and 200 permits a year.

The Town relies on volunteers to provide both fire, rescue and ambulance services. There have been increased demands on first responder's time due to extensive mandated training requirements in addition to the regular rescue work. The town should develop strategies to ensure retention of a fully staffed department. These measures might include some sort of compensation beyond simply reimbursing for expenses.

Police

Law enforcement is provided by the Vermont State Police. The Town also contracts with the Washington County Sheriff's Department for traffic enforcement. The Plainfield Town Constable does not have formal law enforcement authority, but is a source of assistance when various problems arise. The Town Constable also serves as Plainfield's Animal Control Officer and would be available to assist during a variety of emergencies. The Town Health Officer us also assisted by two Deputy Town Health Officers, one of whom is the Town Constable and the other of whom is Plainfield's former Town Health Officer.

Emergency Shelter

Plainfield's geography presents the risk that in the event of high water or flooding of the Winooski River, those on the southern side of the Winooski may not able to get to the northern, Rte 2 side of town. Ideally, emergency shelter locations for Plainfield residents would be available on both the northern and southern sides of the Winooski River. In 2014 arrangements were made with Goddard College to serve as an emergency shelter. Goddard is still willing to provide this community resource, however American Red Cross for NH-VT records don't include Goddard as a certified shelter. The Health Center, located in Plainfield, is also willing to provide emergency shelter for two families in one of its buildings. On the southern side of the Winooski, Maple Hill School and Farm, located in Marshfield, is willing to serve as an emergency shelter for Plainfield residents. Plainfield Emergency Management has been working with the Red Cross, Goddard College, and The Health Center to obtain current certification for these shelter locations. Arrangements with The Maple Hill School and Farm are in a more preliminary stage.

While having a local emergency shelter is strongly encouraged by Vermont Emergency Management, typically, rather than use public emergency shelters, people tend to shelter in place or with family and friends, whether the need is due to extreme cold weather or flooding (the most common emergencies which lead to emergency shelters being opened). In Barre, immediately to the south of Plainfield, the Barre Auditorium is a regional emergency shelter resource available to Plainfield residents while Red Cross certification for

emergency shelters in Plainfield and Marshfield is underway. Those in need of immediate shelter or assistance should call 211.

In addition, arrangements for an Emergency Operations command center at the Plainfield Town Hall/Opera House are now in place. The Town Hall/Opera House on Rte 2, located on the north side of the Winooski River, but high above the river, has landline telephone service as this facility is also a polling place for elections. The Plainfield Town Hall/Opera House has a generator to provide service for a period of time in the event of an emergency which results in an electric power outage. Unfortunately, the generator does not have the capacity to run the entire building. Although the Town has considered replacing the under-sized unit with a larger generator, there are currently no plans to do so. The Town Hall-Opera house, and the Municipal Building, have surge protection installed to protect against electrical surges harming electronics and communication devices.

8.3 Town Parks, Conservation Lands, and Public Recreation Areas

The public green spaces owned and maintained by the town are:

- Mill Street Park - This park at the entrance to the village, on the site of Barchelder Mill is Roughly 0.2 acres with 0.15 acres of parking (18 spaces). This includes a slot dedicated for the handicapped. In addition there is a charging station for electric vehicles.
- Washburn Park on Mill Street, next to the Great Brook- is approximate 0.16 acres and has parking for 3 vehicles.
- Russell Memorial Field on Recreation Field Road – the property is and has the following amenities: a ball field, basketball court, volleyball court, tennis courts, a skateboard park, a seasonal ice rink, a children's playground. The picnic shelter fell victim to erosion from the Great Brook. It was removed and a new post and beam structure built in a nearby location during late 2018/early 2019. It was managed thru the Rec Committee and involved all volunteer work (photos[10]).
- Cross Vermont Trail Land - A 4.75-acre piece of land with frontage on Country Club Road was donated to the town in 2005 by the Cross Vermont Trail Association for use as a recreation and alternative transportation trail. It is a segment of the Cross Vermont Trail and is open to the public from Country Club Road to Route 14, following the old railroad bed.
- Town Forest - In 2006 the town swapped 22 acres of land in Calais (donated to the Town in 1950 by Arthur Cutler and designated as the town forest) for 28 acres of land which abuts Gonyeau Rd. in Plainfield. Subsequently, the Conservation Commission developed a Town Forest Management Plan (adopted by the Selectboard in September 2011)

[10] https://plainfieldvt.wordpress.com/2019/05/14/roof-for-new-shelter-on-rec-field/

that promotes passive, low-impact summer and winter recreation and a longterm demonstration forestry project as the primary purposes for use of this land. The Town Forest provides education and research opportunities, as well as wildlife habitat and wetland protection. The Town Forest can be accessed via either Maxfield Rd., a year-around town-maintained road, or Gonyeau Rd., where the class 4 section is used as a VAST (snowmobile) trail in the winter months. Outside of the winter months, access over the class 4 section depends on the current condition of the road; seasonal frost heaves push rocks above the road surface, which can make travel treacherous for vehicles without high clearance. An occasional (every 2-3 years) grading of this section could make travel safer for all vehicles accessing the town forest.

- Triple Point Natural Area - a 4.9 acre parcel tucked between Route 14, the Marshfield town line and Taylor Farm Road, consists primarily of a cedar swamp with the wet soil precluding most forms of development. Ownership of this parcel was transferred to the town by the Vermont Land Trust in April, 2006 with the understanding that it would be maintained in its current state. The management plan was approved in 2007. The primary goals for conservation of this land are education, research, wildlife habitat, passive recreation, as a demonstration conservation project and protection of a wetland.

In addition to the municipal parks and open space owned by the town, other recreation areas and amenities are available in Plainfield. The abandoned Montpelier-Wells River Railroad bed (MWRR) is a significant recreation resource. The railroad ended operation in 1956 after 83 years of hauling granite, farm products, consumer goods and passengers between Montpelier and the Connecticut River. The former railroad bed has reverted to private property in

Plainfield, but some property owners allow sections to be used for walking, snowmobiling, bicycling, skiing, and horseback riding. In other towns, much of the old railroad bed is still in public ownership. The trail is unusual because, unlike Vermont's many trails that ascend mountains, the MWRR follows the valley. This makes the trail more accessible to the old, the young, and the physically challenged. The trail provides an off-road connection to Groton State Park and could be used by off-road travelers to Montpelier if it were contiguous. Cross Vermont trails has been diligently working to expand the trail network. In 2019 they secured another parcel adjacent to Recreation Field Road. The town worked with them on this transaction and hopes to expand the trail network leading to Plainfield.

Spruce Mountain and the L.R. Jones State Forest provide excellent hiking trails. Local snowmobile clubs negotiate with landowners to define trails throughout the town that connect with other regional trails. Numerous trails for

snowmobiling, walking, horseback riding, and mountain biking (including some Class 4 roads) crisscross Plainfield's woods and fields. Many recreation resources are located on private property and some property owners have kept their lands open for the convenience of Plainfield residents. Hunters have access to most parts of town.

The Winooski River provides unique recreational opportunities to boaters and anglers. The Winooski can be accessed via the public park at the Martin Bridge in Marshfield (upstream from Plainfield village), the boat portage behind the Plainfield Coop (maintained by The Friends of the Winooski), and a pedestrian trail from western end of the Mill Street Park.

8.4 Education, Community, Health, & Human Services

Twinfield Union School

The Twinfield Union School, located in Marshfield, has K-12 students from both towns as students. The school faces the same challenges as other educational institutions throughout the State in maintaining enrollment due to challenging trends in All transportation needs are managed between the parents and the school administrators. The town maintains the roads in order to accommodate the bus routes.

Goddard College

The Goddard campus, located on 117 acres at the western edge of Plainfield's village, includes two clusters of college buildings and a community radio station (WGDR 91.1 FM). The school was initially chartered as a Universalist seminary, the Green Mountain Central Institute, (later renamed Goddard Seminary) in 1863. It was moved to Plainfield from Barre in 1938. The full time residential program ended in 2002. Goddard now offers adult learners a low-residency program for higher education. Goddard is the nation's leading low-residency college, with 10 low-residency programs and nearly 800 students enrolled at three sites: Plainfield, Seattle, WA and Port Townsend, WA.

The college is facing the same enrollment challenges that have plagued many institutions of higher education in New England. It is important that the

town form a dialogue with Goddard and be appraised as to its future plans.

Cutler Memorial Library

The Cutler Memorial Library opened as a non-profit organization in 1937. But for many years before there was an 'official' Plainfield library, there were books being shared-- as early as the late 1800s-- between members of the Ladies' Circulating Book Club. In 1917, the town passed a vote to create a public library. Funds were allocated to pay the librarian and buy books, and a library board of trustees was appointed. However, no public building was provided. For the next 20 years, the library operated out of private homes, with a brief stint on the ground floor of the Plainfield Town Hall Opera House in the early 1930s. In 1937, Arthur and Amy Cutler gave the town a building—and an organization, too— in which a true public library could finally be operated. In the first year it was open, it is reported that books were borrowed more than 5000 times.

The current building was moved from across the road, where it had been the Cutler's Carriage House. Following the example set by East Barre's York Branch of the Aldrich Public Library, the 2nd floor was converted to an apartment so that the rent collected could help support the library. Within a few years, the lean-to garage that was built on the back was replaced with a 2-story back addition with attached garage and sun porch. In 1968, a Veteran's Monument was installed by the widowed Amy Cutler and mounted on the lawn next to the library.

The internet has been the biggest change at the library since then. It has significantly affected how we do so many things, not the least being how people use public libraries. The internet is an essential resource in this day and age, and we are happy to provide very fast and modern internet access to hundreds of library patrons every year who often have no other internet choice.

The American Library Association reports that Americans have come to think of their local public libraries as community anchors that address economic, education and health disparities, not just a place to borrow reading material. Libraries everywhere are offering more workshops and events and recreating their spaces so they easily adapt to different uses. The library trustees and librarian have taken all of these factors into account with this expansion design.

Among the expansion design features: twice the space for kids and the disabled, twice the parking, twice the rental income upstairs, mobile shelving, a kitchenette, a staff workspace, casual seating, quiet reading space, meeting and workshop spaces, accessibility, key code access to the building after hours for group use, and more! With a Vermont Community Development Program grant secured in partnership with the Town of Plainfield, Vermont Integrative Architecture is working with the librarian and board of trustees, with input from the public, to essentially double the square footage of the library and also the rented space upstairs, and to construct a 14 or 16 car parking lot. Although the design in- progress has not gone to the cost estimator as of this writing, the architect's design was guided by a proposed budget of $450,000. It is anticipated that half of that will come from grants and the other half from fundraising.

The design also incorporates recommended practices for Historic Preservation by leaving the majority of the existing building and the monument unchanged and protecting features of the interior even while adapting the floorplan to incorporate the new space. Still ahead in the process: a geological assessment of the suitability of the backyard soil for construction and an archeological assessment to determine whether Native American or early Colonial Settlement farm artifacts are present.

The Health Center

The Health Center (THC), which was established over 45 years ago, is one of 12 community health facilities in Vermont. Open to everyone, the center provides high-quality, cost- effective care to patients regardless of their ability to pay. Payments for eligible patients are on a sliding scale. THC is open 60 hours a week providing primary health care, dental, social outreach, and mental health services. In addition to Plainfield it serves the towns of Cabot, Calais, East Montpelier, Marshfield, Woodbury, and other surrounding communities. Annually they serve approximately 8500 patients.

THC is not only a vital health resource for the community but has very significant economic impact for the Plainfield. They employ 5 MDs, 5 PAs, 1 Nurse Practitioner, 11 nurses and medical assistants, 4 dentists, 6 dental hygienists, 8 counselors, 3 lab technicians, 2 pharmacy techs, 2 outreach staff, 1 certified Diabetes educator, 1 dietitian, 1 part time oral surgeon, 2 neurologists and one psychiatrist. THC owns and operates, in collaboration with Ronald McDonald Charities, a dental bus that visits remote rural schools with limited access to dental care. The complete staff is approximately 100, including financial professionals, medical secretaries, IT and administrative personnel. THC's financial importance to the area cannot be understated.

THC continues to innovate and expand. There is a state of the art online patient portal, which can be used for appointments, prescriptions, lab results and other sundry aspects of patient/health provider interaction. In response to the expanding need for mental health services and substance abuse prevention they have added 2 additional on-site counselors. The in-school counseling services to several local school systems and provide, at the school's request, teaching and training concerning smoking, alcohol, substance abuse and eating disorders. The 8 counselors are educated in Adverse Childhood Experiences (ACEs) screening and interventions, cognitive behavioral therapy, mindfulness, trauma informed yoga, stress reduction, and resilience. Family and parenting counseling workshops are available. These include child care and transportation considerations. The importance of shared family meals is also part of a comprehensive model of integrated care.

Not surprisingly the THC is recognized for its outstanding service by the National Committee for Quality Assurance with the highest certification as a Patient Centered Medical Home. In addition, it is a Federally Qualified Health Center (FQHC). The Health center was one of 8 practices in the entire country chose by Healthcare Quality & Research (AHRQ) as an example of a successful model to provide fully comprehensive and high quality primary care with low overall cost. This is exemplified in their programs' statistically and consistently outstanding results in screening & treating cervical & breast cancer, diabetes, high blood pressure. This all results in lower levels of outpatients undergoing expensive emergency room visits.

This innovative institution has a track record of dedication to providing quality, patient centered care with a collaborative team-centered approach. On top of being an outstanding healthcare organization it is an economic juggernaut for Plainfield.

Twin Valley Senior Center

Twin Valley Senior Center (TVSC) is a non-profit organization that serves six towns. These towns are Marshfield, Plainfield, East Montpelier, Woodbury, Calais and Cabot. The center also has attendees from surrounding areas. The center is not just for the elderly but welcomes anyone of any age.

In 2014 the Senior Center moved from The Old Schoolhouse in Marshfield because of space needs to US Route 2 in East Montpelier known as Blueberry Commons. Each of the six towns served contributes yearly to help with the operational expenses of the center. Center volunteers and staff throughout the year do many fundraisers to sustain the center's annual budget.

The center serves many residents in the town of Plainfield with free door to door transportation to and from the center. We serve many Meals on Wheels to the homebound, disabled and Veterans. The demand for home bound meals rise consistently as residents age and are unable to shop or prepare nutritional food for themselves. Without the service of the Meals on Wheels there are residents that could not remain in their own home and community.

With free transportation to and from the center our most vulnerable population has the opportunity to come to a nutritional meal at the center, socialize, take part in healthy exercise programs, play games, have sing-a-longs, blood pressure checks, foot clinics and updated information presented on Medicare, Fraud, Wills, Diabetes, Dietary needs, Cooking in small amounts and much more. The center also offers, Art, Yoga and Meditation classes weekly. Free tax service is available yearly to any low income residents or non-residents that need the service.

The center once again has outgrown its space and has partnered with EMSLI (East Montpelier Senior Living Imitative) to look at the possibility of purchasing the location we are presently at to expand the center and possibility of adding some senior housing units at the present location. The Twin Valley Senior Center welcomes people to join them on this journey to help the center have a permanent home and to expand on resident needs in Plainfield and the surrounding towns served.

Child Care

Plainfield has approximately a half dozen private child care providers throughout the town. (See Table 8.1.) Children aged kindergarten and older also have access to Twinfield Learning Center (TLC) at Twinfield School which provides educational opportunities for children after school.

Table 8.1 Plainfield Childcare Providers

Provider Name	Contact Information	Program Type
Twinfield Union Preschool	106 Nasmith Brook Road	Licensed Provider

Table 8.1 Plainfield Childcare Providers		
Washington Northeast District ASP at Twinfield	106 Nasmith Brook Road	Licensed Provider
MacLaren, Dawna	785 Upper Road	Registered Home
Brickey, Sally	231 Bunker Hill Circle	Registered Home
Roberts, Brandi	1267 Hollister Hill Rd.	Registered Home
Anderson, Chelsie	2930 VT Rt 14N	Registered Home

Source: The Bright Futures Child Care Information System

8.4 Communication Infrastructure & Services

Plainfield is reasonably well-served by various telecommunications providers, as well as television and radio stations, newspapers, and community forums.

Telecommunications

Telecommunications services are provided by four national companies: the incumbent telephone company, now owned by Consolidated Communications, mobile wireless carriers AT&T and Verizon Wireless, and, to a lesser extent, franchised, cable provider Charter Communications, which offers voice services but is largely limited to the village area.

Broadband

Broadband is available from all four of the telecom providers. Broadband is also available from national satellite wireless providers ViaSat and HughesNet and Plainfield-based fixed wireless provider Cloud Alliance. A smattering of coverage is available on the southern border of the town from VTel Wireless. FirstLight and Charter deliver fiber-based broadband to anchor institutions—FirstLight to Cutler Memorial Library, Goddard College, and Cloud Alliance and Charter to Maple Hill School.

With varying potentials for evolution, each provider has improved its offerings, but certain technologies will reach their limits soon. Geo-stationary satellites are too far away from the earth's surface to provide low latency communication, which is essential for voice and other time-sensitive communications. Twisted-pair copper telephone wires deteriorate with age.

There have been concerns raised about much of the copper infrastructure that serves the town. In addition, even with copper-bonding techniques, distance-limited DSL technology will soon be unable to keep up with modern demands. Cable technologies offer robust downstream but limited upstream speeds. Both mobile and fixed wireless continues to evolve with significant potential. Fiber is generally considered the gold standard, due to its nearly limitless capacity and symmetrical down and up speeds, but remains the most capital intensive solution.

The ever increasing broadband demands of modern society threaten to outstrip Plainfield's current supply, and mobile wireless coverage remains incomplete. Lack of best class broadband and ubiquitous mobile wireless impacts the ability of the Town to attract and keep new residents and businesses.

As communications infrastructure is a vital part of community development, Plainfield has joined with 16 neighboring towns to form CVFiber, a communications union district ("CUD"). CUDs are a new kind of Vermont municipality that can fund, develop, and even directly offer broadband communications without using member towns' taxpayer money. The CVFiber's mission is to offer world class broadband to everyone over a few years—a daunting objective. CVFiber and Washington Electric Cooperative are mutually exploring ways to partner towards achieving that goal.

Television & Radio

Plainfield has generally good access to television over-the-air services ("OTA"). Most or all of the major national television networks are available on digital OTA antennas in many parts of town. Television is further available from Charter Communications cable in the village and DISH and DirecTV satellite-based wireless services in the town. Streaming television is available over broadband connections as well.

Numerous radio stations are audible in Plainfield on the AM and FM bands. WGDR is a not-for-profit community radio station broadcast from Goddard College. It was established in 1973, as a unique, college-based community radio station serving the Central Vermont region from the campus of Goddard College in Plainfield, Vermont. With the addition of WGDH the station now has expanded coverage into neighboring communities.

As a forum for cultivating social justice, stewardship of the natural world, and the independent arts, Goddard College Radio fosters local and global community building and resilience through the broadcast of information, audio arts, and moderated dialogue. Goddard College Radio is a hybrid college-community radio station and living laboratory for knowledge production in the 21st century. Community volunteers, staff, faculty, and students work together to serve listeners and learners through high quality programming and online

content, informed by Goddard College's values and the ethical guidelines of non-commercial, educational community radio.

In 2018, WGDR is celebrating forty-five years on air, with two signals broadcasting in six counties and to twenty-five Central Vermont zip codes.

Print media, Public Access & Community Forums

The town is served by three newspapers, the Times Argus, Hardwick Gazette (new ownership includes Plainfield in its coverage), and the World. Finally, Plainfield has an information kiosk located in the Mill Street Park.

In addition to Goddard's local radio station, (WGDR/WGDH) Plainfield has a thriving local community access television station which also broadcasts the Selectboard meetings. CVTV (Central Vermont Community Television) was founded in 1992 and is a 501 (c)(3) Non-Profit Organization. Other municipalities served by this station are Barre City, Barre Town, East Montpelier, Orange, Washington, Williamstown, Chelsea, S. Royalton, Tunbridge and Cabot.

Despite being one of the smaller towns served Plainfield boasts a larger than average following of its government meetings. This is due to the town being an early adaptor of CVTV's state of the art internet distribution system. In addition to recording the meetings the material is then broken down into "chapters" and placed on the town's website. Citizens can easily track the discussion topics that interest them, rather than having to watch the entire 2 hour deliberations. Plainfield's partnership with CVTV has greatly improved townspeople's awareness on the deliberations of a myriad of political issues. Many town officials have commented on the importance of these broadcasts aiding in participation in town events. Unfortunately, due to severe budget considerations in the 2020-year allocation for this service is being suspended. There is discussion about finding alternative funding sources. As Twinfield's print publication, Fields Notes, no longer is the main conduit for the dissemination of events on the Selectboard, there is clearly a need to broadcast the civic proceedings.

Plainfield has its own robust website. It provides information regarding the structure of town government, contact info for key office holders and copies of forms and applications. There is talk of adding transactional capability. The Hazard Committee maintains a website in conjunction with the official town website. The Plainfield Town Hall Opera House maintains its own website that lists offerings of concerts, lectures, plays in addition to information on theater rental.

The town is involved in social media. There is a joint Plainfield/Marshfield site on Vermont's Front Porch Forum. An active site on Facebook is maintained by a private citizen, called Plainfield People, plus there is a site, managed by a

private citizen, that promotes the town of Plainfield with photographs of different Plainfield events.

Social Concern Organizations

There are numerous Government and "not for profit organizations" that support local residents. Plainfield's Social Concerns Committee has had a history of awarding local tax dollars to the groups listed below:

- Circle - services for domestic violence victims.
- Central Vermont Adult Basic Education - free education in reading, writing, math and English as a second language.
- Capestone Community Action - promoting economic self-sufficiency, alleviate the effects of poverty
- Central Vermont Council on Aging - aid for the elderly
- Central Vermont Home Health and Hospice - Visiting Nurse Service safeguarding healthcare needs
- Family Center of Washington County - Childcare specialists helping young families
- Friends of the Winooski River - Protects the Winooski Watershed
- Good Beginnings - Specializing in the care of newborns and infants
- Green Mountain Transit Agency - aiding program for seniors and disabled in organizing transportation
- Home Share Now - Helps develop home-sharing to mitigate affordable housing crisis
- Onion River Food Shelf - Food and clothing support
- People Health and Wellness Clinic - Health and dental care for the uninsured and underinsured
- Sexual Assault Crisis Team - support for victims of sexual violence
- Twinfield Learning Center - Afterschool programs for Twinfield Students
- Twinfield Together Mentoring Program - Develops one on one mentoring for the local youth
- Twin Valley Senior Center - Many programs for seniors from wellness programs to socializing opportunities
- Vermont Center for Independent Living - Support for those with disabilities
- Washington County Diversion Program - Alternative restorative justice program
- Washington County Mental Health Services - Support for those with mental health challenges
- Washington County Youth Services Bureau - Support for youth facing serious challenges

8.5 Goals and Strategies

Goals:

- Maintain and upgrade Town property, including: historic buildings; amenities that promote healthy life styles and cultural events; amenities that promote pedestrian safety; amenities that promote alternative transportation; proper space for Town government, public meetings, and voting.
- Protect residents from health and safety hazards.
- Ensure that adequate child and Senior Citizen care services are available.
- Maintain and upgrade the Town's water and wastewater system, storm water management system, and emergency management system to protect public health, safety and welfare, and to achieve sustainable growth in the village.

Strategy	Responsible Party	Priority
With the aid of grant funds and fees in lieu of parking space requirements from local businesses and owners of residential rental property, acquire or create additional off-street parking spaces for the upper and lower village.	Selectboard Planning Commission Development Review Board	Near Term (within 1-3 years)
Enact ordinances to regulate solid waste disposal and establish obligations of owners of vacant buildings and enforce them.	Select Board Town Health Officer Town Building Safety Officer	Near Term (within 1-3 years)
Keep the Town's Local Emergency Operations Plan (LEOP) updated; use the National Incident Management System (NIMS) as the basis for all incident management.	Selectboard Emergency Management Coordinator	Near Term (within 1-3 years)
Implement the Town's Pre-Disaster Mitigation Plan and review progress annually.	Fire Department Emergency Management Coordinator	Near Term (within 1-3 years)

Strategy	Responsible Party	Priority
Work with the Red Cross, the Central VT Emergency Management Planner, and potential funding agencies to maintain the Red Cross certified emergency shelter currently at Goddard.	Emergency Management Coordinator Fire Department	Long Term (within 3 years)
In association with the State Division of Fire Safety and with the Town's insurance company, develop and follow a regular Maintenance inspection procedure for Town facilities.	Fire Department Selectboard	Near Term (within 1-3 years)
Work with CVRPC and VTrans to help design and fund replacement of undersized bridges on Main and Brook to prevent debris jams.	Selectboard Road Commissioner	Near Term (within 1-3 years)
Promote the use of the Park and Ride, the Rec. Field parking lot, and the Town Hall parking lot. Seek additional parking space for events at the Town Hall.	Selectboard	Near Term (within 1-3 years)
Work with landlords, tenants, and business owners to enforce parking restrictions in the village.	Town Constable Road Commissioner	Near Term (within 1-3 years)
Support efforts to reduce illegal burning.	Select Board Fire Warden	Near Term (within 1-3 years)
Promote community-based and private child and senior citizen care facilities.	Selectboard	Near Term (within 1-3 years)
Continue to expand the communication infrastructure in town. Ensure that new telecommunication towers are designed and sited to provide co-location of other carriers.	Planning Commission Development Review Board	Near Term (within 1-3 years)

Strategy	Responsible Party	Priority
Assess the condition of the Village Trustee Building and develop a plan for repairing it for Plainfield Historical Society's use or investigate an alternative space for the PHS collection.	Selectboard Planning Commission Plainfield Historical Society	Near Term (within 1-3 years)
Apply for grants to fund improvements for pedestrian safety and for additional parking in the vicinity of the Town Hall/Opera House and the lower village…	Selectboard	Near Term (within 1-3 years)
Develop plans and a budget for the repair and remodeling of the Municipal Building to present to voters.	Selectboard	Near Term (within 1-3 years)
Through grants and private funds, continue to upgrade the Town Hall/Opera House into a facility suitable for cultural and municipal events.	Selectboard	Near Term (within 1-3 years)
Provide opportunities for citizen input during planning and decision- making process.	Planning Commission Selectboard	Near Term (within 1-3 years)
Inform the public of governmental activities through public forums, the Mill Street Park kiosk, direct mailings, Front Porch Forum, local newspapers and Field Notes.	Selectboard Conservation Commission Historical Society Town Clerk	Near Term (within 1-3 years)
Actively participate in the Central Vermont Regional Planning Commission, the CVRPC Transportation Advisory Committee, and the Regional Planning process.	Selectboard	Near Term (within 1-3 years)

Strategy	Responsible Party	Priority
Provide elected and appointed Town officials with a description of their roles and responsibilities and afford them opportunities to participate in professional training.	Selectboard Town Clerk	Near Term (within 1-3 years)
Maintain the Town Hall and improve the Municipal Building so that suitably-sized, accessible meeting space is available for the conduct of public business.	Selectboard	Near Term (within 1-3 years)
Increase the amount of information about Town business and administration on the Town's web site and the timeliness of postings.	Selectboard	Near Term (within 1-3 years)
Secure Emergency Shelters on both sides of the Winooski River.	Selectboard Emergency Management Coordinator	Near Term (within 1-3 years)
Replace undersized generator at the Town Hall Opera House with a robust unit that can power the entire building.	Selectboard Emergency Management Coordinator Friends of the Town Hall Opera House	Long Term

9 Economic Development

Plainfield's economic well-being is a critical function of the planning process in order to foster an environment in which residents have access to meaningful employment within the community. Economic vitality also supports many of the recreational, cultural and commercial amenities that have attracted permanent residents to Plainfield. Such programs and resources as the Creative Economy; Goddard Arts Community; Plainfield Town Hall/Opera House form a cultural foundation for the citizens in the Town.

9.1 Employment Opportunities

Plainfield's employment opportunities are primarily offered by small businesses, self- employment, and commuting to work in other communities. The largest employers in Plainfield, Goddard College and The Health Center, would be considered small businesses on the national scale. All others jobs are provided by very small employers. According to the Vermont Dept. of Labor

the average wage in Plainfield in 2018 was nearly $37,113—up more than $8000 from 2010. How the number of employees, wages and types of employment has changed from 2010 to 2018 is shown in Table 9.1:

Table 9.1

Change in Number of Establishments, Employees, and Wages among Plainfield Employment Base, by NIACS Industry

	Establishments		Employment		Average Wage	
NIACS Industry Type	2010	2018	2010	2018	2010	2018
Construction	9	11	25	18	$35,603	$43,759
Trade, Transportation, and Utilities	5	7	33	54	$13,479	$17,311
Professional and Business Services	8	16	14	41	$31,006	$37,920
Education and Health Services	7	6	245	253	$39,616	$47,939
Leisure and Hospitality	2	2	(c)	(c)	(c)	(c)
Government	4	5	76	97	$28,486	$38,640
Total	35	47	393	463	$148,190	$185,569
(c): Data is confidential	Source: VT Dept. of Labor					

(c): Data is confidential Source: VT Dept. of Labor

According to the data collected by the Vermont Department of Employment and Training, unemployment increased in Plainfield at a similar rate as neighboring communities.

Unemployment figures are based on the percentage of the estimated potential working residents in a given town or region. Table 9.2 shows the percentage of unemployed Plainfield residents versus the state of Vermont. Since 2011, the unemployment percentage has decreased for both Plainfield and the state.

Table 9.2 Unemployment Rate From June 2011 - June 2019									
Comparison Region	Jun -11	Jun -12	Jun -13	Jun -14	Jun -15	Jun -16	Jun -17	Jun -18	Jun -19
Plainfield	8.2	5.7	6.8	3.9	3.1	2.1	2.8	2	2
Barre, VT Micropolitan Area	4.9	4.6	4.2	3.6	3.3	3	2.8	2.5	1.9
Burlington - S. Burlington Metropolitan Area	4.4	4.3	3.8	3.3	3.0	2.9	2.5	2.4	1.9
Washington County	5	4.8	4.3	3.7	3.6	3.3	2.9	2.7	2
Vermont	5.3	5.1	4.5	3.9	3.6	3.3	3	2.8	2.2
United States	9.3	8.4	7.8	6.3	5.5	5.1	4.5	4.2	3.8

While some diversification has taken place, the trends are generally stable in each employment sector. Employment in the real estate industry appears to have decreased; however, there could be other explanations, such as a shift to self- employment. Professional and Business services, Educational and Health Services (not including public education), and services such as property maintenance are all growing sectors and do indicate a healthy diversification of employment opportunities.

As building ownership changes in the core village area, there can be losses of commercial prospects. Within the last 10 years the general store on US Route 2 known as "the Red Store" was bought and closed by the new owner of the remodeled Maplefields store on US Route 2 in Marshfield just past the town boundary.

While there is still a convenience store and gas station near the village it is in the next town and a loss of the tax base and community gathering place for Plainfield.

Over the years Plainfield has had a variety of small businesses come and go while still keeping a modest level of commercial viability. For a town the size of Plainfield keeping a mix of small retail, service providers and community based activities has been important. Large retail operations or larger industrial operations have not tried to locate in Plainfield and might find local opposition.

The lower village has limited access for high traffic and US Route 2 has more residential use currently. The Town has made the village more pedestrian

friendly and is working toward connecting the upper and lower villages with the new pedestrian bridge. This will allow the smaller retail and service businesses that have served Plainfield in the past to continue on. The restoration and program development of the Plainfield Opera House can be seen as an economic development engine, bringing people into the village for events that often have trickle-down effects for retail and hospitality businesses, as well as promoting a sense of cultural vitality within the town.

As residents consider the US Route 2 and Main St. Road Project (See Section 8.2) concern from residents and business owners has been voiced regarding harm to lower village businesses during work due to limited village access and traffic slow-downs. In light of this possibility, measures should be taken to encourage commuters to patronize businesses during construction. Additionally, the project should be seen as an opportunity to aid in Plainfield's long-term economic development. Changes to roadways, sightlines, and structural features may provide opportunities to increase commuter interest in the lower village businesses through improvements in safety and aesthetic appeal, and by augmenting informational signage.

9.2 Revitalizing All Marshfield & Plainfield

The Town has also been proactive in other areas as well. In 2019 The Vermont Council on Rural Development launched the Climate Economy Model

Communities Program in Marshfield and Plainfield. The project is called Revitalizing All Marshfield & Plainfield (RAMP). Four committees, peopled by local residents, formed to tackle a variety of issues:

- Farm and Food
- Renewable Energy Usage
- Transportation
- Village Center Revitalization

This last group is focusing on the US Route 2 intersection with the hope of creating an additional entrance to the village. There is talk of possibly building a bridge that would span the Winooski from US Route 2 to the Plainfield Park & Ride. The Transportation group is also working to creating "hitching posts" - an organized way of using private vehicles to transport people on a casual basis. No doubt there will be other ideas and projects initiated by RAMP over the next few months.

9.3 Goals and Strategies

Goal: Promote an attractive, vibrant Village and Town with a mix of businesses, homes, cultural activities, home-based businesses, environmentally friendly businesses, and friendly businesses.

Strategy	Responsible Party	Priority
Support the village street tree program. Continue to maintain and enhance the Mill Street and Washburn Parks and other planting areas.	Conservation Commission Tree Warden	Near Term (within 1-3 years)
Plainfield and other town entities will work with prospective developers to ensure the economic diversity continues as strategic properties change ownership.	Selectboard	Long Term (within 5 years)
Encourage agricultural businesses through publicity and community engagement such as farm tours.	Community Groups	Near Term (within 1-3 years)
Plan and implement public investment in the village: sidewalks, benches, street lighting, historic preservation and crosswalks.	Selectboard Historical Society Planning Commission	Near Term (within 1-3 years)
Develop design and siting guidelines for commercial development to encourage multi-use buildings, use of traditional materials, the re-use of existing buildings, and compatibility with historic character of the village.	Planning Commission Development Review Board Historical Society	Near Term (within 1-3 years)
Promote and manage the Plainfield Town Hall as a regional center for the arts as well as a venue for private and community celebrations and activities.	Selectboard	Near Term (within 1-3 years)

10. Land Use

Land use regulation is one of the most critical and controversial issues confronting local communities. While decisions regarding land use are generally made by the landowner, it becomes a public concern to the extent that land use could affect adjoining properties, demand for municipal services, public safety, the local environment, the use of finite resources, the character of the community, or the quality of life of its residents. Plainfield's land area, at 13,501 acres, is roughly one half the area of traditional land grant towns. This reduced land base presents the town with particular challenges in protecting its rural character.

10.1 Current Land Use

Plainfield developed in two distinct areas: the village and the outlying rural hills. Through most of Plainfield's history, growth occurred in the village, which occupies 128 acres in the northwest corner of town. Over the past twenty-five years, however, most new houses in Plainfield have been built outside the village, particularly along Lower Road and Country Club Road.

The village and some areas at its edges are served by the town's water and sewer lines. In 2004, the zoning was revised to allow development on lots of .25 acre in the village (previously the minimum lot size had been .5 acre). This, together with the current sewer and water hookup capacity, would allow greater density in the village district, enabling more people to build homes close to existing public services and transportation corridors.

The historic district, containing the village's core, has always served as the social, cultural, educational, governmental, commercial and manufacturing heart of the town. Visible clues to the source of its early prosperity, the water-powered mills and manufactories, can still be found in the area around the old Mill Privilege

where the dam and the ruins of some penstocks remain.

Plainfield's village, practically speaking, extends into the town of Marshfield, serving the residents in the western part of that town. This area of Marshfield was part of the legal Village of Plainfield until this was dissolved in 1985. As a consequence, some residences and businesses on the Marshfield side of the line continue to be served by the Plainfield water and wastewater system. However, Marshfield declined to share in the cost of constructing the new wastewater plant, stating that they needed no further capacity. Therefore, Plainfield has no obligation to provide additional hookups to Marshfield residents living near Plainfield's village area, although the Select Board voted in 2006 to adopt an amended wastewater ordinance that extends the district to areas within 500 feet of existing water and sewer lines, which allowed a couple of sites in Marshfield to obtain sewer hookups. Since Marshfield businesses on the edge of Plainfield village are perceived by most people to be a part of Plainfield village, the Plainfield Planning Commission has requested the Marshfield Planning Commission and Development Review Board notify the Town of development proposals and planning policy changes for this area of Marshfield.

In 2012, Plainfield's sole remaining dairy farm ceased operations, but is currently being revived. There are also non-dairy farms in Plainfield, but most of the town has heavy upland soils of medium fertility. Although the land is capable of supporting various agricultural enterprises, it has generally been used for raising hay, sheep, cows, and horses. Plainfield has a few areas of well-drained river bottomland along the Winooski that are potentially excellent for vegetable and small-fruit production. The decline of farming provides fewer economic reasons for landowners to keep large tracts of open land, and the town may continue to become less agricultural and more residential.

A number of larger properties have been divided into smaller lots for residential use over the years. Subdivision regulations, adopted in 2004, now provide town oversight of developments; however, the regulations exempted the first lot subdivided from an existing lot. This has been viewed by some as a significant shortcoming, allowing new lots to be created without undergoing subdivision review. Currently the majority of land outside the village, i.e. the Forest & Agricultural zoning district, is zoned for five-acre-minimum lot sizes. While the original intent may have been to allow smaller lots as a way of allowing the landowner to retain a large parcel still viable for agriculture or forestry the result has been a number of single homes strung along the road that in some areas is beginning to resemble a suburban neighborhood. Some towns have adopted density-based zoning, as opposed to minimum lot size requirements, to address this issue. Under such a method, a lot would be allowed to develop a certain number of dwellings or parcels, based on its original acreage, without restrictions on individual parcel size.

The land use policies of the Town Plan are implemented primarily through the zoning and subdivision regulations. In November 2000, voters approved a revision of the zoning regulations that combined the former Village Zoning Regulations with the Town Zoning Regulations. In addition to meshing the two

sets of regulations into a cohesive bylaw and combining superfluous zoning districts, the Planning Commission also made minor updates to the definitions and uses, and created a new use, extended home occupations, that allows for the creation of small cottage industries throughout the town. A telecommunications bylaw was added to give the town a way to deal with anticipated requests for towers. An interim zoning amendment adopted by the Select Board in 2001 added temporary structures as a new use in all zoning districts in response to community needs.

In March 2004, the town adopted subdivision regulations that incorporated several of the goals and strategies from the 2002 Town Plan. In November 2004, a zoning revision that combined the Village Residential, Commercial and Public Lands districts into one Village zoning district was adopted. A revision in 2011 broadened the scope for Cottage Industries and made Planned Unit Developments a more prominent part of the subdivision process. It also brought the zoning up to date with a Wireless Telecommunication Facilities section that was similar to neighboring towns. There is a pending zoning update based on the 2014 Town Plan that will incorporate the Flood Hazard zoning to include erosion concerns based on heavy rain events and damage to areas near waterways. Concepts built around the studies on habitat connectivity and wildlife corridors are also included in the draft zoning.

10.2 Future Land Use

Plans for future land use have to find a balance between different community needs: the need for housing, transportation and economic growth must be balanced with the need to protect the town's valuable agricultural soils and natural resources. Plainfield envisions concentrating future growth in densities and locations that respect both the natural capacity of the land and the historic patterns of development, and make use of existing infrastructure, including roads.

New development should be at a scale and character that works in harmony with Plainfield's small historic village and maintains the rural nature of the town's landscape by reinforcing the historical land patterns of Plainfield: mixed use development—commerce, residences and offices—in the village, and farming and forestry along with low-density residential development activities located in the surrounding rural landscape.

The future land use map illustrates Plainfield's vision for how the town will develop in the coming decades. The future land use map is not a zoning map, but does establish the basis for a zoning map. The land use classifications are broad and reflect general land uses. Parts of this plan will be implemented through land use regulations (zoning and subdivision regulations.) Overlay zoning areas may be created within a particular zoning district dependent on locations of significant natural resources or other characteristics of an area that need additional protection.

Plainfield's future land use areas are:

FLOODPLAIN: Areas mainly along the Great Brook and the Winooski River area designated flood hazard areas and mapped by the National Flood Insurance Program (NFIP.) The purpose of the area is to protect current and future investment from flood related damages and to retain the ecological functions of floodplains as flood retention areas. Limited new development will be allowed.

VILLAGE DISTRICT: A mixed-use area consisting of the town's businesses, civic and religious buildings along with many residences, served by town water and sewer facilities. Greater densities are encouraged in the village district, enabling more people to build homes close to existing public services and transportation corridors.

The historic district is located within the village's core. It has always served as the social, cultural, educational, governmental, commercial and manufacturing heart of the town. Visible clues to the source of its early prosperity, the water-powered mills and manufactories, can still be found in the area around the old Mill Privilege where the dam and the ruins of some penstocks remain. Retaining a vital historic village center is a priority goal. Maintaining a Village Center Designation from the state of Vermont for this area will help support this goal by providing incentives for businesses to invest in their property.

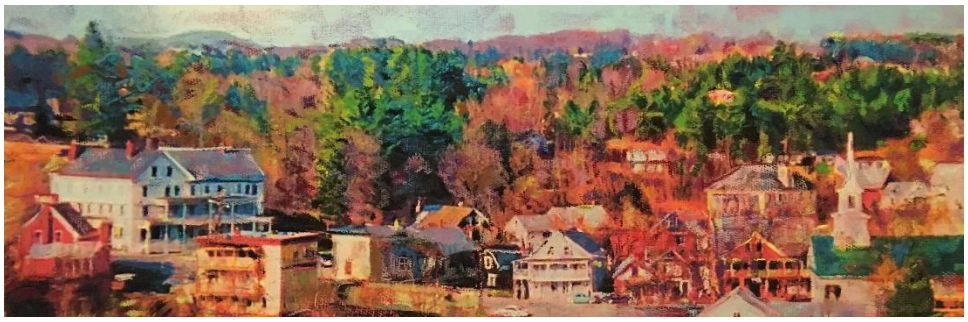
RURAL RESIDENTIAL DISTRICT: Areas adjacent to the Village District, some of which are served by town water and sewer, are mostly residential, with lower densities than those in the Village. Under current zoning regulations, a number of other uses are permitted, due to its proximity to the village. A more thorough review of the current land uses and physical characteristics of the parcels in these areas should be done to be sure that the district boundaries, densities and uses are appropriate and do not impact natural resources or negatively impact Village vitality.

FOREST AND AGRICULTURAL LANDS DISTRICT: This district encompasses 85% of the land area in Plainfield. There are large parcels of forest and agricultural land, some of which are still based on the earliest settled farms. The

primary purpose of the district is to support land-based enterprises such as agriculture and forestry, and to encourage land management practices that support wildlife habitat and biodiversity, retain riparian buffers, and maintain forest blocks. New residential development which avoids or minimizes impacts on significant natural resources, either by clustering dwellings to leave larger areas undeveloped, or by other innovative methods, will be encouraged.

At present, over 60 landowners have enrolled a combined 5,600 acres in Current Use, also known as the Use Value appraisal program (see section 4 for further discussion of the program). The owners of these parcels might find it advantageous to manage the forests cooperatively, thereby saving costs and maximizing the potential return from a resource that, as if managed separately, might produce no return from logging at all. Additionally, there are more opportunities to improve wildlife habitat through forest management when contiguous parcels are managed cooperatively.

RESERVE LANDS DISTRICT: This district is currently limited to lands with an elevation above 2200 feet. An area with steep slopes, scenic ridge lines and high elevations, lacking good road access make this area suitable mainly for forestry, low-impact recreation and wildlife habitat.



10.3 Goals and Strategies

Goals:

- Concentrate future growth in densities and locations that respect both the natural capacity of the land and the historic patterns of development, and make use of existing infrastructure, including roads.
- Promote a vibrant village center with a mix of businesses and homes while preserving the rural working landscapes of farms and forestry uses.
- Promote the regulation of land development that protects vital natural and community resources while allowing a range of land uses in appropriate locations.

Strategy	Responsible Party	Priority
Modify zoning through creative methods such as density-based zoning, to encourage development in areas where infrastructure already exists.	Planning Commission	Near Term (within 1-3 years)
Clustered development may be required in conjunction with overlay districts, as appropriate, to promote growth in appropriate areas without sacrificing the potential of lands with good agricultural soils or valuable wildlife habitat, and to protect rural and scenic character and maintain contiguous tracts of forest or open land.	Planning Commission	Near Term (within 1-3 years)
Develop design and siting guidelines for commercial development to encourage multi-use buildings, use of traditional materials, and compatibility with historic character of the village.	Planning Commission	Near Term (within 1-3 years)
Promote local entrepreneurs through the Mill Street Park kiosk and a Local Resource Directory on the Town website.	Selectboard	Near Term (within 1-3 years)
Establish and maintain conservation, recreation, and agricultural areas in the zoning ordinance. Parcels within these special overlay areas would be of particular importance to the town and would be managed in a way that would protect their special values by creating siting standards for development and limiting uses as appropriate. By designing protection for specific natural features, the district's regulations might actually permit greater flexibility in lot sizes, density, or other otherwise be available.	Conservation Commission Planning Commission	Near Term (within 1-3 years)
Strive to maintain a balance between community land use regulations and the rights of individual landowners.	Planning Commission	Near Term (within 1-3 years)

Strategy	Responsible Party	Priority
Using educational and regulatory methods encourage the protection of natural resources including important agricultural soils, wetlands, fluvial erosion hazard areas, riparian buffers, headwater streams, steep slopes and wildlife habitat.	Conservation Commission Planning Commission	Near Term (within 1-3 years)
Promote local entrepreneurs through the Mill Street Park kiosk and a Local Resource Directory on the Town website.	Selectboard	Near Term (within 1-3 years)
Inventory and map all existing conservation easements, current use and deed restrictions so the actual amount and location of conserved land is known.	Conservation Commission	Near Term (within 1-3 years)
Create a forum that will encourage open discussion between affected neighbors and developers. Make it possible for the resolution of conflicts to take place in atmosphere of creative solutions rather than strict regulations.	Conservation Commission Planning Commission	Near Term (within 1-3 years)
Create a central database of resources relevant in guiding any planning, zoning, building or remodeling decisions, such as: • Zoning regulations and permitting requirements, plus contact information for zoning administrators, highway department, fire marshal, DRB personnel, Water/Wastewater Dept., etc • Information about and map of all areas subject to flood inundation, fluvial erosion or other flood hazards • Explanation and map of conserved lands. • Map of historic district and buildings, benefits and restrictions relevant to property owners. • Information about the importance and benefits of preserving prime agricultural lands, wetlands, headwaters, groundwater, riparian buffers, healthy and contiguous forest systems, wildlife habitat and	Conservation Commission Planning Commission	Long Term (within 5 years)

Strategy	Responsible Party	Priority
connectivity, and areas hosting significant natural communities. • Information about the variety of types of development possible in different areas of town (i.e., clustered housing, hamlets, PUDs.) • List of town and other resources available to assist property owners, i.e. revolving loan fund, Conservation Fund, Current Use program, historic preservation grants, Conservation Commission's invasive plant management program, VT Housing and Conservation Board, Vermont Land Trust, County Forester, Plainfield's Village Center designation, etc.		

Appendix

A.1 Community Profile

- Plainfield is losing population and is projected to keep losing population
- Population is aging
- Median incomes have been declining since 2013
- And based upon statement previously in the plan recent housing development is happening outside the village.
- These take away should be considered in all the plan's Goals and Strategies.

Population

Plainfield's population has generally followed the same growth pattern as that of most Vermont communities. The town's population peaked in 1840 with 880 residents and gradually declined to 716 in 1900. Since the beginning of the 20th century, the number of Plainfield residents has steadily increased, exceeding its 1840 population peak in 1950, to a historic high in 1970 of 1,399. Based upon ACS Census data for 2016, the population is estimated to be about 1,466 people.

The 45% increase in Plainfield's population between 1960 and 1970 may be related to the expansion of Goddard College. Plainfield's population today is about 8% less than its historical high, roughly corresponding to Goddard's decline in enrollment. (See Chart 3.1.?) Most of the neighboring towns have experienced steady population growth in the last decade. Plainfield is the lone exception with a slight decrease in population since 1990. (See Chart 3.2.?) This info needs to be updated, check out https://www.housingdata.org/profile/population-household/population or ask RPC to do.

The 2010 U.S. Census shows that Plainfield has lost roughly 3% of its population over the past decade. (See Chart 3.3.?) This trend is projected to continue. In 2013 the State of Vermont issued the Vermont Population Projections – 2010-2030. The report presents 2 sets of population projections. Scenario A depicts conditions with a healthy national economy with greater rates of in-migration, compared to those presented in Scenario B. insert chart comparing historic population change with population forecasts?

	2010 Census	2020	% change from 2010	2030	% change from 2010
Scenario A	1,243	1,215	-2.3%	1,196	-3.8%
Scenario B	1,243	1,191	- 4.2%	1,149	-7.6%

Source:https://accd.vermont.gov/sites/accdnew/files/documents/CD/CPR/ACCD-DED-VTPopulationProjections-2010-2030.pdf

Roads

Plainfield's amounts of and class of roads can be found below:

- State Highway: 2.148 miles
- Class 2: 13.22 miles
- Class 3: 26.33 miles
- Class 4: 3.04 miles

Demographics

Data below is included from the 2018 Data Report for Plainfield prepared by the Central Vermont Regional Planning Commission. Narrative may be found in the full reports, but for reference purposes, the figures are included here.

List of figures:

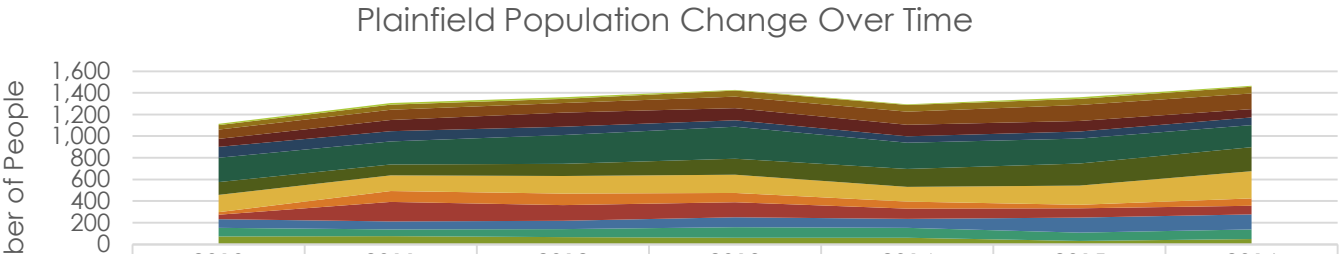
- Figure A-1: Educational Attainment of Residents in Plainfield, VT
- Figure A-2: Plainfield Population Change Over Time
- Figure A-3: Types of Households in Plainfield, VT
- Figure A-4: Household Units By Occupancy in Plainfield, VT
- Figure A-5: Plainfield Household Units By Value Over Time
- Figure A-6: Average Annual Household Income in Plainfield, VT
- Figure A-7: Occupational Fields of Plainfield, VT, Residents Over Time
- Figure A-8: Industries of Employment of Plainfield, VT, Residents Over Time
- Figure A-9: Sales and Use Tax Revenue in Plainfield, VT
- Figure A-10: Household Vehicles Available to Residents of Plainfield, VT
- Figure A-11: How Do Residents of Plainfield, VT, Get to Work?

Figure A-1: Educational Attainment of Residents in Plainfield, VT

Year	2010	2011	2012	2013	2014	2015	2016
Population 18 to 24 years	**41**	**250**	**220**	**170**	**113**	**66**	**99**
High School Graduate (Includes Equivalency)	39.00%	30.80%	23.20%	24.10%	29.20%	36.40%	34.30%
Bachelor's Degree or Higher	0.00%	0.00%	2.70%	2.90%	7.10%	10.60%	7.10%
Population 25 Years and Over	**816**	**813**	**888**	**952**	**900**	**992**	**1,041**
Percent High School Graduate or Higher	95.70%	94.70%	95.70%	96.70%	95.80%	92.20%	92.50%
Percent Bachelor's Degree or Higher	43.40%	44.20%	45.20%	43.40%	40.40%	37.80%	38.40%
Population 25 to 34 Years	**161**	**143**	**163**	**168**	**137**	**176**	**251**
High School Graduate or Higher	100.00%	98.60%	95.10%	93.50%	92.00%	71.00%	80.90%
Bachelor's Degree or Higher	39.10%	42.00%	44.20%	34.50%	33.60%	17.60%	27.90%
Population 35 to 44 Years	**119**	**102**	**110**	**148**	**165**	**203**	**222**
High School Graduate or Higher	100.00%	100.00%	100.00%	100.00%	95.20%	96.60%	96.40%
Bachelor's Degree or Higher	49.60%	59.80%	60.90%	51.40%	47.30%	34.00%	33.30%
Population 45 to 64 Years	**398**	**411**	**474**	**469**	**409**	**394**	**352**
High School Graduate or Higher	95.50%	94.60%	96.60%	97.90%	98.30%	98.50%	98.00%
Bachelor's Degree or Higher	42.50%	44.00%	44.70%	45.20%	40.30%	43.40%	37.50%
Population 65 Years and Over	**138**	**157**	**141**	**167**	**189**	**219**	**216**
High School Graduate or Higher	87.70%	87.90%	90.10%	94.00%	93.70%	94.10%	93.10%
Bachelor's Degree or Higher	45.70%	36.30%	35.50%	40.10%	39.70%	47.50%	57.40%

Figure A-1 – Educational Attainment of Residents of Plainfield, VT (Source: U.S. Census Bureau, Educational Attainment ([2010-2016 American Community Survey 5-Year Estimates])

Figure A-2: Plainfield Population Change over Time



	2010	2011	2012	2013	2014	2015	2016
85+	10	15	13	6	6	13	10
75 to 84	42	49	40	57	61	59	60
65 to 74	86	93	88	104	122	147	146
60 to 64	73	105	130	114	106	98	77
55 to 59	101	94	77	58	59	63	71
45 to 54	224	212	267	297	244	233	204
35 to 44	119	102	110	148	165	203	222
25 to 34	161	143	163	168	137	176	251
20 to 24	22	101	106	86	65	33	69
15 to 19	42	182	146	138	94	86	80
10 to 14	80	74	76	91	83	141	139
5 to 9	79	62	75	98	92	76	89
0 to 4	74	75	67	62	60	31	48

Figure A-2 – Plainfield Population Change Over Time (Source: U.S. Census Bureau, Selected Economic Characteristics [2010-2016] American Community Survey 5-Year Estimates

Figure A-3: Types of Households in Plainfield, VT

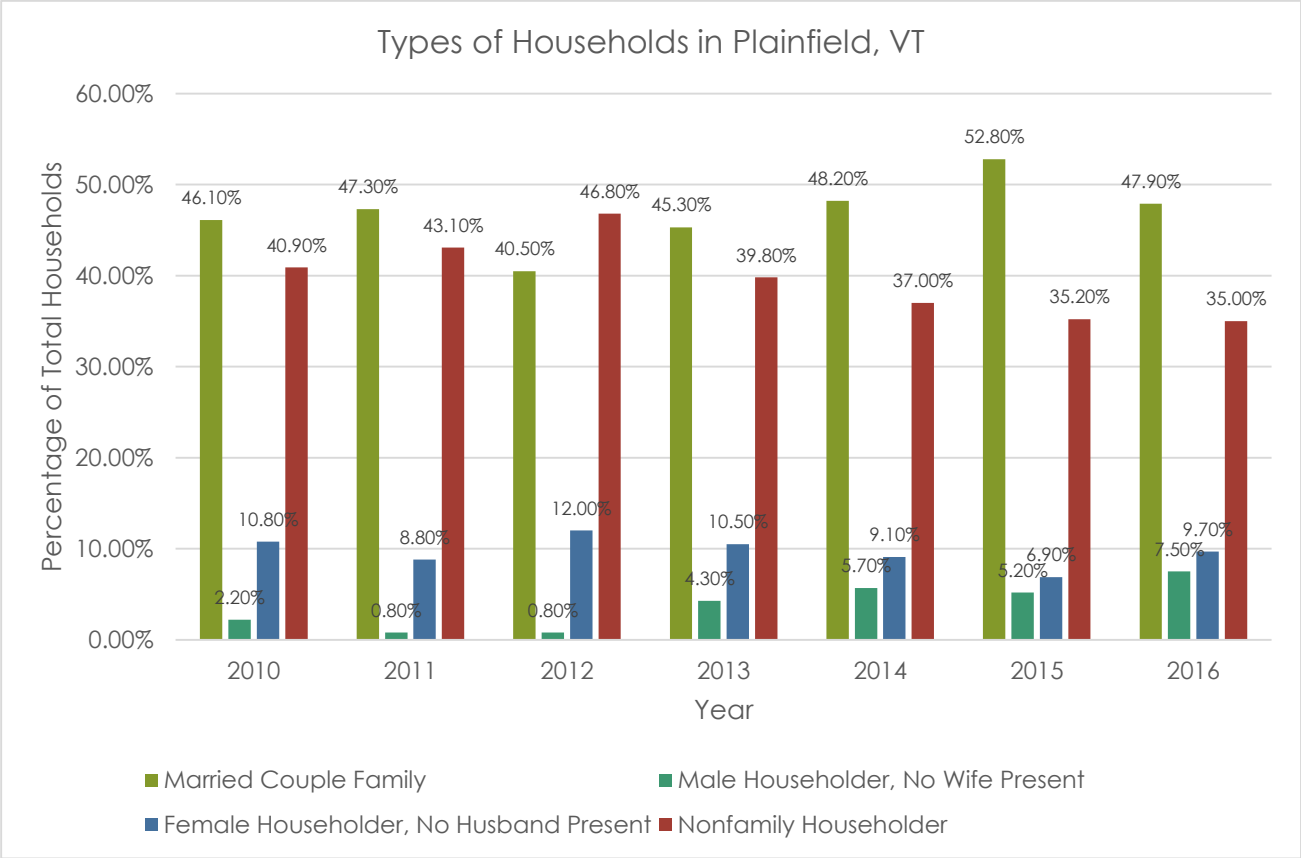


Figure A-3 – Types of Households in Plainfield, VT (Source: U.S. Census Bureau, Occupancy Characteristics [2010-2016 American Community Survey 5-Year Estimates])

Figure A-4: Plainfield Household Units by Occupancy Over Time:

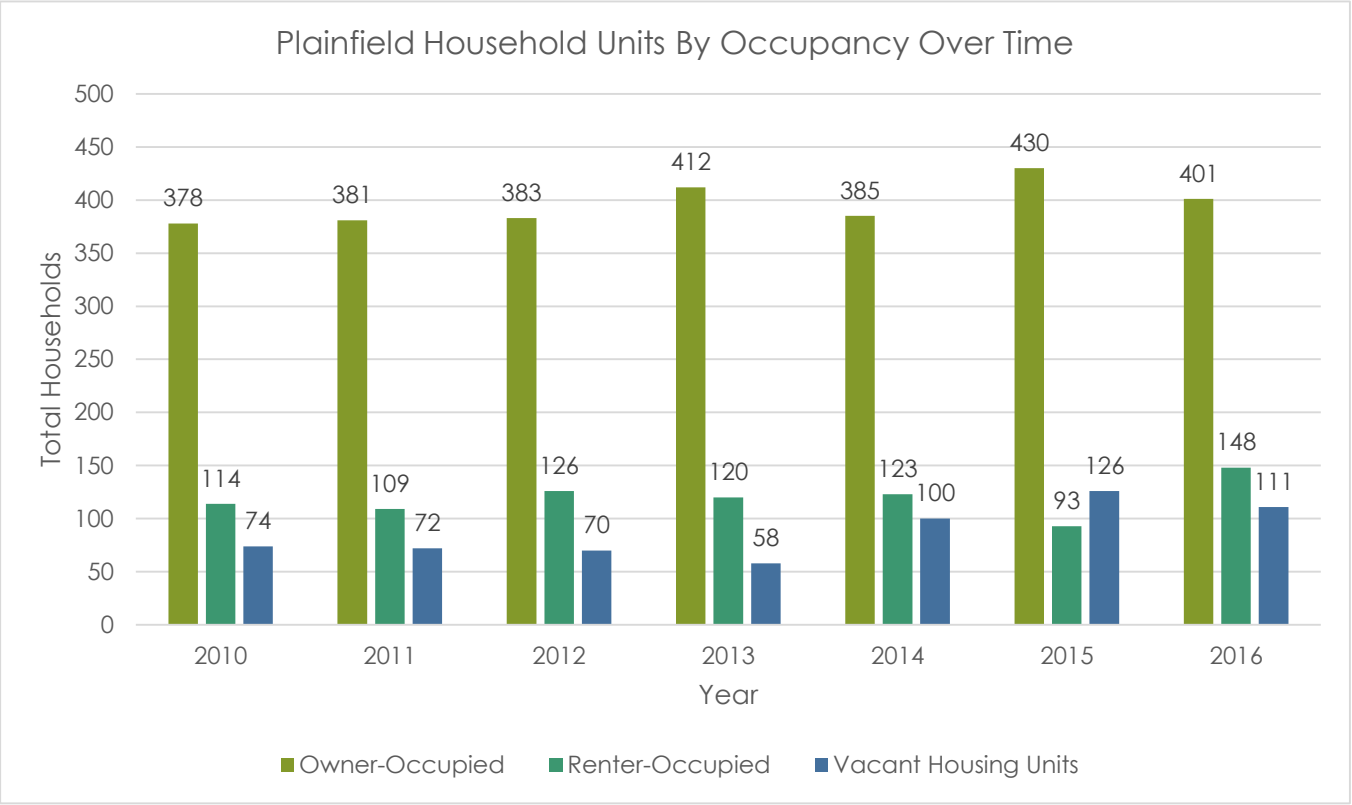
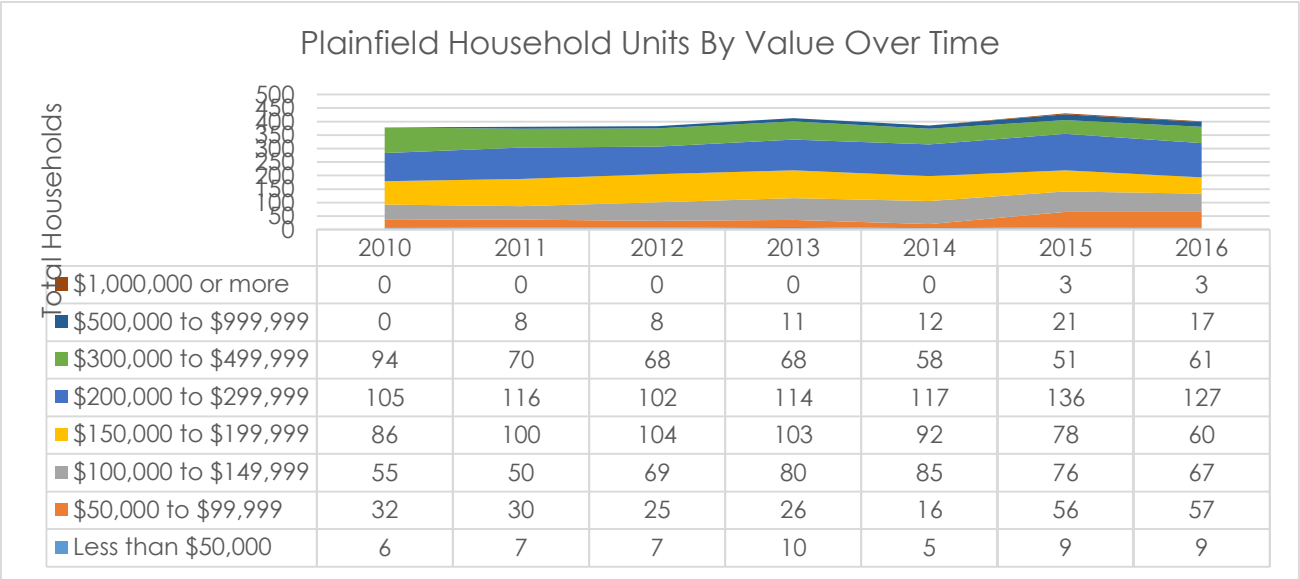


Figure A-4 – Household Units by Occupancy in Plainfield, VT (Source: U.S. Census Bureau, Selected Housing Characteristics [2010-2016 American Community Survey 5-Year Estimates])

*Vacant Housing Units Data may be unreliable

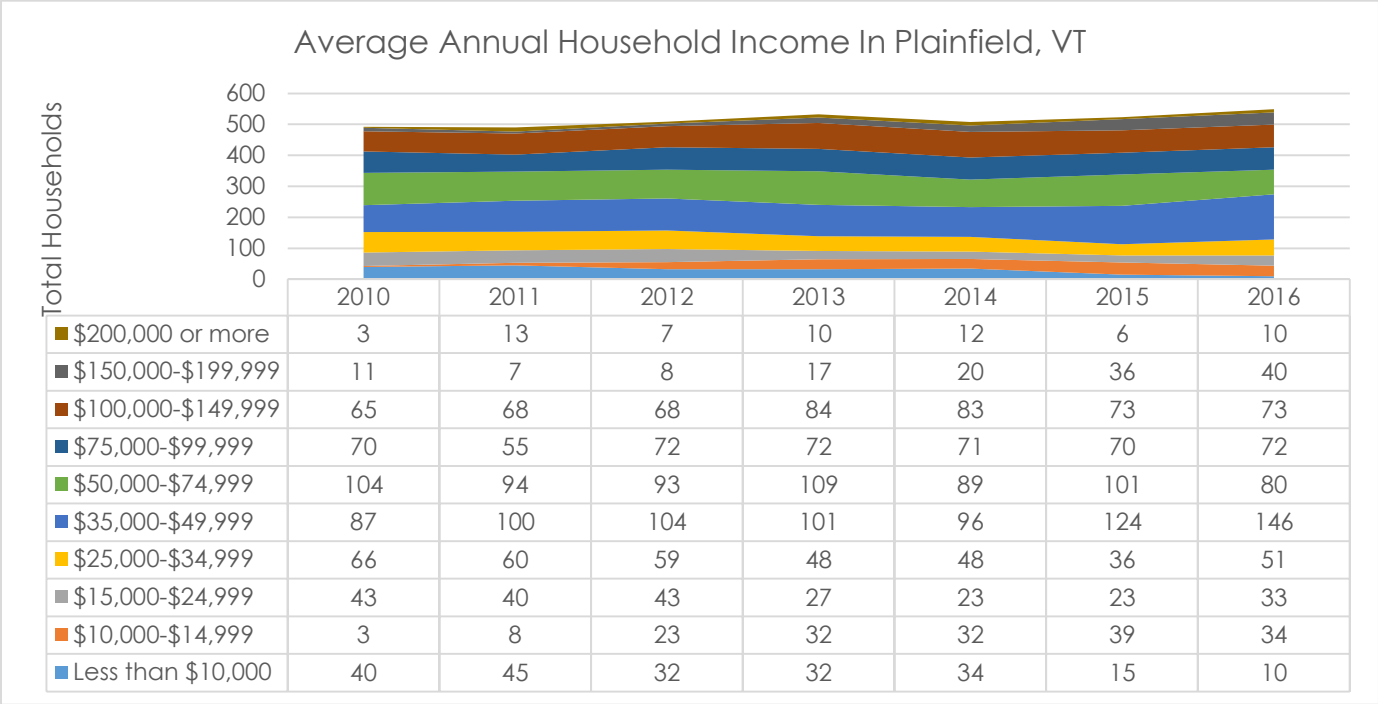
Figure A-5: Plainfield Household Units by Value Over Time



	2010	2011	2012	2013	2014	2015	2016
$1,000,000 or more	0	0	0	0	0	3	3
$500,000 to $999,999	0	8	8	11	12	21	17
$300,000 to $499,999	94	70	68	68	58	51	61
$200,000 to $299,999	105	116	102	114	117	136	127
$150,000 to $199,999	86	100	104	103	92	78	60
$100,000 to $149,999	55	50	69	80	85	76	67
$50,000 to $99,999	32	30	25	26	16	56	57
Less than $50,000	6	7	7	10	5	9	9

Figure A-5 – Plainfield Household Units By Value Over Time (Source: U.S. Census Bureau, Profile of Selected Housing Characteristics [2010-2016 American Community Survey 5-Year Estimates])

Figure A-6: Average Annual Household Income in Plainfield, VT



	2010	2011	2012	2013	2014	2015	2016
$200,000 or more	3	13	7	10	12	6	10
$150,000-$199,999	11	7	8	17	20	36	40
$100,000-$149,999	65	68	68	84	83	73	73
$75,000-$99,999	70	55	72	72	71	70	72
$50,000-$74,999	104	94	93	109	89	101	80
$35,000-$49,999	87	100	104	101	96	124	146
$25,000-$34,999	66	60	59	48	48	36	51
$15,000-$24,999	43	40	43	27	23	23	33
$10,000-$14,999	3	8	23	32	32	39	34
Less than $10,000	40	45	32	32	34	15	10

Figure A-6 – Average Annual Household Income in Plainfield, VT (Source: U.S. Census Bureau, Profile of Selected Economic Characteristics [2010-2016 American Community Survey 5-Year Estimates])

Figure A-7 – Occupational Fields of Plainfield, VT, Residents Over Time

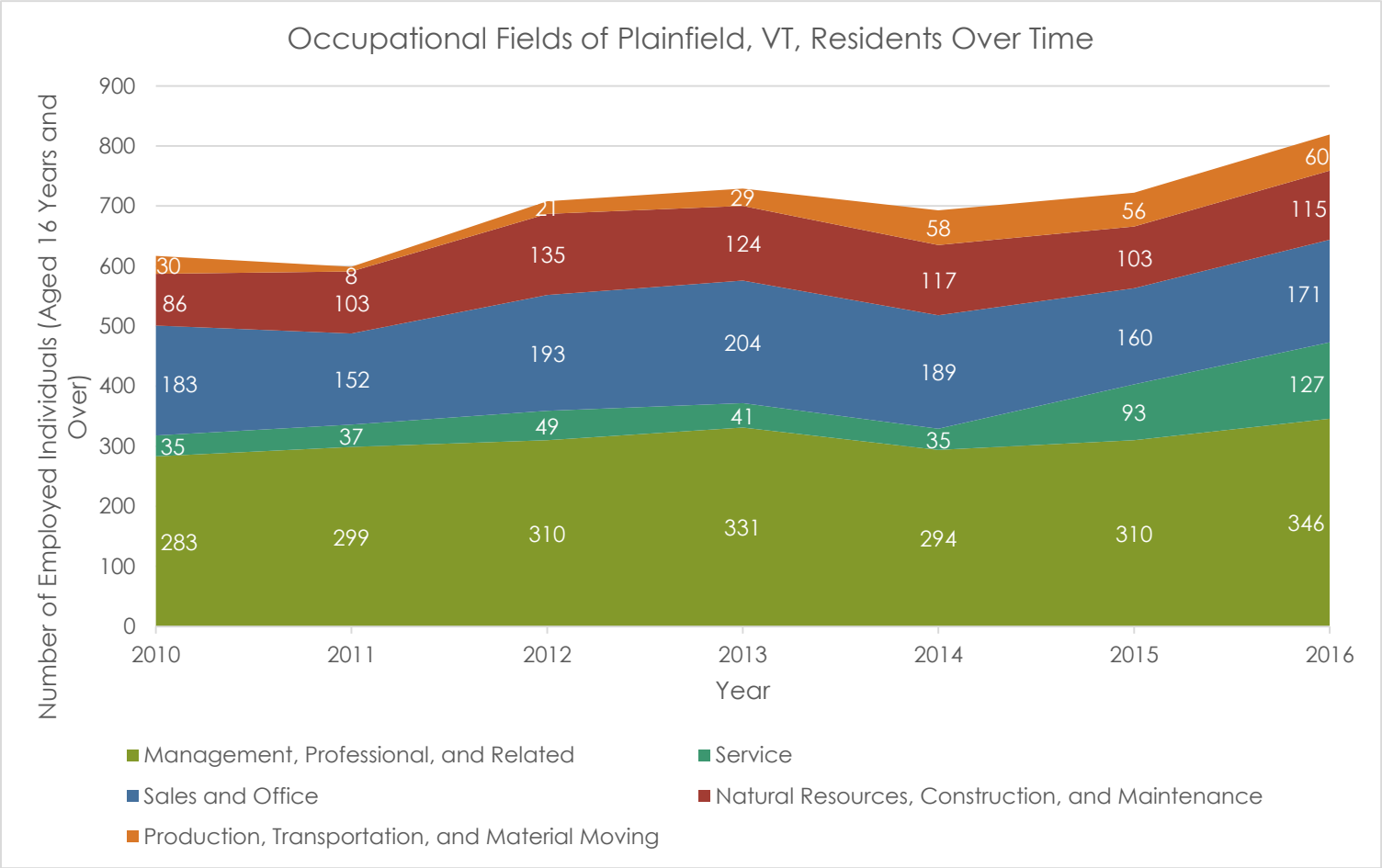


Figure A-7 – Occupational Fields of Plainfield, VT, Residents Over Time (Source: U.S. Census Bureau, Profile of Selected Economic Characteristics [2010-2016 American Community Survey 5-Year Estimates])

Figure A-8 – Industries of Employment of Plainfield, VT, Residents Over Time

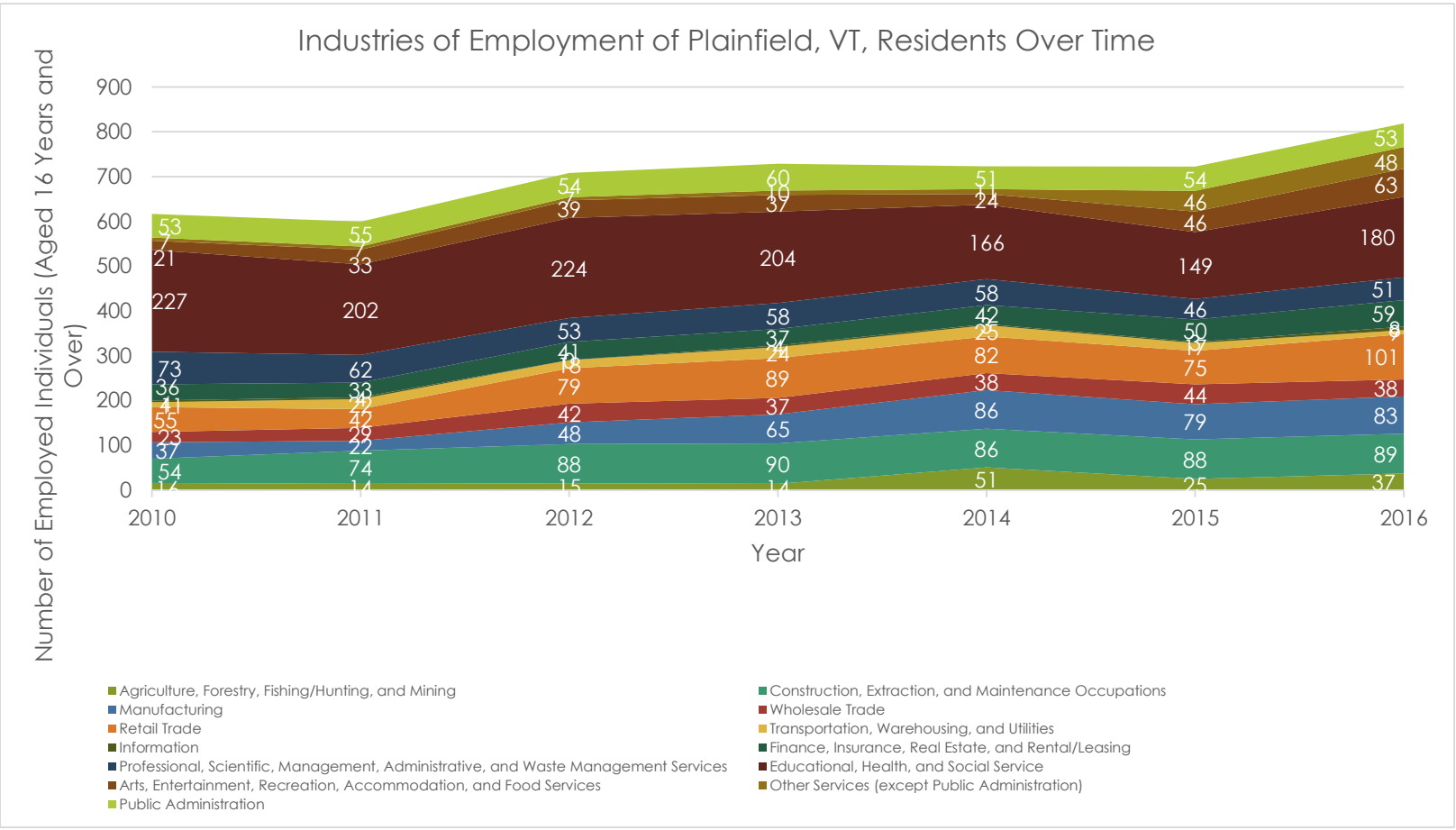
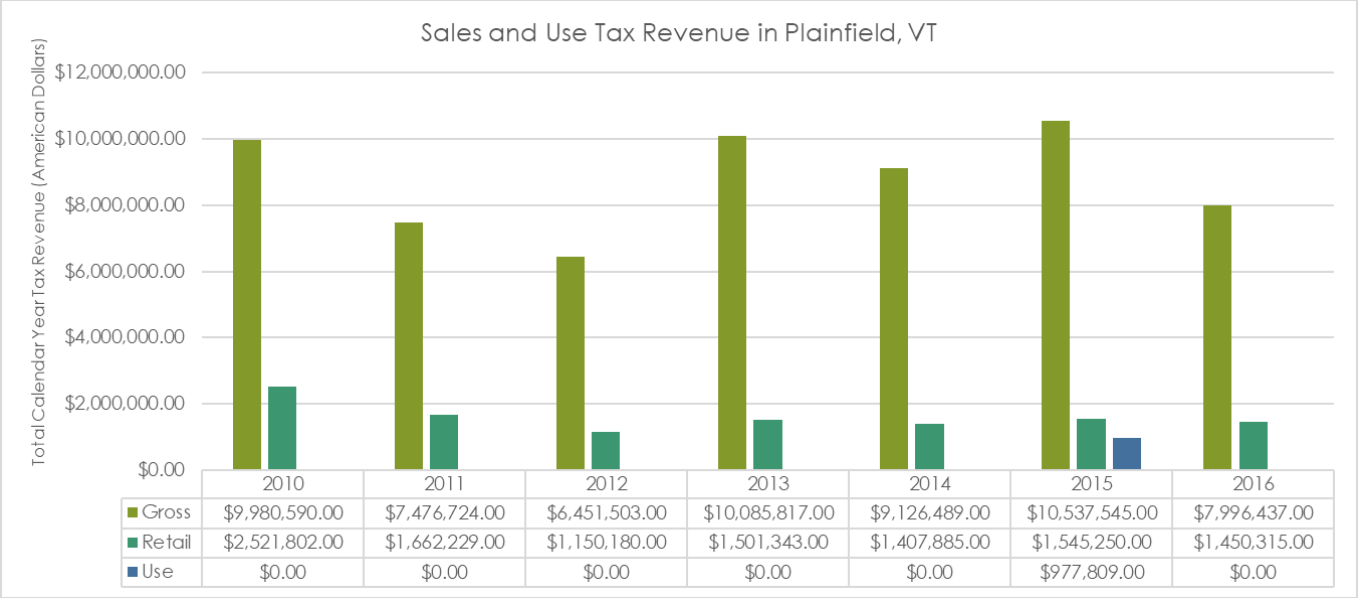


Figure A-8 – Industries of Employment of Plainfield, VT, Residents Over Time (Source: U.S. Census Bureau, Profile of Selected Economic Characteristics [2010-2016 American Community Survey 5-Year Estimates])

Figure A-9 – Sales and Use Tax Revenue in Plainfield, VT



	2010	2011	2012	2013	2014	2015	2016
Gross	$9,980,590.00	$7,476,724.00	$6,451,503.00	$10,085,817.00	$9,126,489.00	$10,537,545.00	$7,996,437.00
Retail	$2,521,802.00	$1,662,229.00	$1,150,180.00	$1,501,343.00	$1,407,885.00	$1,545,250.00	$1,450,315.00
Use	$0.00	$0.00	$0.00	$0.00	$0.00	$977,809.00	$0.00

Figure A-9 – Sales and Use Tax Revenue in Plainfield, VT (Source: Vermont State Tax Department: Sales & Use Statistical Tax Reports, Calendar Year [2010-2016])

Figure A-10 – Household Vehicles Available to Residents of Plainfield, VT

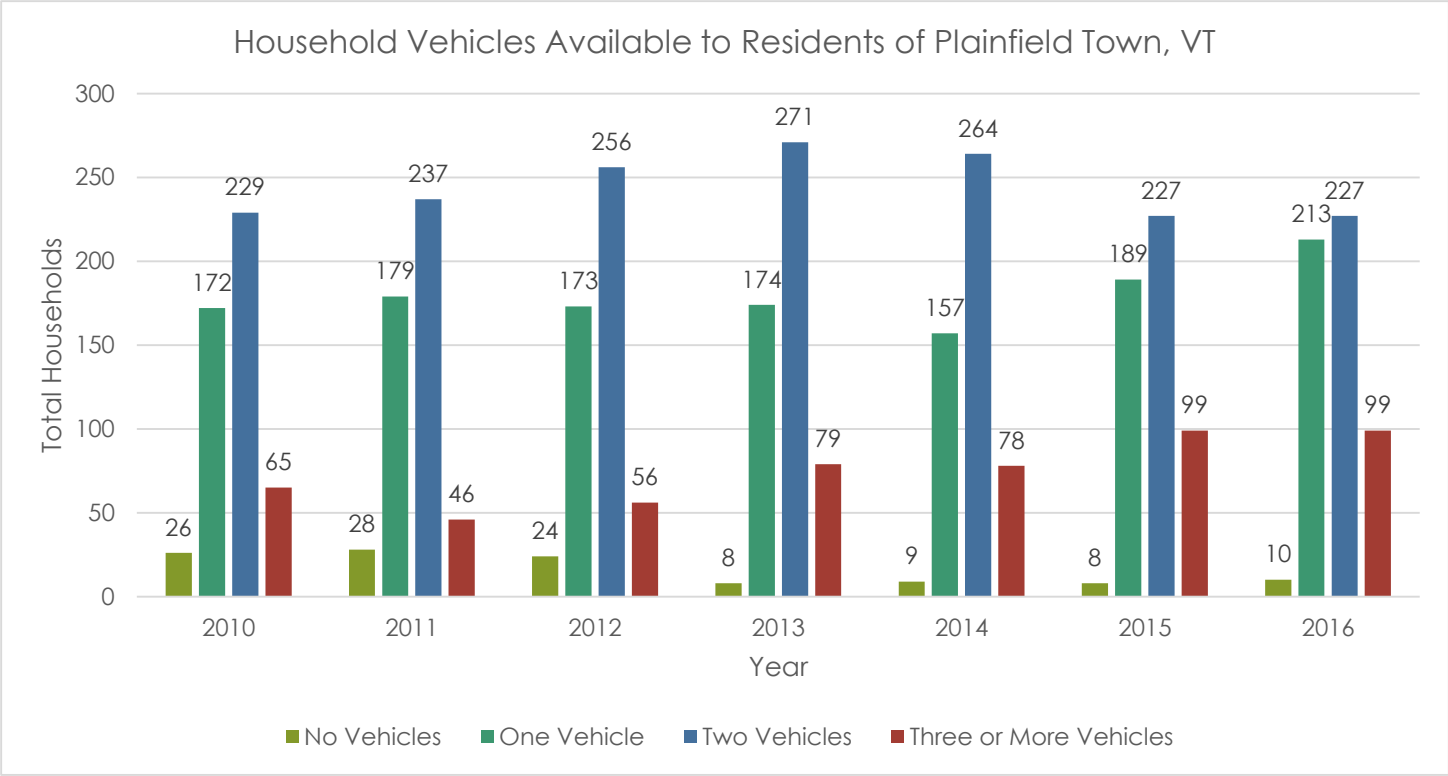
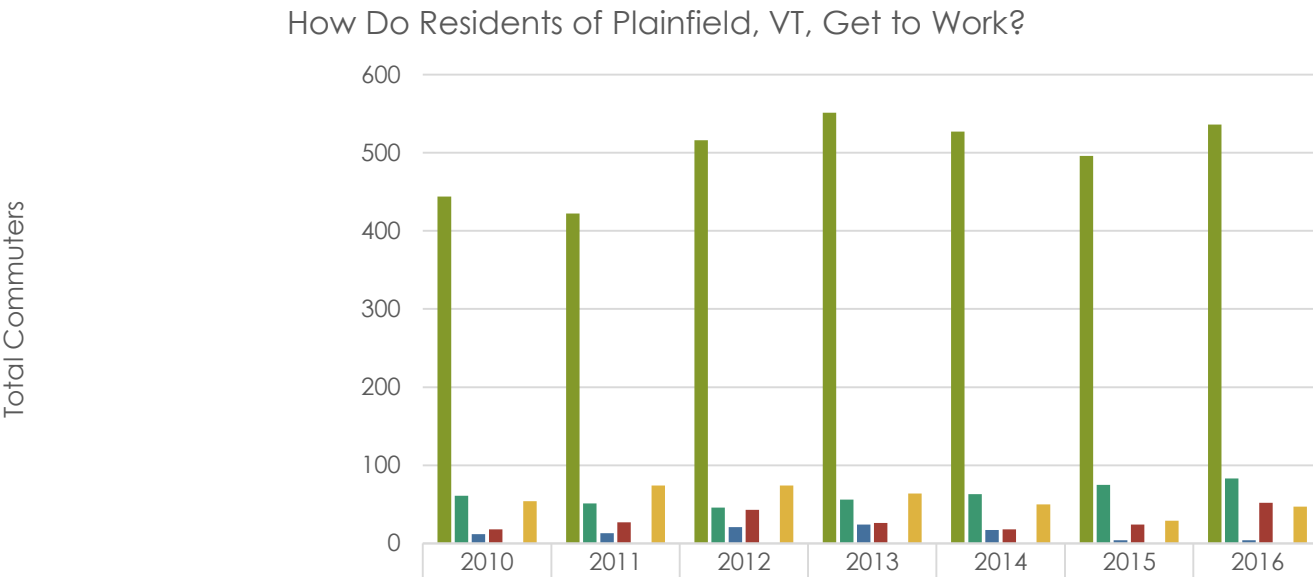


Figure A-10 – Household Vehicles Available to Residents of Plainfield, VT (Source: U.S. Census Bureau, Selected Housing Characteristics [2010-2016 American Community Survey 5-Year Estimates])

Figure A-11 – How Do Residents of Plainfield, VT, Get to Work?



	2010	2011	2012	2013	2014	2015	2016
Car, Truck, or Van -- Drove Alone	444	422	516	551	527	496	536
Car, Truck, or Van -- Carpooled	61	51	46	56	63	75	83
Public Transportation (Excluding Taxicab)	12	13	21	24	17	4	4
Walked	18	27	43	26	18	24	52
Other Means	0	0	0	0	0	0	0
Worked at Home	54	74	74	64	50	29	47

Figure A-11 – How Do Residents of Plainfield, VT, Get to Work? (Source: U.S. Census Bureau, Selected Economic Characteristics ([2010-2016 American Community Survey 5-Year Estimates])

A.2 Survey Questions and Results

The following questions were distributed online by the Plainfield Planning Commission in order to assess public input on the Town's future. Survey results are embedded in the Town Plan and available upon request.

How satisfied are you with the quality of life?	
Very satisfied	23
Satisfied	55
Neutral/No answer	16
Unsatisfied	1
Very Unsatisfied	1
Total	96

How satisfied are with the sense of community?	
Very satisfied	26
Satisfied	43
Neutral/No answer	20
Unsatisfied	7
Very Unsatisfied	0
Total	96

How satisfied are you with recent real estate development?	
Very satisfied	4
Satisfied	14
Neutral/No answer	46
Unsatisfied	18
Very Unsatisfied	7
Total	89

How satisfied with Town Government?	
Very satisfied	16
Satisfied	43
Neutral/No answer	26
Unsatisfied	8
Very Unsatisfied	2
Total	95

How satisfied are you with Plainfield's reputation & image?

Very satisfied	23
Satisfied	42
Neutral/No answer	19
Unsatisfied	9
Very Unsatisfied	3
Total	96

How satisfied are you with the level of citizen participation	
Very satisfied	10
Satisfied	25
Neutral/No answer	43
Unsatisfied	15
Very Unsatisfied	3
Total	96

How satisfied are you with communication between government and the residents?	
Very satisfied	18
Satisfied	42
Neutral/No answer	28
Unsatisfied	7
Very Unsatisfied	1
Total	96

How satisfied are you with the value of services for taxes paid?	
Very satisfied	13
Satisfied	39
Neutral/No answer	25
Unsatisfied	11
Very Unsatisfied	5
Total	93

Housing:

How satisfied are you with the availability of housing?	
Very satisfied	11
Satisfied	19
Neutral/No answer	45

Unsatisfied	14
Very Unsatisfied	3
Total	92

How satisfied are you with the cost of housing?	
Very satisfied	8
Satisfied	24
Neutral/No answer	33
Unsatisfied	19
Very Unsatisfied	9
Total	93

Would you like to see any of the following built in Plainfield?		
	yes	no
Temporary Work Housing (Agriculture)	51	28
Affordable Family Housing	77	16
Affordable Senior Housing	89	8

Would you like to see any of the following built in Plainfield in the next 10 years?		
	yes	no
Cluster Single Family Houses on Large Lots	51	32
Small Lot Single Family Homes	49	30
Large Lot Single Family Homes	38	40
Multi-Family Apartments	54	28
Cottage or Tiny Houses	80	9

Economy

Are you satisfied with the availability of goods & services with 30 minutes?	
Very satisfied	32
Satisfied	38
Neutral/No answer	17
Unsatisfied	8
Very Unsatisfied	2
Total	97

Are you satisfied with the job opportunities within 30 miles?	
Very satisfied	16
Satisfied	29
Neutral/No answer	24
Unsatisfied	16
Very Unsatisfied	5
Total	90

Are you satisfied with the overall business climate?	
Very satisfied	7
Satisfied	19
Neutral/No answer	38
Unsatisfied	20
Very Unsatisfied	7
Total	91

What would you like to see locate in Plainfield in the Next Decade?			
	Support	No Opinion	Am Against
Laundromat	63	25	4
Professional Offices	61	23	6
Farm Based Businesses	89	2	3
Light Industry	55	23	13
Tech-Based Businesses	64	22	5
Recreation-Based Businesses	77	10	4

Community Facilities and Services

How satisfied are you with Emergency Response?	
Very satisfied	52
Satisfied	27
Neutral/No answer	16
Unsatisfied	0
Very Unsatisfied	0
Total	95

How satisfied are you with the Sheriff Department? (major responsibility in enforcing traffic regs)	
Very satisfied	10
Satisfied	22
Neutral/No answer	42
Unsatisfied	14
Very Unsatisfied	5
Total	93

How satisfied are you with the State Police? (mostly handle crime such as burglary, drugs, violent crime…)	
Very satisfied	6
Satisfied	24
Neutral/No answer	53
Unsatisfied	5
Very Unsatisfied	3
Total	91

How satisfied are you with the quality of schools?	
Very satisfied	10
Satisfied	37
Neutral/No answer	27
Unsatisfied	12
Very Unsatisfied	8
Total	94

How satisfied are you with recreational opportunities?	
Very satisfied	24
Satisfied	39
Neutral/No answer	23
Unsatisfied	7
Very Unsatisfied	3
Total	96

How satisfied are you with high speed internet access?	
Very satisfied	11
Satisfied	24

Neutral/No answer	25
Unsatisfied	18
Very Unsatisfied	17
Total	95

How satisfied with you about access to cultural activities?	
Very satisfied	21
Satisfied	38
Neutral/No answer	25
Unsatisfied	7
Very Unsatisfied	2
Total	93

How satisfied with you with services for seniors?	
Very satisfied	4
Satisfied	34
Neutral/No answer	41
Unsatisfied	4
Very Unsatisfied	0
Total	83

How satisfied with you with availability of cell phone service?	
Very satisfied	8
Satisfied	26
Neutral/No answer	22
Unsatisfied	24
Very Unsatisfied	15
Total	95

How satisfied with you with your power reliability?	
Very satisfied	21
Satisfied	37
Neutral/No answer	27
Unsatisfied	8
Very Unsatisfied	3
Total	96

How satisfied with you with your access to health providers?	
Very satisfied	31
Satisfied	36
Neutral/No answer	14
Unsatisfied	11
Very Unsatisfied	1
Total	93

How satisfied with you with the available activities for youth?	
Very satisfied	6
Satisfied	20
Neutral/No answer	42
Unsatisfied	14
Very Unsatisfied	4
Total	86

How satisfied are you with the availability of childcare?	
Very satisfied	1
Satisfied	11
Neutral/No answer	33
Unsatisfied	19
Very Unsatisfied	8
Total	72

Environment:

How satisfied are you with the quality of the natural environment?	
Very satisfied	46
Satisfied	42
Neutral/No answer	6
Unsatisfied	1
Very Unsatisfied	2
Total	97

How satisfied are you with the ability to enjoy nature?	
Very satisfied	57
Satisfied	36

Neutral/No answer	3
Unsatisfied	1
Very Unsatisfied	0
Total	97

How satisfied are you with the water quality?	
Very satisfied	37
Satisfied	38
Neutral/No answer	15
Unsatisfied	2
Very Unsatisfied	1
Total	93

I feel there should be more forest land available to the public in Plainfield.	
Strongly Agree	26
Agree	22
Neutral	28
Disagree	8
Strongly Disagree	8
total	92

I feel Plainfield needs more farmland.	
Strongly Agree	15
Agree	21
Neutral	41
Disagree	14
Strongly Disagree	2
total	93

I feel Plainfield needs more recreation land.	
Strongly Agree	14
Agree	27
Neutral	37
Disagree	8
Strongly Disagree	4

total	90

I feel Plainfield needs more access to the rivers and streams.	
Strongly Agree	19
Agree	27
Neutral	26
Disagree	14
Strongly Disagree	3
total	89

I feel Plainfield needs more paths and trails.	
Strongly Agree	25
Agree	39
Neutral	16
Disagree	6
Strongly Disagree	7
total	93

Plainfield should have regulations safeguarding good agricultural soils.	
Strongly Agree	41
Agree	27
Neutral	10
Disagree	8
Strongly Disagree	7
total	93

Plainfield should manage a compost facility for town residents.	
Strongly Agree	40
Agree	18
Neutral	20
Disagree	7
Strongly Disagree	8
total	93

Plainfield should have zoning rules to manage drone landing activity.	
Strongly Agree	45
Agree	17
Neutral	17
Disagree	4
Strongly Disagree	10
total	93

Transportation

How satisfied are you with the availability of parking?	
Very satisfied	16
Satisfied	23
Neutral/No answer	32
Unsatisfied	17
Very Unsatisfied	6
Total	94

How satisfied are you with the availability of sidewalks?	
Very satisfied	14
Satisfied	37
Neutral/No answer	27
Unsatisfied	6
Very Unsatisfied	10
Total	94

How satisfied are you with the safety of walking & biking in the village?	
Very satisfied	12
Satisfied	40
Neutral/No answer	26
Unsatisfied	12
Very Unsatisfied	4
Total	94

How satisfied are you with the safety of walking & biking on the backroads?	
Very satisfied	5

Satisfied	27
Neutral/No answer	24
Unsatisfied	30
Very Unsatisfied	10
Total	96

How satisfied are you with the availability of public transit?	
Very satisfied	7
Satisfied	23
Neutral/No answer	42
Unsatisfied	9
Very Unsatisfied	7
Total	88

How satisfied are you with the general condition of the town sidewalks	
Very satisfied	12
Satisfied	33
Neutral/No answer	29
Unsatisfied	12
Very Unsatisfied	3
Total	89

There is too much traffic in the village	
Strongly Agree	4
Agree	10
Neutral	35
Disagree	31
Strongly Disagree	10
total	90

There is too much traffic on the backroads.	
Strongly Agree	7
Agree	15
Neutral	25
Disagree	33

Strongly Disagree	13
total	93

Vehicles travel too fast in the village.	
Strongly Agree	32
Agree	15
Neutral	30
Disagree	13
Strongly Disagree	2
total	92

Vehicles travel too fast on the backroads.	
Strongly Agree	46
Agree	26
Neutral	15
Disagree	6
Strongly Disagree	2
total	95

Plainfield and You

I am	
0 to 18	0
18 to 39	13
40 to 64	43
Over the age of 64	37

I Have	
Lived in Plainfield For less than 5 years	17
Lived in Plainfield For 5 to 10 years	12
Lived in Plainfield For 10 to 20 years	23
Lived in Plainfield For over 20 years	40
Property in Plainfield but do not presently live in Plainfield.	2
A residence in a neighboring town and regularly frequent Plainfield's businesses and facilities.	1

ENHANCED ENERGY PLAN

FOR THE

TOWN OF PLAINFIELD

PREPARED BY:

The Central Vermont Regional Planning Commission

24 Main Street, Suite #4

Montpelier, Vermont 05602

802.229.0389

A.3.1 Executive Summary & Introduction

With the passage of Act 174 in 2016, Towns have been allowed a higher level of deference in the Section 248 proceedings if they meet specific planning standards, which would allow Plainfield an opportunity to reexamine the actions its community is taking to meet its energy goals.

Through Act 174, three primary planning areas are identified and need to be met satisfactorily in order for successful compliance. These sections include Analysis & Targets; Pathways & Implementation Actions; and Mapping. All three sections include an evaluation of energy sectors that include thermal (heating), electrical, and transportation.

Section I: Analysis & Targets

This section provides a baseline of information for where a municipality currently stands in terms of energy and identifies the trajectories and pace of change needed to meet targeted reductions and conservation of energy. It includes information on current electricity use for residential and non-residential uses; existing and potential renewable resource generation; and current transportation energy use information. Additionally, targets are established to provide milestones for thermal efficiency, renewable energy use, and conversion of thermal and transportation energy from fossil fuels to renewable resources. These milestones are intended to help the municipality measure progress towards the overall goals and are not identified as requirements. Targets are established for the years 2025, 2035, and 2050 which coincide with the State Comprehensive Energy Plan.

Specific information in this section notes that Plainfield currently uses approximately 8,690 megawatt hours of electricity on an annual basis across the identified sectors. By comparison, Plainfield's share of new renewable energy generation needed to meet the state's goal is approximately 7,999 megawatt hours. Based on the mapping and resource data (Section III), Plainfield has resources available to generate approximately 4,155,059 megawatt hours of energy.

Other analysis includes 2050 targets for fuel switching of vehicles from fossil-based to alternative power, and conversion or installation of high efficiency heating systems for residential and commercial structures. Specific targets for Plainfield include approximately 1,500 alternative-powered vehicles and approximately 270 heating systems. The specific 2050 targets for transportation and heating renewable use in Plainfield are 90.2% and 92.3% respectively. It's important to note that the targets for alternative-powered vehicles listed in Section One are based on maintaining current land use and transportation policies. Transit, ride sharing, telecommuting, or similar policies may be prioritized by the Town, which would impact these targets and reduce dependency on individual vehicle needs.

Section II: Pathways & Implementation Actions

Section II provides the basis for how Plainfield will meet their target year goals as noted in Section I. The implementation actions are categorized by:

1. Conservation & efficient use of energy

2. Reducing transportation demand and single occupancy vehicles trips, and encouraging the use of renewable sources for transportation

3. Patterns and densities of land use likely to result in conservation of energy

4. The siting of renewable energy generation

The implementation actions that are identified in this section focus primarily in areas where the Town of Plainfield is already working to support its residents and businesses through local land use, transportation, and environmental planning activities.

To this end, the current Plainfield Town Plan was first reviewed and implementation actions that pertained to any of the above mentioned sections were noted. These implementation items were carried forward for inclusion in the energy plan to establish consistency with the two documents. To ensure all the categories for implementation as noted above were adequately addressed, guidance from the Department of Public Service related to implementation was utilized.

The implementation actions identify who will be responsible for completing each action, the timeframe for when it should be completed, and an anticipated outcome that will help provide a measure of success. This section will serve as the basis for how energy planning will be incorporated into local activities. The implementation actions that were included are based on Plainfield's ability to lead the action. This will create consistency with regard to implementation and put the responsibility for action on the Town. Other partners are listed when appropriate to indicate which groups will be engaged to support the successful completion of the identified actions.

Section III: Mapping

The mapping section allows the Town of Plainfield to visually identify where renewable energy generation is most suitable. This section combines resource information with specific known and possible constraints to the development of renewable energy generation. The mapping section also allows the opportunity to identify preferred locations for renewable energy development and areas that are unsuitable for development of any kind. In addition, the maps identify existing infrastructure to support renewable energy development.

In general, the mapping information looks at state-level data and breaks it down to a municipal perspective. From there, an analysis was done (as noted in Section I) regarding the potential renewable energy generation that might be possible based on resource areas and constraints. This information is useful to visualize what geographies throughout Central Vermont are most ideally suited or best to avoid regarding renewable energy siting.

This section also contains specific information regarding the development and siting of renewable energy resources that are reflected on the maps. The Regional Planning Commission did, however, identify additional possible constraints to be considered. These include elevations above 2,500 feet, slopes greater than 25%, municipally owned lands, and lakeshore protection buffer areas of 250 feet. The decision was made to include these resources as possible constraints to allow for further analysis by the region or the municipalities to determine if development of renewable energy generation facilities may be appropriate based on specific conditions.

Appendices

There are two appendices included with this plan. Appendix A.A. provides definitions for the known, possible, and regional constraints that are included on the maps and discussed in Section III. These definitions include source information and in several instances provide insight as to why the particular resource is listed as a known, possible, or regional constraint. Appendix A.B. includes the specific resource and constraint maps. Included in the resource mapping is data specific to wind, solar, hydrological, and woody biomass. All of these maps also include information regarding three-phase power and transmission lines; roads; and other relevant data used to assist with siting of renewable energy development.

How This Plan Will Be Used

The Plainfield Energy Plan will establish the policies that will help the Town achieve its share of the state's goal of 90% of the state's energy coming from renewable sources by 2050, as outlined in the 2016 State Comprehensive Energy Plan. In order for this document to have standing, it will need to receive a Determination of Energy Compliance (DOEC) from the Central Vermont Regional Planning Commission (CVRPC). This determination will give the Plainfield Town Plan "substantial deference" before the PUC during their review of applications for Certificates of Public Good related to renewable energy generation facilities. Once a DOEC has been issued, the Plainfield Town Plan will be used to establish a position in proceedings before the PUC if warranted. Additionally, where applicable, the Town Plan will be used during Act 250 proceedings before the District 5 Environmental Commission.

Additional Energy Generation Technology

The general premise of the Plainfield Energy Plan is based on the idea that generation of energy will be achieved using more renewable sources and less fossil fuel based resources. To this end, the focus for generation of energy is primarily based on existing technologies such as solar, wind, and hydroelectric. Additionally, the plan notes woody biomass and biogas as renewable forms of energy generation when developed in a sustainable manner. This direction is taken from the State's Comprehensive Energy Plan which focuses on electrification of the grid with alternative energy generation in order to meet their goals of 90% of the state's energy use coming from renewable sources by 2050.

The sources of renewable energy generation that are identified in this plan include current technologies that are known and supported in Vermont. Advances in the development of renewable energy technologies may result in generation measures or techniques that are not currently considered in this plan but may be more efficient or effective. As such, this plan will consider renewable generation technologies that do not have an adverse impact on the Town of Plainfield, the Central Vermont Region, or the policies that guide the Planning Commission and not be limited exclusively to the generation techniques and technologies noted herein.

A.3.2 Analysis & Targets

In order to adequately determine if the Town of Plainfield is on the right path to meeting its share of the state's goal of 90% of the energy used being produced by renewable resources, an identification and analysis of current energy use is necessary. To this end, the following questions have been identified to help determine current energy use and targets moving forward.

1. Does the plan estimate current energy use across transportation, heating, and electric sectors?

2. Does the plan establish 2025, 2035, and 2050 targets for thermal and electric efficiency improvements, and use of renewable energy for transportation, heating, and electricity?

3. Does the plan evaluate the amount of thermal-sector conservation, efficiency, and conversion to alternative heating fuels needed to achieve these targets?

4. Does the plan evaluate transportation system changes and land use strategies needed to achieve these targets?

5. Does the plan evaluate electric-sector conservation and efficiency needed to achieve these targets?

These five questions and their respective responses serve as the basis for identifying where the Town of Plainfield is now, where it needs to go, and how it will get there in terms of its energy future.

1. Estimates of current energy use across transportation, heating, and electric sectors.

<u>Transportation</u>

Transportation is a large consumer of energy in Plainfield. Transportation typically consists of passenger vehicles, light duty trucks, and heavy duty trucks. It may also include transportation related to public transit, rail, or air service, however these uses are minimal and trips may not originate within the municipality. As such, this section focuses primarily on vehicles, however rail, air, and public transit are addressed in other sections of the energy plan and throughout the municipal plan. Table 1 provides an overview of the current energy usage in Plainfield related to transportation.

Table 1 Current Transportation Energy Use	
Transportation Data	Municipal Data
Total # of Vehicles (ACS 2011-2015)	807
Average Miles per Vehicle (Vtrans)	12,500
Total Miles Traveled	11,750,000
Average Gallons Used per Vehicle per Year (VTrans)	576
Total Gallons Use per Year	631,720
Transportation BTUs (Billion)	76
Average Cost per Gallon of Gasoline (RPC)	2.31
Gasoline Cost per Year	$1,459,274.00

This table uses data from the American Community Survey (ACS) and Vermont Agency of Transportation (VTrans) to calculate current transportation energy use and energy costs.

In 2016, Plainfield had 16 Electric Vehicles/Hybrids registered. This number grew to 24 in 2018, representing a 50% increase in adoption of these vehicles. Plainfield understands that purchasing an electric or hybrid vehicle is a personal choice dependent on finances and feasibility, but also recognizes the important role the Town can play in incentivizing the usage of them through designated parking areas and charging infrastructure.

Electricity

In 2016, Plainfield's electricity usage was split at 57% by commercial and industrial customers, and 43% by residential customers. Utility rates are regulated by the Vermont Public Utility Commission. In 2018, the U.S. Energy Information Administration reported the average cost per kilowatt hour in Vermont was approximately 15 cents and approximately 18 cents for all of New England. Plainfield's current electricity usage can be found in Table 2, below:

Table 2 Current Electricity Use	
Use Sector	Current Electricity Use
Residential (Efficiency Vermont) (kWh)	3,738,830
Commercial and Industrial (kWh)	4,951,594
Total (kWh)	8,690,424

This table displays current electricity use within the municipality. This data is available from Efficiency Vermont (EVT).

Home Heating

2015 American Community Survey Data indicate that approximately 40.4% of homes (205) in Plainfield are heated with fuel oil, which is down from 240 in 2010. The number of homes heated with propane and other bottled fuel oils decreased from 89 in 2010 to 73 in 2015. Electric heat has doubled from 3 in 2010 to 6 in 2015, and wood heat has risen dramatically from 143 in 2010 to 205 in 2015.

Municipal Energy Use:

According to the 2017-2018 Annual Plainfield Report, the Town spent over $8,500 on both heating fuels and electricity (combined $17,000). Notably, streetlights cost Plainfield $4,455 for electricity in 2018, up from $4,135 in 2017. The numbers for electricity and heat decreased marginally from 2016-2017, which is shown by the cost of electricity for the Park and ride decreasing by over $400 and electricity for the municipal building decreasing by over $450. Fuel for the Town's Highway Department and Fire Department/Rescue cost $33,429 in 2018, which represents a $6,122 increase from 2017.

The Town has significant opportunities to lower their operational costs through increased energy efficiency and conservation measures.

Table 3 provides a breakdown of the fuel sources used for residential heating in Plainfield while Table 4 lists the current commercial energy use.

Table 3
Current Municipal Residential Heating Use

Fuel Source	Municipal Households (ACS 2011-2015)	Municipal % of Households	Municipal Square Footage Heated	Municipal BTU (in Billions)
Natural Gas	3	0.6%	5,856	0.35
Propane	73	14.4%	128,947	7.74
Electricity	6	1.2%	11,712	0.70
Fuel Oil	205	40.4%	361,904	21.71
Coal	3	0.6%	5,856	0.35
Wood	203	40.0%	359,594	21.58
Other (Includes Solar)	15	0.0%	19,716	1.18
No Fuel	0	3.30%	0	0.00

Total	**509**	**100%**	**893,585**	**53.62**

This table displays data from the ACS that estimates current municipal residential heating energy use.

Table 4 Current Commercial Energy Use			
	Commercial Establishments in Municipality (VT DOL)	Estimated Thermal Energy BTUs per Commercial Establishment (in Millions) (VDPS)	Estimated Thermal Energy BTUs by Commercial Establishments in Municipality (in Millions)
Municipal Commercial Energy Use	51	1,458	74,358

This table uses data available from the Vermont Department of Labor (VT DOL) and the Vermont Department of Public Service (DPS) to estimate current municipal commercial establishment energy use in the municipality.

2. 2025, 2035, and 2050 targets for thermal and electric efficiency improvements, and use of renewable energy for transportation, heating and electricity.

Energy efficiency is commonly viewed as the most effective and lowest-cost option for reducing energy consumption for electricity, heat, and transportation. Energy efficiency and conservation efforts such as improved insulation and weatherization of new and existing structures; improvements in building design; and the use of high-efficiency vehicles often have a dramatic impact on reducing fuel consumption. These methods are supported and encouraged by the town. In a challenging economy and at a time of increasing concern for the impacts of climate change, steps to reduce fuel use, fuel expenditures, and to shrink emissions make good sense for the pocketbook and the environment.

For the purposes of this section, thermal and electric efficiency will be defined as overall improvements or reductions in the amount of energy used to run mechanical systems or provide climate control for structures. To effectively identify efficiency improvements for Plainfield, the Central Vermont Regional Planning Commission has provided targets for efficiency improvements for each of the target years. These improvements relate to residential, commercial, and overall electric efficiency. The target number may seem to be skewed towards the later years, however there is an expectation that efficiencies will increase with technological advances and occur over time regardless of additional actions being taken. The thermal efficiency targets for residential and commercial improvements are noted in Table 5.

Table 5 Targets for Thermal Efficiency Improvements			
	2025	2035	2050
Residential – Increased Efficiency and Conservation (% of municipal households to be weatherized)	20%	42%	92%
Commercial - Increased Efficiency and Conservation (% of commercial establishments to be weatherized)	22%	33%	61%

This table displays targets for thermal efficiency for residential and commercial structures based on a methodology developed by DPS using data available from the regional Long-range Energy Alternatives Planning (LEAP) analysis and ACS. The data in this table represents the percentage of municipal households that will need to be weatherized in the target years.

In order for Plainfield to help support the state's goals of 90% of the energy used being derived from renewable sources by 2050, the Central Vermont Regional Planning Commission allocated megawatt hour targets for the years 2025, 2035, and 2050. This municipal target is based on an allocation from a region-wide target for renewable energy generation. Table 6 notes Plainfield's targets for renewable energy use and Table 7 identifies the targeted renewable energy generation.

Table 6 Targets for Renewable Energy Use			
	2025	2035	2050
Renewable Energy Use - Transportation	9.6%	31.3%	90.2%
Renewable Energy Use - Heating	53.0%	66.9%	92.3%

This data displays targets for the percentage of transportation and thermal energy use coming from renewable sources during each target year. This data was developed using the LEAP analysis.

Table 7 Targets for Renewable Energy Generation			
	2025	2035	2050
Total Renewable Generation Target (in MWh)	1,999	3,199	7,999

Renewable generation targets for municipalities were developed by the regional planning commission.

Groups to Support Energy Planning

State and local support for energy planning makes identifying energy related actions and implementing energy objectives a more manageable task. Several groups exist that fill this role. A brief overview of these groups is noted below including some of the accomplishments that benefit the Town of Plainfield.

Efficiency Vermont

Efficiency Vermont helps all Vermonters to reduce energy costs, strengthen the local economy, and protect the environment by making homes and businesses energy efficient. A volumetric charge on electric customers' bills supports energy-efficiency programs.

Efficiency Vermont provides technical assistance, rebates, and other financial incentives to help Vermont households and businesses reduce their energy costs with energy-efficient equipment, lighting, and approaches to construction and major renovation. Additionally, it partners extensively with contractors, suppliers, and retailers of efficient products and services throughout the state.

It is operated by a private nonprofit organization, the Vermont Energy Investment Corporation, under an appointment issued by the Vermont Public Utility Commission.

Revitalizing All Marshfield-Plainfield (RAMP) Task Forces

In 2019, Plainfield began working with the Vermont Council on Rural Development (VCRD) and neighboring town of Marshfield on the RAMP project. This project was held by VCRD as part of the Climate Economies Model Communities program. This program seeks to identify action steps that communities may take to improve economic vitality in the face of climate change. Focus areas for Marshfield and Plainfield include renewable energy generation, transportation improvements, local businesses and foods, and the creative economy.

Task forces for each area have been identified, and members have been joining to write policies and brainstorm ideas. During the writing of this plan, VCRD is in the process of working with these groups and should have an implementation plan ready for the two towns by the end of 2019.

Plainfield Energy Committee

This plan would be remiss without mentioning the ongoing hard work by the Plainfield Energy Committee. Led by Energy Coordinator Bob Atchinson, the Energy Committee has long worked to improve energy efficiency in Plainfield, and has evolved to meet the changing needs of the community.

While much of their work is stated in the Energy Chapter, the Energy Committee has notably installed Plainfield's first Electric Vehicle charging station. They have also worked with the public while the solar array at Plainfield's park-and-ride lot was installed. Their continuous work includes performing energy audits, as well as assistance in drafting this plan. Plainfield's Energy Committee has provided a major asset to the community, and will play a pivotal role in the future as Plainfield seeks to achieve the targets set out in this plan.

3. Evaluation of the amount of thermal-sector conservation, efficiency, and conversion to alternative heating fuels needed to achieve these targets.

Energy Audits and Energy Efficiency Measures

The Environmental Protection Agency estimates that half of the energy used in most buildings is for heating and cooling. Much of this energy is lost -seeping through cracks in windows and doors for instance -which wastes energy and money and makes homes and businesses less comfortable.

Weatherization is the practice of modifying a building to protect its interior from the elements, to reduce energy consumption, and to optimize energy efficiency. Investing in thermal efficiency improvements -primarily air sealing, insulation, and heating system replacements--can dramatically reduce a home's heating energy use and an owner's fuel bills. Vermonters' 2010 fuel bills were nearly twice as much as those of a decade earlier.

An estimated 62,000 single and multi-family homes in Vermont will require energy efficient improvements by 2020. The state's volatile weather conditions play a critical role in how buildings can cost-effectively be heated and that most of the economic benefit of money Vermonters spend on fossil fuel accrues outside the state. At current fuel prices home energy efficiency investments can save Vermont residents approximately $1,000 per year.

As a result, the task force suggests "comprehensive and rapid weatherization" of Vermont's buildings to:

- Reduce the vulnerability of Vermont ratepayers to fuel market volatility and dramatic weather fluctuations.
- Ensure that more of the money spent on energy will stay within the Vermont economy.

One of the most important goals in the 2016 Vermont Comprehensive Energy Plan is for the state to use energy audits, weatherization, and other tools to substantially improve the energy fitness of 25% of the state's housing stock by 2020.

After weatherization, the next step to increasing home heating efficiency is replacing outdated or inefficient home heating systems with high efficiency

units. In general, this conversion would typically include replacing a system that used fossil fuel such as oil with an electric heat pump, wood burning system, or other renewable based heating systems. Specifically, Table 8 identifies the number of new efficient wood heating systems or heat pumps needed in each target year to meet Plainfield's portion of the state's comprehensive energy goals.

Table 8
Thermal Sector Conversions Per Target Year
(Residential and Commercial)

	2025	2035	2050
New Efficient Wood Heat Systems (in units)	2	2	18
New Heat Pumps (in units)	52	133	252

This table provides a target for new wood heating systems and new heat pumps for residential and commercial structures in the municipality for each target year. This target was calculated using data from LEAP and ACS.

A building energy audit is a service where the energy efficiency of a structure is evaluated by a person using professional equipment (e.g., blower doors, infrared cameras) to identify best ways to improve energy efficiency in heating and cooling the house. The goals are to:

- Evaluate the building's overall thermal performance.
- Identify cost effective ways to improve the comfort and efficiency of the building.
- Estimate the potential savings in fuel and expenses for the proposed changes.

Many building and energy contractors in Central Vermont offer home and business energy audits for a fee (typically ranging from $300-$500). Depending on income, some families or individuals may qualify for free audits or energy efficiency grants from Efficiency Vermont or other organizations.

According to a 2019 report from Efficiency Vermont, Plainfield had a total of 140 residential efficiency projects and 114 commercial efficiency projects. This resulted in a total savings of $96,813 between 2016 and 2018. Most of these upgrades include light bulbs and light fixtures, but also include electronics, cooking and laundry, as well as space heat replacements.

4. Evaluation of transportation system changes and land use strategies needed to achieve these targets.

<u>Transportation Efficiency</u>

According to the 2016 Vermont Comprehensive Energy Plan, transportation accounts for approximately one third of the overall energy use in Vermont, at 33.7%. Nationally, transportation represents 28.6% of overall energy use. This difference is a result of Vermont's higher dependence on automobile transportation due to the state's rural character, more dispersed population, as well as a relatively small industrial base.

Gasoline and diesel account for more than a quarter of all energy consumed in Vermont across all energy sectors. Gasoline and diesel consumption is twice that of fuel oil and kerosene used for heating. Petroleum combustion in the transportation sector is also the state's largest contributor to greenhouse gas emissions.

Fuel prices are typically higher in northern than in southern New England. Significant increases in the costs of gasoline, diesel fuel, and heating fuel have occurred over the last decade. Price spikes in recent years highlight our area's heavy reliance on limited sources and types of fuel and leave the local population, particularly low-income residents, vulnerable to fuel shortages and price fluctuations.

One component of reducing fossil fuel based energy used in the transportation sector is to convert or replace older vehicles with alternative fuel vehicles such as electric or biodiesel. Table 9 identifies the targets for the number of new electric or biodiesel vehicles over each of the target years to help Plainfield reduce its transportation energy consumption to a point that will help meet the state's comprehensive energy planning goals. Again, this information assumes efficiency and improved technologies will be included in the development of vehicular fuel technology.

It should be noted that another consideration is to reduce the total number of vehicles overall. This can be done through the creation of compact development patterns, increased transit opportunities, or alternative transportation options such as bicycles or walking. The Town should evaluate additional objectives that will promote a shift away from vehicle use rather than rely on the conversion of vehicles to renewable fuels.

Table 9
Transportation Fuel Switching Targets

	2025	2035	2050
Electric Vehicles	81	558	1,114
Biodiesel Vehicles	141	261	423

This tables displays a target for switching from fossil fuel based vehicles (gasoline and diesel) to electric vehicles and biodiesel vehicles. This target is calculated by using LEAP and ACS data.

5. Evaluation of electric sector conservation and efficiency needed to achieve these targets.

Conservation and efficiency of electricity is a key component to achieving the state's comprehensive energy planning goals. Over time, advancements in technology will provide a degree of the needed efficiency and conservation measures to achieve these goals, but also, efforts can be taken now to ensure the Town of Plainfield is on track to meet its conservation and efficiency targets. Table 10 outlines the electric efficiency improvements needed for each of the three target years. Additionally, information related to more proactive ways to achieve these efficiencies are also noted below.

Table 10
Targets for Electric Efficiency Improvements

	2025	2035	2050
Increase Efficiency and Conservation	1.5%	7.3%	15.2%

Data in this table displays a target for increased electricity efficiency and conservation during the target years. These targets were developed using regional LEAP analysis.

Energy Efficient Design

It is much more time-and cost-effective to plan, design and build a structure and its systems with energy efficiency in mind at the outset than to perform weatherization activities after the building has been constructed.

Leadership in Energy and Environmental Design (LEED) consists of a suite of rating systems for the design, construction and operation of high performance green buildings, homes and neighborhoods. Developed by the U.S. Green Building Council, LEED is intended to provide building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

Across Vermont, in 2012 nearly one-third of new homes were EnergyStar rated. The 2016 Vermont Comprehensive Energy Plan sets a goal of 60% by 2020.

School Energy Efficiency

Schools are one of the largest consumers of energy in most Vermont communities. Because they are such large consumers of a variety of energy sources, they often offer significant opportunities for saving fuel and taxpayer expenditures. There have been local efforts to save schools, and local taxpayers, fuel and funds.

Local Food

The average food item in the average grocery store travels between 1,000 and 1,500 miles to reach the table. Food transportation consumes a considerable

amount of energy, and the related emissions contribute to climate change. A typical meal bought from a conventional supermarket chain – including some meat, grains, fruit and vegetables – consumes 4 to 17 times more petroleum for transport than the same meal using local ingredients.

Renewable Energy

The Town of Plainfield actively supports the use and development of renewable energy. Specifically, through 2016 renewable energy generation installations create approximately 234 megawatt hours of energy each year. This includes a mix of solar and wind. This allocation of renewable energy generation will help the Town meet their renewable energy goals. The specific breakdown of renewable energy generation is outlined in Table 11. Table 14 also provides a breakdown of existing renewable energy generation and identifies those sources generating 6 kW or more.

Table 11
Existing Renewable Energy Generation

Renewable Type	MW	MWh
Solar	0.18	219.53
Wind	0.00	14.72
Hydro	0.00	0.00
Biomass	0.00	0.00
Other	0.00	0.00
Total Existing Generation	**0.18**	**234.24**

Table 11 shows existing renewable generation in the municipality, in MW and MWh, based on information available from the Vermont Department of Public Service

Hydroelectric

In the past, local waterways powered numerous mills and provided small-scale electricity across Vermont. Today, power from in-state and out-of-state hydroelectric dams (most notably Hydro Quebec) supply approximately 40% of Vermont's annual power needs.

Currently, there are no hydroelectric facilities in Plainfield. There are two potential sites in Plainfield, one under 50 kW and the other above 50 kW in capacity. However, due to the environmental impact of damming these sites for the small generation boost, there are no plans in place at this time to develop hydroelectricity in Plainfield.

Solar

Converting radiation from the sun into electricity is a clean, renewable energy source. Solar photovoltaic (PV) cells convert sunlight into electricity for homes and businesses, while solar thermal arrays provide hot water for domestic use and may even be designed to augment a household's heating system.

Advances in technology have improved solar efficiency and solar arrays are becoming more affordable. The cost to install one kilowatt of PV in Vermont fell by nearly 40% from 2004 to 2011. Federal and state incentives and leasing programs have improved financial accessibility to the technology. Green Mountain Power's willingness to pay a small premium for solar energy (the "solar adder") has also helped to support the burgeoning solar industry. In 2014, the State of Vermont ranked nationally in the top ten in solar installations.

As of 2018, solar collectors were installed at approximately 57 sites in Plainfield with a total photovoltaic capacity of 322 kW. This number derives from numerous, dispersed residential scale solar projects. Table 15 lists the existing sites in Plainfield with an installed generation capacity of 6 kW or more.

Plainfield has made great strides to incorporate solar energy into its energy portfolio. According to the Energy Action Network's Energy Dashboard, Plainfield ranks 27th among Vermont municipalities in total solar installation with 57 sites. A number of south-facing roofs and slopes provide the potential for even greater use of the technology, although some roofs may need to be retro-fitted to support solar panels.

According to the Vermont Energy Atlas, Plainfield has the capability to produce 936 MWh on rooftop solar alone. There is also the possibility of 602,162 MWh from ground mounted solar as well. Additional information on potential generation is noted in Table 13 and is reflected on the maps in Appendix B.

Commercial leasing programs now allow households and companies access to solar energy at fixed costs that often are less than their current electricity bills. Further advances in technology will likely improve the efficiency and lower the cost of solar panels. Finding space for additional solar arrays remains an issue in Plainfield, particularly for residents and businesses lacking south-facing rooftops or land.

Wind

Improvements in turbine technology in combination with federal and state subsidies have recently made investments in wind power more attractive across the country as well as in Vermont. The Vermont Energy Atlas identifies the possibility of generating 3,551,961 MWh of wind in Plainfield. Almost all sites are located on ridge lines on the Southern and Eastern borders of Plainfield, which may conflict with the Town's plans for conserving areas such as Spruce Mountain and Colby Peak. Specific suitability for wind resources is noted in the mapping section. The wind maps identify where wind speeds are appropriate

for smaller scale wind generation and do not include large industrial scale wind suitability

In order to support large-scale wind projects, we believe that projects must meet certain criteria to ensure that they do not cause undue negative impacts on natural, recreational, and aesthetic resources. Plainfield plans to establish clear and specific guidelines that can be used when evaluating proposed large scale wind projects. Also, the current Central Vermont Regional Energy Plan limits wind generation facilities to hub height of 125 feet and restricts development above 2,500 feet in elevation. Plainfield will work to maintain consistency with these regional limits.

Wood

Historically, wood has been Vermont's, and Plainfield's, most abundant local energy source. Statewide residential firewood consumption grew from 275,000 cords per year in 1997 to 315,000 cords in 2008, a nearly 15% increase. Current use of cordwood for heating in Plainfield is unknown. In addition to firewood, wood biomass heating, in the form of woodchips and pellets, is becoming more popular.

Approximately 37% of Vermont's households utilize biomass (including cord wood and wood pellets) to heat at least a portion of their homes.

There are potential negative side effects to extensive wood harvesting and burning, among them habitat impairment, soil erosion, sedimentation and water pollution if forests are not properly managed, as well as the degradation of air quality and an increase risks of accidental fires. These are, however, easily manageable risks. Best forest management practices, as outlined by the state and independent forest certification groups, can reduce the adverse impacts of harvesting while regular maintenance of wood stoves and adherence to fire codes lessens the risk of accidental fires.

According to the Vermont Department of Public Service, the efficiency factor for biomass is between 60% and 80%. Use of wood for heating is calculated as carbon-neutral; that is, the carbon sequestered by a tree during its lifetime balances with the carbon emitted during its burning.

If factoring in the fossil fuels used to cut and haul wood/wood biomass, as well as the inefficiencies of current biomass burning, wood may not be fully carbon neutral. More efficient burning of woody biomass would greatly improve biomass's potential for wider adoption as a local power source. This could be supported by converting to high-efficiency wood heating systems as noted in Table 8.

Other Local Renewable Energy Sources

Other potential local renewable energy sources include:

- Methane recovery systems that convert farm manure or landfill gases into electricity.
- Bio-fuels produced from green crops such as soy beans, or from waste vegetable oil.
- Geothermal energy, which uses the temperature differential in water taken from deep wells to heat and cool buildings.

Siting

An analysis of existing land and renewable resource potential will help determine the amount of local renewable energy that could be developed within the Town of Plainfield. Table 7 identifies the amount of renewable energy generation (in megawatt hours) that The Town of Plainfield would need to generate by 2050 to help meet their share of the Region's total renewable energy generation.

The information in Table 12 includes an analysis of the renewable energy generation potential and will be complemented by information and maps that are in Appendix B of the plan. It is clear that there is adequate land area available for Plainfield to accommodate renewable energy generation that can meet their share of the region's renewable energy allocation. It should be noted, however, that not all renewable energy generation is appropriate at the same scale. For example, wind may be appropriate in the Town of Plainfield at a residential scale, but not at a commercial scale. Local objectives will need to be established to address these issues. Also, it should be noted that not all areas are appropriate for development of renewable energy and more detailed analysis may be needed to identify appropriate locations for renewable energy development.

One final factor to consider is efficiency of renewable resources and their ability to generate energy. Since not all sources of renewable energy generation provide the same level of capacity, it is important to understand the efficiency differences between the common types of renewable generation. Simply put, the sun doesn't always shine and the wind won't always blow therefore these renewable generators are not always producing energy. These efficiency factors will allow the municipality to utilize whatever renewable resource is most appropriate for the specific circumstances.

Table 12
Potential Renewable Energy Generation

Renewable Type	MW	MWh
Rooftop Solar	0.76	936
Ground-mounted Solar	491.00	602,162
Wind	1,158.50	3,551,961

Hydro	0.00	0
Biomass and Methane	0.00	0
Other	0.00	0
Total Renewable Generation Potential	**1,650.26**	**4,155,059**

Renewable generation potential is based on mapping completed by the regional planning commission that is based on the Municipal Determination Standards and associated guidance documents developed by DPS. The renewable generation potential is expressed in MW and MWh by the type of renewable resource (solar, wind, hydro, etc.).

Below, Table 13 displays current existing generation in Plainfield greater or equal to 6 kW. This data comes from the Public Utility Commission's Certificates of Public Good information, which means that all of these facilities are net-metering, and facilities that do not feed back into the grid have been excluded. For information on all generators in Plainfield, please see the Renewable Energy Atlas on the Vermont Community Energy Dashboard!

Table 13
Existing Renewable Energy Generation greater than or equal to 6 kW based on existing Certificates of Public Good

Category	Sub Category	Name	Electricity Type	Utility	Capacity kW
Solar	Roof-Mounted PV	Judi Whipple	Net Metered	Green Mountain Power	15
Solar	Roof-Mounted PV	Theresa Bienz	Group Net Metered	Green Mountain Power	13.6
Solar	Ground-mounted PV	Town of Plainfield	Net Metered	Green Mountain Power	10
Solar	Roof-Mounted PV	Jonathan Matthew	Net Metered	Green Mountain Power	8.2
Solar	Roof-Mounted PV	Rebecca Yahm & Gabriel Hailberg	Net Metered	Washington Electric Coop	8
Solar	Roof-Mounted PV	Peter & Jane Youngbaer	Net Metered	Vermont Electric Coop	7.9

Table 13 Existing Renewable Energy Generation greater than or equal to 6 kW based on existing Certificates of Public Good					
Category	Sub Category	Name	Electricity Type	Utility	Capacity kW
Solar	Roof-Mounted PV	David and Lynn Boynton	Net Metered	Green Mountain Power	7.7
Solar	Roof-Mounted PV	Sarah O'Brien	Net Metered	Washington Electric Coop	7.6
Solar	Roof-Mounted PV	Adam King	Net Metered	Washington Electric Coop	7.6
Solar	Roof-Mounted PV	Daniel and Lindsey Caddy	Net Metered	Washington Electric Coop	7.6
Solar	Roof-Mounted PV	Kristopher Hammer	Net Metered	Green Mountain Power	7.6
Solar	Roof-Mounted PV	Joseph Wheeler	Net Metered	Green Mountain Power	7.6
Solar	Roof-Mounted PV	Ryan Christiansen	Net Metered	Green Mountain Power	7.6
Solar	Roof-Mounted PV	Guy & Patricia Edson	Net Metered	Washington Electric Coop	7.4
Solar	Roof-Mounted PV	Michel Kabay	Net Metered	Green Mountain Power	7.2
Solar	Roof-Mounted PV	Robert & Carolyn Atchinson	Group Net Metered	Washington Electric Coop	7.1
Solar	Roof-Mounted PV	Rhea Wilson and Rick Levy	Net Metered	Green Mountain Power	6.8
Solar	Roof-Mounted PV	Tom and Carrie Mancini	Net Metered	Washington Electric Coop	6.8

Table 13 Existing Renewable Energy Generation greater than or equal to 6 kW based on existing Certificates of Public Good					
Category	Sub Category	Name	Electricity Type	Utility	Capacity kW
Solar	Roof-Mounted PV	David Copping	Net Metered	Washington Electric Coop	6
Solar	Roof-Mounted PV	Michael Reed	Net Metered	Washington Electric Coop	6
Solar	Roof-Mounted PV	Russell Wells	Net Metered	Green Mountain Power	6
Solar	Roof-Mounted PV	John and Lauren Cleary	Net Metered	Washington Electric Coop	6
Solar	Roof-Mounted PV	Jamie Spector	Net Metered	Washington Electric Coop	6
Solar	Roof-Mounted PV	Joe John	Net Metered	Green Mountain Power	6
Solar	Roof-Mounted PV	mary pat murphy	Net Metered	Washington Electric Coop	6

Table 13 provides information on net-metered renewable energy generation in Plainfield greater than or equal to 6 kW. This information is generated by the Vermont Community Energy Dashboard through PUC Certificates of Public Good.

Conclusion

As noted throughout this section, the Town of Plainfield faces challenges similar to the rest of the state regarding its energy future including the need for conservation, renewable energy development, and changing habits and attitudes towards renewable technology and land use choices. All of these components need to work together in order to ensure a collective and comprehensive approach to energy planning is initiated.

The information provided in this section has shown that Plainfield has the ability to shape its energy future within the spectrum of the avenues that it can control. The unknown component is whether or not the changes and development will occur and when. The State Comprehensive Energy Plan has set a goal of 90% renewable energy by the year 2050. This goal is achievable if

all stakeholders including the state, the region, the municipalities, the energy developers, the private land owners, the special interest groups, and the interested citizens come together to discuss the issues and work collectively to identify the outcomes that satisfy the needs of the whole to the best of their ability.

This plan primarily explores renewable energy related to the production of electricity and electrification of the grid. In addition to the resources noted herein, it's important to consider other forms or technologies that could contribute to our renewable energy future. With advancements in safety, efficiency, and technology, the Region's energy future could look vastly different in the next five or ten years. This will not only impact the generation of energy, but the delivery and infrastructure to support distribution of energy.

A.3.3 Pathways and Implementation Actions

The following goals and implementation actions outline the specific pathways for the region to consider in order to effectively support the State of Vermont's goals that are outlined in the 2016 Comprehensive Energy Plan. These goals are intended to cover a variety of pathways that address land use and siting of developments (including renewable energy generation); efficiency of building construction and weatherization; and fuel switching from fossil based fuels to more sustainable and renewable options.

A. Conservation and Efficiency

Objective A-1: Increase conservation of energy by individuals and organizations.

	Implementation Action	Responsibility	Priority/ Timeline	Measure of Success
1	Weatherize residential homes and multi-family dwellings	Owner and landlords with guidance from contractor	High 1-3 Years	A list of landowners and landlords interested in weatherization is created and distributed to local contractors.
2	Tune or replace heating appliances. Consider fuel switching to biomass or electric	Homeowners and Energy Committee	Medium 4-6 Years	Information is distributed to homeowners with regular check-ins from Energy Committee
3	Hold quarterly weatherization workshops for residents to gain information	Energy Committee	High 1-3 Years	Residents are provided information on options for weatherization and a sign-in list is created and used to create an email list.

Objective A-2: Promote energy efficiency in the design, construction, renovation, operation, location and retrofitting of systems for buildings and structures.

	Implementation Action	Responsibility	Priority/ Timeline	Measure of Success
1	Work with zoning administrator to inform contractors and structure owners to comply with Residential or Commercial building energy standards, in both new and major renovation projects. Notify them of incentive opportunities and provide education and guidance to contractors.	Energy coordinator to identify and provide educational materials. Town admin. staff to be sure information accompanies building permit applications. Zoning administrator to follow up.	High 1-3 Years	Educational materials and prepared and made available at the municipal building. Training to be held for zoning administrator and town staff on the importance of these materials and their contents.
2	Update municipal regulations to include building and renovation code, while also finding ways to include incentives.	Selectboard, Energy Committee, Zoning Administrator, Public Service Department	High 1-3 Years	Development Regulations are updated and list of possible incentives is created.
3	Integrate energy data progress into town reports to celebrate progress and raise awareness in the community)	Energy Coordinator with data help from Energy Action Network (EAN)	Moderat ely High 1-6 Years	Energy Data is provided in at least 4 Annual Reports during the term of this plan.

Objective A-3: Identify ways to decrease the use of fossil fuels for heating.

	Implementation Action	Responsibility	Priority/ Timeline	Measure of Success
1	Hold workshops with Electric Efficiency Utilities to educate residents on options with alternative heating systems	Energy Coordinator, E-VT for educating HVAC contractors.	High 1-3 Years	Two workshops focused on thermal fuel switching are held annually during the duration of this plan. A list of residents attending meetings will be kept.
2	Providing local electric generation resources to provide electricity for fueling cold-climate heat pump technology	Helping homeowners and businesses to finance and install renewable energy sources.	High 1-3 Years	Information is distributed at the municipal building and provided at Town events on solar providers, installers, and local financing offers.
3	Prevent further development of any new fossil-fuel infrastructure in Plainfield. Hold meeting to discuss a carbon tax and tax on local fuels.	Energy Committee, Select Board	High 1-3 Years	Selectboard will consider a resolution to prevent future fossil fuel infrastructure from being built in Plainfield. Meetings on possible local taxes will be held to assess local opinion on the matter.

Objective A-4: Demonstrated municipal leadership by example regarding efficiency of municipal buildings.

	Implementation Action	Responsibility	Priority/ Timeline	Measure of Success
1	Continue with the weatherization of all municipal buildings	Energy coordinator to identify resources, and celebrate success.Select board to put it in the budget; voters to approve.	High 1-3 Years	50% of municipal buildings are weatherized during the term of this plan.
2	Increase amount of solar capability to fuel water and wastewater plant (largest consumer of power in town)	Selectboard and voters to work with the W&WW Board.	High 1-3 Years	A list of possible Power Purchase Agreements will be created and a plan will be created to transition the wastewater treatment facility to renewable energy.

B. Reducing Transportation Energy Demand, Single Occupancy Vehicle Use, and Encouraging Renewable or Lower-Emission Energy Sources for Transportation

Objective B-1: Encourage increased use of transit as a primary method to complete daily trips and reduce demands on existing infrastructure such as roads and parking.

Implementation Action		Responsibility	Priority/ Timeline	Measure of Success
1	Partner with neighboring municipalities to explore current usage of, and expectation for, public transit.	Selectboard, Energy Coordinator, neighboring towns	High 1-3 Years	Joint meetings will be held in each municipality to discuss needs and expectations of transit. A list of funding needs and opportunities will be identified.
2	Present an overview of current public transit systems in the community during scheduled meetings	Energy Coordinator, Green Mountain Transit, Selectboard, Planning Commission	High 1-3 Years	2 Presentations on the system will be held with opportunities for community members to comment.

Objective B-2: Promote the shift away from single-occupancy vehicle trips to reduce congestion, impacts to local facilities, and support alternative options for transportation needs.

	Implementation Action	Responsibility	Priority/ Timeline	Measure of Success
1	Complete an assessment of internet connectivity infrastructure that may present a barrier to telecommuting.	Energy Coordinator, Planning Commission, Selectboard, Outside contractors, local utilities	Medium 4-6 Years	Priority areas where connection is lacking will be identified.
2	Promote the Go! Vermont webpage to connect commuters and inform residents on alternative modes of transportation.	Energy Coordinator	High 1-3 Years	Go! Vermont webpage is linked on Plainfield website.

Objective B-3: Promote the shift away from gas/diesel vehicles to electric or non-fossil fuel transportation options to reduce dependency on non-renewable fuel sources for transportation.

	Implementation Action	Responsibility	Priority/ Timeline	Measure of Success
1	Partner with Drive Electric Vermont, Waterbury LEAP, and other organizations to hold events where people can learn more about and test drive electric vehicles.	Energy Committee, Selectboard.	High 1-3 Years	At least 3 events are held in Plainfield to showcase electric vehicles.
2	Hold meetings and discussions to encourage local employers and partners to provide free parking for EVs and fuel-efficient owners.	Selectboard, Energy Coordinator, Planning Commission	Medium 4-6 Years	A list of interested employers and groups is identified and outreach about these incentives is sustained throughout the term of this plan.
3	Work with the Selectboard and school board to alter budgets for diesel fuel purchases to reflect need to get highest biodeisel blend available.	Selectboard, School Board, Energy Committee	Medium 4-6 Years	Budgets for municipality and schools reflect need for biodiesel, and school and municipality publicize this initiative.

Objective B-4: Facilitate the development of walking and biking infrastructure to provide alternative transportation options for the community.

	Implementation Action	Responsibility	Priority/ Timeline	Measure of Success
1	Update municipal roads standards to include complete streets principles in maintenance and new construction.	Energy Coordinator, Planning Commission, Selectboard	High 1-3 Years	Complete Streets principles are integrated into municipal standards.
2	Partner with Marshfield to identify ways to provide safe alternative transportation between village centers in both Towns.	Planning Commission, Marshfield governing bodies, Vermont Agency of Transportation	Medium 4-6 Years	A plan is created to link the two villages with walkable and bikeable infrastructure.
3	Partner with the Vermont Department of Health to apply for grants for active transportation projects.	Energy committee, Planning Commission, Selectboard. VT Department of Health	Medium 4-6 Years	Bike and pedestrian infrastructure is improved through signage, bike racks, and other improvements appropriate to Plainfield.

Objective B-5: Demonstrated municipal leadership with respect to efficiency of municipal transportation to show an on-going commitment on behalf of the Town of Plainfield.

Implementation Action		Responsibility	Priority/ Timeline	Measure of Success
1	Install EV charging stations on municipal lots and advertise at meetings.	Planning Commission, Selectboard, Energy Committee	High 1-3 Years	A list of funding opportunities is created and 3 EV Charging stations will be installed in municipal lots.
2	Replace any aging municipal vehicles with EV or high efficiency vehicles.	Selectboard, Energy committee	Medium 4-6 Years	A review of the capital budget is completed, and possible areas for the integration of EVs will be identified.
3	Revise municipal policies to allow certain municipal employees to telecommute.	Selectboard, Town administration, Energy committee	Medium 4-6 Years	Municipal policies are reviewed for feasibility of telecommuting.

C. Patterns and Densities of Land Use Likely to Result in Conservation of Energy

Objective C-1: The Town of Plainfield is committed to reducing sprawl and minimizing low-density development by encouraging density in areas where infrastructure exists or is planned to support growth.

	Implementation Action	Responsibility	Priority/ Timeline	Measure of Success
1	Modify zoning through creative methods such as density-based zoning, to encourage development in areas where infrastructure already exists.	Planning Commission	High 1-3 Years	Zoning bylaws are updated during the term of this plan to include a focus on density..

Objective C-2: Strongly prioritize development in compact, mixed-use centers when feasible and appropriate and identify ways to make compact development more feasible throughout the Town of Plainfield.

	Implementation Action	Responsibility	Priority/Timeline	Measure of Success
1	Revise development regulations and municipal policies to limit water and wastewater services to centralized areas of Town.	Energy Coordinator, Planning Commission, Selectboard	High 1-3 Years	Development regulations are revised to reflect this focus on centralization.
2	Consider revising 2004 subdivision regulations to encourage compact developments in the subdivision process.	Planning Commission, Selectboard	Medium 4-6 Years	Two meetings are held with the Planning Commission to discuss the feasibility of incorporating these regulations.

D. Development and Siting of Renewable Energy Resources

Objective D-1: Evaluate generation from existing renewable energy generation including the identification of constraints, resource areas, and existing infrastructure by energy type.

	Implementation Action	Responsibility	Priority/ Timeline	Measure of Success
1	Create a database on the Town website where residents can easily access energy generation information.	Energy Coordinator, Town administrator	High 1-3 Years	Section of the website is added/edited to include information about current generation and progress to State goal. Alternatively: Link to Vermont Community Energy Dashboard is added to the website in the interim.
2	Analyze current generation sources and identify common site conditions that have made them successful.	Planning Commission	Medium 4-6 Years	A list of current sources and the site conditions is compiled and reviewed before the preferred sites discussion is held.
3	Conduct a public interest survey regarding the solar array at the park-and-ride	Energy Committee	Medium 4-6 Years	Public interest regarding effectiveness of solar array at park and ride will be gauged, and results tabulated to inform future municipal generation projects.

Objective D-2: Evaluate generation from potential renewable energy generation including the identification of constraints, resource areas, and existing infrastructure by energy type.

	Implementation Action	Responsibility	Priority/ Timeline	Measure of Success
1	Hold comprehensive meetings to identify preferred sites for potential energy generation	Energy Coordinator, Planning Commission	High 1-3 Years	Preferred sites are identified in Town and plan is amended to include them.
2	In the visioning process for preferred sites, include a discussion on constraints that residents may see as important.	Energy Coordinator, Planning Commission	High 1-3 Years	A list of additional constraints is created and added to the plan as an amendment.

A.3.4 Mapping

The siting and generation of renewable resources is a critical part to identifying whether or not the region can meet its share of the state's renewable energy goals by 2050. Furthermore, this analysis is important to determine where resources are available throughout the region to ensure no one municipality is unduly burdened with supporting more than should be reasonably anticipated. Finally, this information will better position the Town of Plainfield to evaluate the renewable energy generation options that are available to meet these goals.

To this end, maps were created for the Town of Plainfield that identifies resources related to solar, wind, hydroelectric, and woody biomass. Maps were also created to identify constraints that may limit the overall area of possible resource development within the town. The following information will address the evaluation of current and future generation potential within the Town of Plainfield.

Existing Renewable Resource Generation

As noted in the Analysis and Targets section, Tables 11 and 14 identify the existing renewable generation for the Town of Plainfield. Information on existing generation is a representation of all projects that were issued a Certificate of Public Good by the Public Service Board through the end of 2018. Projects that are currently under review are not included in these numbers therefore additional renewable energy generation may be developed that will not be noted in the total generation represented in Table 11 or 14.

Potential Renewable Energy Generation

Table 12 in the Analysis and Targets section identifies potential generation of renewable energy for Plainfield. This information is based on mapping data provided by the Vermont Center for Geographic Information (VCGI) and the Department of Public Service. This information includes specific data related to prime resource areas for solar and wind development which is an indication of where the conditions are most ideal for generation of the specific resource. Also included with this data is information regarding constraints to be considered when evaluating areas for renewable energy development. Additional detail regarding known and possible constraints is discussed below.

Constraints

As part of this effort, the Central Vermont Regional Planning Commission has identified information for each municipality related to renewable energy generation that includes an analysis and evaluation of resource areas within each municipality and how those resource areas are impacted by statewide and regionally identified constraints. In order to determine the impacts, an understanding of the constraints needs to be discussed.

For the purpose of this plan, constraints are separated into two main categories; known and possible. Known constraints are those areas where development of a renewable resource are very limited and therefore are not likely to occur. Known constraints that have been identified include:

- Vernal Pools (confirmed or unconfirmed)
- River Corridors as identified by the Vermont Department of Environmental Conservation
- Federal Emergency Management Agency Identified Floodways
- State-significant Natural Communities and Rare, Threatened, and Endangered Species
- National Wilderness Areas
- Class 1 and Class 2 Wetlands (as noted in the Vermont State Wetlands Inventory or Advisory Layers
- Regionally or Locally Identified Critical Resources

Similarly, the state has identified a list of possible constraints to be considered. Possible constraints identify areas where additional analysis will need to occur in order to determine if development of renewable energy resources is appropriate. In some cases, conditions may be prohibitive, but in others the conditions may be suitable for renewable energy development. The possible constraints include:

- Agricultural Soils
- Federal Emergency Management Agency Special Flood Hazard Areas
- Protected Lands (State fee lands and private conservation lands)
- Act 250 Agricultural Soil Mitigation Areas
- Deer Wintering Areas
- Vermont Agency of Natural Resources Conservation Design Highest Priority Forest Blocks
- Hydric Soils
- Regionally or Locally Identified Resources

In addition to the items listed above, the Regional Planning Commission, through its Regional Energy Committee, has identified additional constraints to be included for all the municipalities that were noted as being regionally significant. For the purposes of this mapping exercise, all of the regional constraints are considered possible constraints. This is due to the fact that the Regional Energy Committee determined that, like the statewide possible constraints, conditions could be such that developing renewable energy resources in these locations could occur but should be studied further at the municipal level to determine if the specific conditions regarding these locations are suitable. The possible regional constraints that were identified include:

- Elevations above 2,500 feet
- Slopes greater than 25%

- Municipally Owned Lands
- Lakeshore Protection Buffer Areas of 250 feet

Methodology

With all the known and possible constraints identified, this information was overlaid on the resources maps for solar and wind resources. Where known constraints existed the resource areas were deleted. Where possible constraints existed, the resource areas were shaded. The resulting areas included those lands where prime resources exist without any constraints and prime resource areas with possible constraints. The total area within these two categories served as the basis to determine the amount of resource that is available for potential development within the Town of Plainfield.

As noted in Table 12 of the Analysis and Targets section, based on the solar, wind, and hydroelectric potential within Plainfield, approximately 4,155,059 megawatt hours of energy could be produced, well above the town's allocation of 7,999 megawatt hours by 2050 as noted in Table 7. The potential energy generation for the Town of Plainfield increases when other sources of renewable energy generation such as biomass, biogas, and methane are included. No specific generation numbers are listed in Table 12 for these types of energy generation as their siting is not specifically tied to the availability of a resource, therefore calculating a potential for generation would be difficult.

Transmission Infrastructure

In addition to identifying and calculating possible generation of renewable energy based on resources and constraints, the mapping included in this plan also incorporates the existing three phase power infrastructure throughout the municipality. This is important to include because renewable energy generation needs three phase power to provide energy generation back to the grid. Without three phase power, renewable energy generation would be limited to scales necessary to serve uses in close proximity that would not require transmission infrastructure.

Similar to limits on three phase power are potential limitations on existing transmission infrastructure and the ability to transmit energy from its point of generation to the possible users. As noted previously, the mapping includes three phase power, but it also includes information on current transmission infrastructure. This is another component to consider when identifying where specific generation types should be located to ensure the transmission capacity exists within the grid or to identify areas where upgrades may be needed before development of renewable energy generation can occur. Based on the factors noted above, it may be appropriate for mapping to identify areas where significant energy loads are currently occurring or anticipated based on future land use and zoning.

Preferred & Unsuitable Siting Locations

The Town of Plainfield recognizes the preferred locations that have been identified by the State of Vermont's Net Metering Rules. Additional preferred locations may be identified after an analysis of the needs with the community have been conducted. The state preferred locations include but are not limited to:

- Parking lots
- Gravel pits
- Brownfield sites
- Landfills
- Rooftop installations

As of drafting this plan, Plainfield has not identified any sites or conditions of sites that would be considered preferred. The Town's Energy Committee and Planning Commission may partner to conduct public engagement on this topic and amend the plan to include specific details on preferred sites in the future.

Considering the Land Use element of this plan and Plainfield's Zoning Bylaws, the follow district would be a local possible constraint for large scale renewable energy development:

- Reserve Lands District (Zoning)

These lands are generally of high elevation (above 2,200 ft), and include steep slopes. No dwelling units are allowed in this district, but agriculture and forestry are allowed in some aspects. The purpose of this district is to preserve the ridgelines and wildlife habitat while minimizing the impacts from further development. Already low access and challenges to increasing access make the area unsuitable for large scale renewable energy development, whether wind, solar, or biomass production.

Local Mapping

To provide a more specific visual representation of resources and constraints, mapping was developed by the Central Vermont Regional Planning Commission that includes:

- Solar Resource Areas
- Wind Resource Areas
- Hydroelectric Resource Areas
- Known Constraints
- Possible Constraints
- Woody Biomass Resource Area
- Existing Renewable Generation Sites
- Statewide Preferred Generation Sites

These maps should be used as a starting point to determine what areas may exhibit characteristics consistent with conditions that would support renewable energy development. More detailed review and analysis should be conducted to determine specific boundaries for resource areas or constraints. These maps can be found in Appendix A.B.

A.3.A Appendix 1: Known & Possible Constraint Definitions and Descriptions

The following is a list of the known, possible, and regional constraints that were used and referenced in the mapping section of this document. A definition of the constraint including source of the data is provided.

Known Constraints

Vernal Pools (confirmed and unconfirmed layers)

Source: Vermont Fish and Wildlife, 2009- present

Vernal pools are temporary pools of water that provide habitat for distinctive plants and animals. Data was collected remotely using color infrared aerial photo interpretation. "Potential" vernal pools were mapped and available for the purpose of confirming whether vernal pool habitat was present through site visits. This layer represents both those site which have not yet been field-visited or verified as vernal pools, and those that have.

Department of Environmental Conservation (DEC) River Corridors -

Source: DEC Watershed Management District Rivers Program, January 2015

River corridors are delineated to provide for the least erosive meandering and floodplain geometry toward which a river will evolve over time. River corridor maps guide State actions to protect, restore and maintain naturally stable meanders and riparian areas to minimize erosion hazards. Land within and immediately abutting a river corridor may be at higher risk to fluvial erosion during floods.

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. River corridor widths are calculated to represent the narrowest band of valley bottom and riparian land necessary to accommodate the least erosive channel and floodplain geometry that would be created and maintained naturally within a given valley setting.

Federal Emergency Management Agency (FEMA) Floodways-

Source: FEMA Floodway included in Zones AE- FEMA Map Service Center

These are areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

State-significant Natural Communities and Rare, Threatened, and Endangered Species-

Source: Vermont Fish and Wi/dlift, National Heritage Inventory

The Vermont Fish and Wildlife Department's Natural Heritage Inventory (NHI) maintains a database of rare, threatened and endangered species and natural (plant) communities in Vermont. The Element Occurrence (EO) records that form the core of the Natural Heritage Inventory database include information on the location, status, characteristics, numbers, condition, and distribution of elements of biological diversity using established Natural Heritage Methodology developed by NatureServe and The Nature Conservancy.

An Element Occurrence (EO) is an area of land and/or water in which a species or natural community is, or was, present. An EO should have practical conservation value for the Element as evidenced by potential continued (or historical) presence and/or regular recurrence at a given location. For species Elements, the EO often corresponds with the local population, but when appropriate may be a portion of a population or a group of nearby populations (e.g., metapopulation).

National Wilderness Areas-

Source: United States Department of Agriculture Forest Service

A parcel of Forest Service land congressionally designated as wilderness.

Class 1 and Class 2 Wetlands-

Source: Vermont Significant Wetland Inventory (VSWI) and advisory layers

The State of Vermont protects wetlands which provide significant functions and values and also protects a buffer zone directly adjacent to significant wetlands. Wetlands in Vermont are classified as Class I, II, or III based on the significance of the functions and values they provide. Class I and Class II wetlands provide significant functions and values and are protected by the Vermont Wetland Rules. Any activity within a Class I or II wetland or buffer zone which is not exempt or considered an "allowed use" under the Vermont Wetland Rules requires a permit.

Class I wetlands have been determined to be, based on their functions and values, exceptional or irreplaceable in its contribution to Vermont's natural heritage and, therefore, merits the highest level of protection. All wetlands contiguous to wetlands shown on the VSWI maps are presumed to be Class II wetlands, unless identified as Class I or III wetlands, or unless determined otherwise by the Secretary or Panel pursuant to Section 8 of the Vermont Wetland Rules.

Possible Constraints

Agricultural Soils -

Source: Natural Resources Conservation Service (NRCS)

Primary agricultural soils" are defined as "soil map units with the best combination of physical and chemical characteristics that have a potential for growing food, feed, and forage crops, have sufficient moisture and drainage, plant nutrients or responsiveness to fertilizers, few limitations for cultivation or limitations which may be easily overcome, and an average slope that does not exceed 15 percent. Present uses may be cropland, pasture, regenerating forests, forestland, or other agricultural or silvicultural uses.

The soils must be of a size and location, relative to adjoining land uses, so that those soils will be capable, following removal of any identified limitations, of supporting or contributing to an economic or commercial agricultural operation. Unless contradicted by the qualifications stated above, primary agricultural soils include important farmland soils map units with a rating of prime, statewide, or local importance as defined by the Natural Resources Conservation Service of the United States Department of Agriculture.

FEMA Special Flood Hazard Areas -

The land area covered by the floodwaters of the base flood is the Special Flood Hazard Area (SFHA) on NFIP maps. The SFHA is the area where the National Flood Insurance Program's (NFIP's) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.

Protected Lands -

Include State fee land and private conservation lands. Other state level, non-profit and regional entities also contribute to this dataset. The Vermont Protected Lands Database is based on an updated version of the original Protected Lands Coding Scheme reflecting decisions made by the Protected Lands Database Work Group to plan for a sustainable update process for this important geospatial data layer.

Act 250 Ag Mitigation Parcels -

Source: Vermont Department of Agriculture

All projects reducing the potential of primary agricultural soils on a project tract are required to provide "suitable mitigation," either "onsite or offsite," which is dependent on the location of the project. This constraint layer includes all parcels in the Act 250 Ag Mitigation Program as of 2006.

Deer Wintering Areas (DWA)-

Source: Vermont Department of Fish and Wildlife

Deer winter habitat is critical to the long term survival of white-tailed deer (Odocoileus virginianus) in Vermont. Being near the northern extreme of the white-tailed deer's range, functional winter habitats are essential to maintain

stable populations of deer in many years when and where yarding conditions occur. Consequently, deer wintering areas are considered under Act 250 and other local, state, and federal regulations that require the protection of important wildlife habitats. DW As are generally characterized by rather dense softwood (conifer) cover, such as hemlock, balsam fir, red spruce, or white pine. Occasionally DWAs are found in mixed forest with a strong softwood component or even on found west facing hardwood slopes in conjunction with softwood cover. The DWA were mapped on mylar overlays on topographic maps and based on small scale aerial photos.

Vermont Conservation Design include the following Highest Priority Forest Blocks: Connectivity, Interior, and Physical Landscape Diversity -

Source: Vermont Department of Fish and Wildlife

The lands and waters identified in this constraint 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.

Hydric Soils -

Source: Natural Resources Conservation Service

A hydric soil is a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part. This constraint layer includes soils that have hydric named components in the map unit.

Regional Constraints

Elevations above 2500 feet-

This constraint uses USGS contours over 2500 feet.

Lake Shore Protection Buffers (250 Foot and 800 Foot in Calais Only)-

For this constraint, CVRPC selected Vermont Hydrologic Dataset lakes and ponds greater than 10 acres and then buffered those by 250 feet and use the Town of Calais Land Use Regulations for shore lands in Calais.

Slopes Greater Than 25%-

For this constraint, CVRPC performed a slope analysis using a 10 meter Digital Elevation Model.

Municipal Lands -

For this constraint, CVRPC used the Vermont Center for Geographic Information's Protected Lands Database.

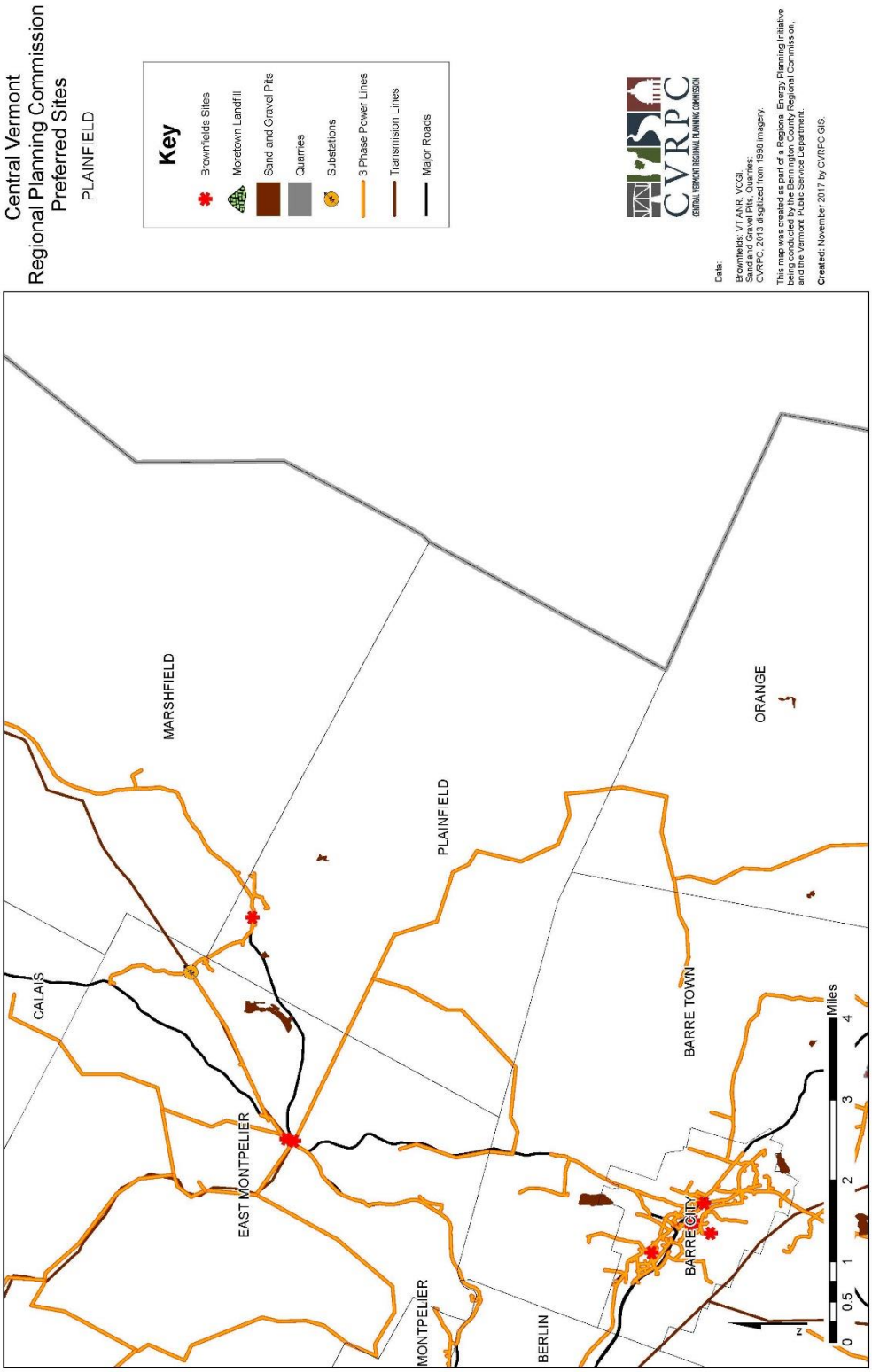
Local Constraints

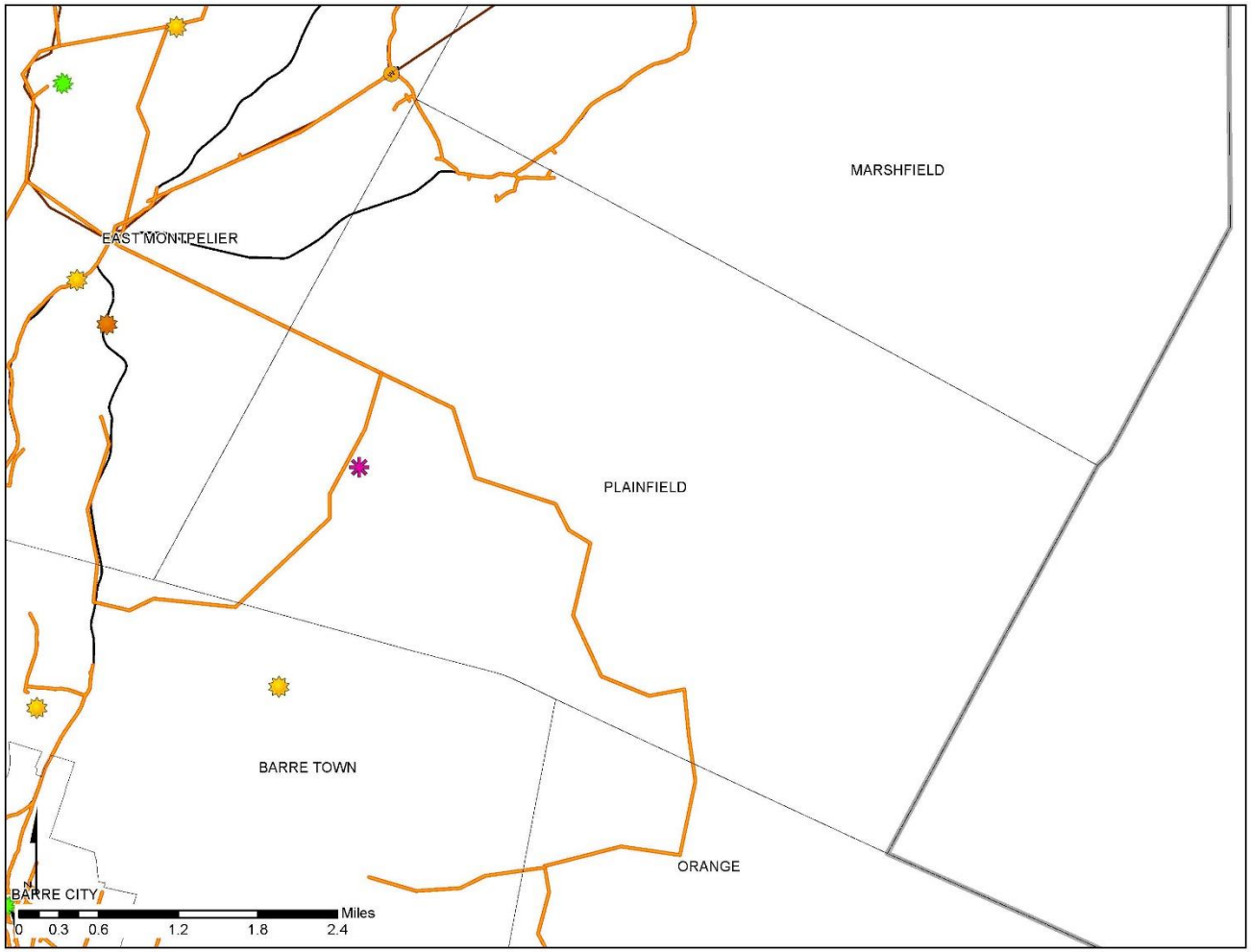
Reserve Lands District –

According to Plainfield's Zoning Bylaws, this is a high-elevation area (above 2,200 ft) with steep slopes. No dwelling units are allowed in this district, but agriculture and forestry are allowed in some aspects. The purpose of this district is to preserve ridgelines and wildlife habitat while minimizing the impacts from further development.

A.3.B Appendix 2: Municipal Resource Maps

For full size maps, please visit
http://centralvtplanning.org/programs/energy/municipal-energy-planning/





Central Vermont Regional Planning Commission
Existing Renewable Energy Generation
PLAINFIELD

Key

- Biomass for Heat - Current Sites
- Wind Generation - Current Sites

Solar Sites - Current Generation > 15 KW

- Ground-mounted PV
- Roof-Mounted PV
- Substations
- 3 Phase Power Lines
- Transmission Lines
- Major Roads

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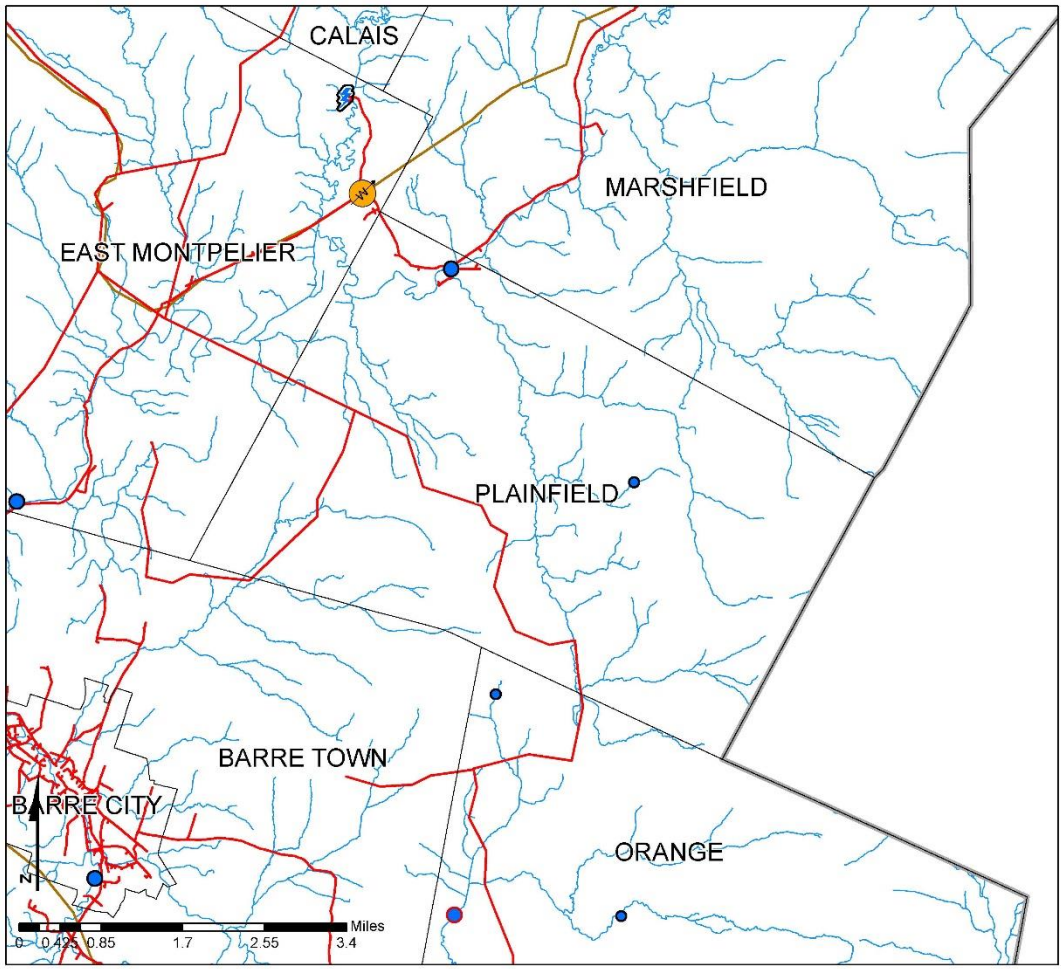
Data:

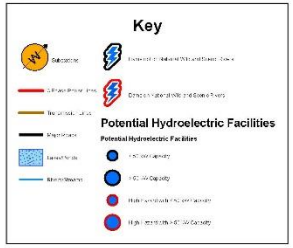
Wind and Biomass generation:
VT Energy Dashboard
Solar Sites: VT Energy Dashboard

This map was created as part of a Regional Energy Planning Initiative being conducted by the Bennington County Regional Commission, and the Vermont Public Service Department.

Created: November 2017 by CVRPC GIS.



PLAINFIELD
Hydroelectric Resources Map



Methodology

This map shows areas of resource potential for renewable energy generation from hydroelectric , i.e., dams that could be converted in to hydroelectric facilities as well as active hydroelectric sites. Existing hydroelectric dam information was extracted from the Vermont Dam Inventory, while potential hydroelectric sites were derived from a study conducted by Community Hydro in 2007.1 Based on estimates conducted within the report, this map categorizes dams based on their potential hydroelectric generation capacity, and the downstream hazard risk that would be involved in hydroelectric production at each site.

High hazard potential dams are those where failure or mis-operation will probably cause loss of human life. The other rankings were grouped together and their failure or mis-operation results in no probable loss of human life, but could cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. These dams are often located in predominately rural or agricultural areas, but could be located in areas withpopulation and significant infrastructure.

This map was created as part of a Regional Energy Planning Initiative being conducted by the Bennington County Regional Commission, and the Vermont Public Service Department.

Created: December 2016 by CVRPC GIS.
N:\Region\Projects\2017\Act174_Energy\
Hydroelectric Resources 11x17.mxd

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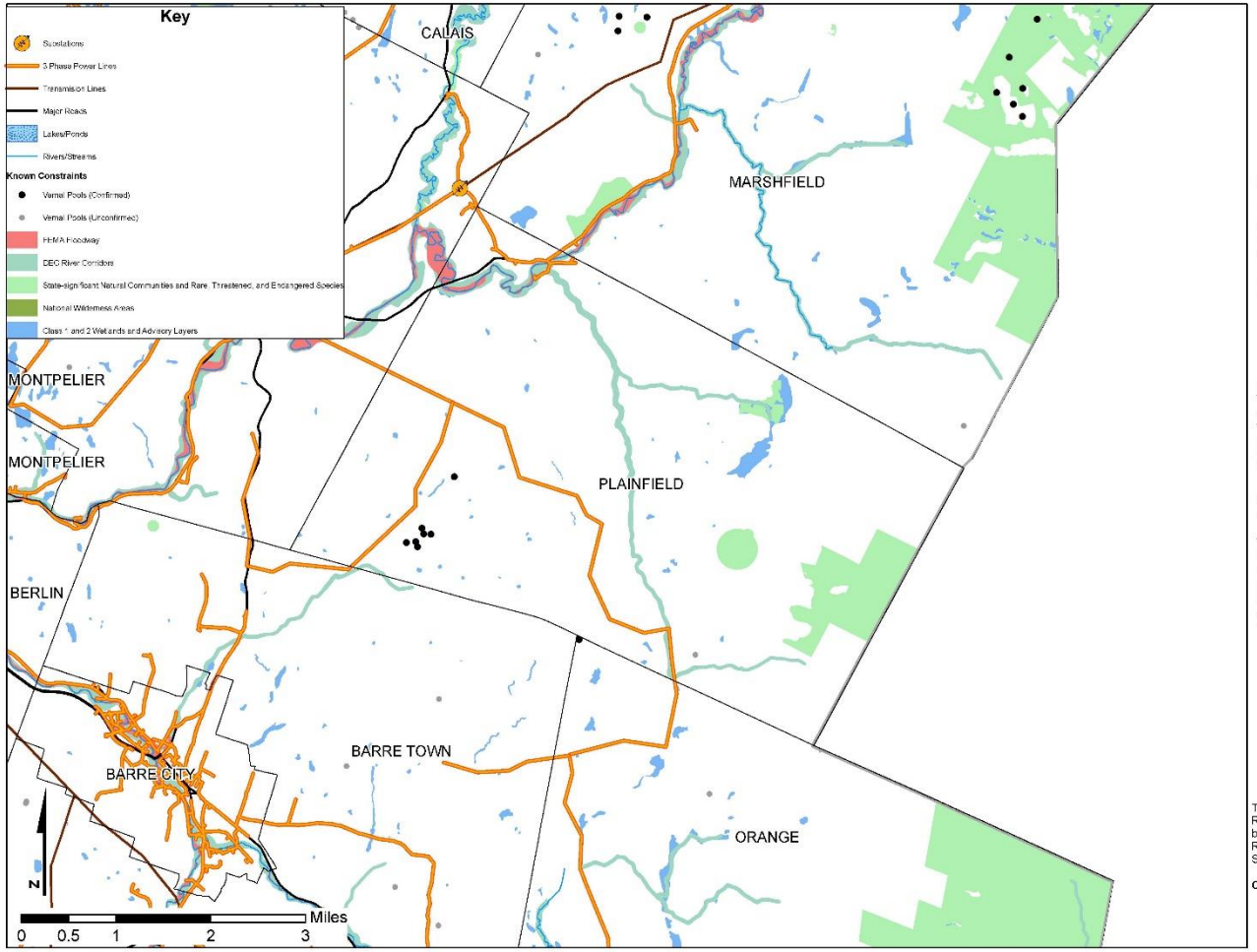


PLAINFIELD
Known Constraints Map

Known Constraints

These constraints signal likely, though not absolute, unsuitability for development based on statewide or local regulation or designated critical resources.

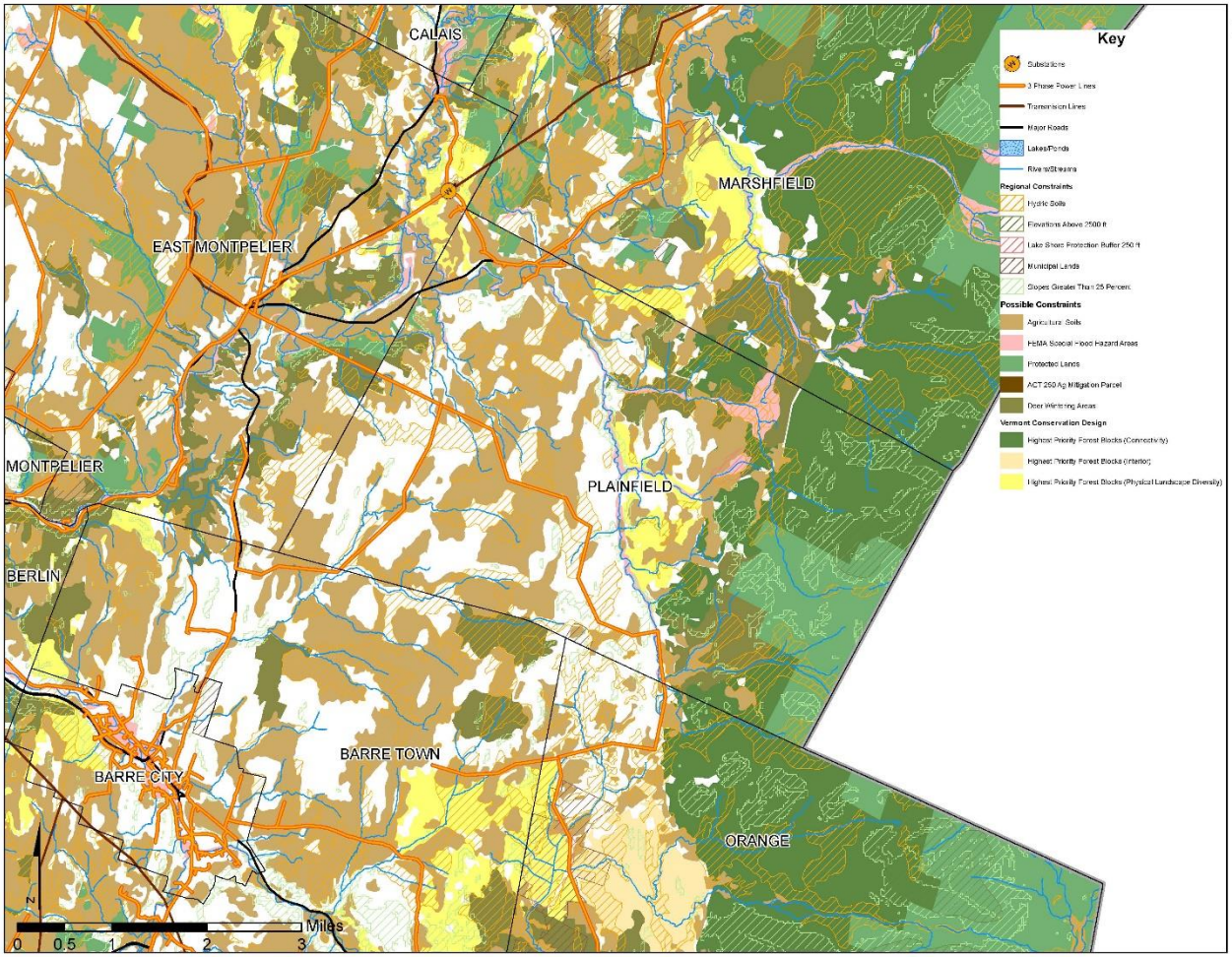
Link to Data -
http://vcgi.vermont.gov/opendata/act174

Known Constraints
Vernal Pools incuding confirmed and unconfirmed -
Vermont Fish and Wildlife
DEC River Corridors -
DEC WSMD Rivers Program 1/2/15
FEMA Floodway included in Zones AE -
FEMA Map Service Center
State-significant Natural Communities and Rare, Threatened, and Endangered Species -
Vermont Fish and Wildlife, Natural Heritage Inventory
National Wilderness Areas -
USDA Forest Service
Class 1 and Class 2 Wetlands (VSWI) and Advisory Layers - VT Watershed Management Division

This map was created as part of a Regional Energy Planning Initiative being conducted by the Bennington County Regional Commission, and the Vermont Public Service Department.

Created: December 2016 by CVRPC GIS.

CVRPC



PLAINFIELD
Possible Constraints Map

Possible Constraints

These constraints signals 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.

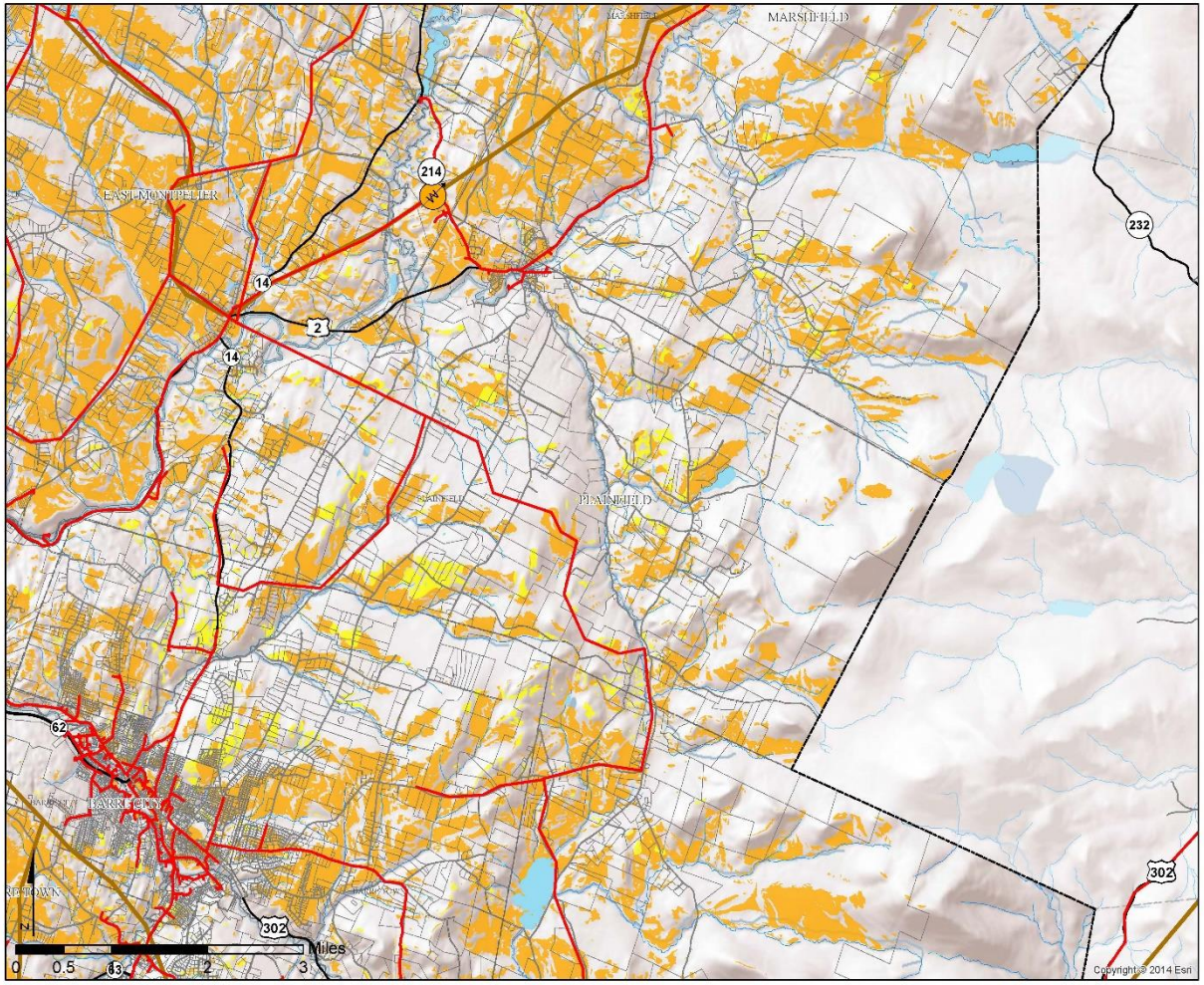
Link to Data - http://vcgi.vermont.gov /opendata/act174

Possible Constraints Data Sources
Agricultural Soils include local, prime and statewide classifications - NRCS
FEMA Special Flood Hazard Areas include Zones A and AE - FEMA Map Service Center
Protected Lands - Include State fee lands and private conservation lands - VCGI
Act 250 Ag Mitigation Parcels include parcel as of 2006 - VT Dept. of Ag
Deer Wintering Areas - VT Fish and Wildlife
Vermont Conservation Design include the following Highest Priority Forest Blocks: Connectivity, Interior, and Physical Landscape Diversity) - VT Fish and Wildlife
Hydric Soils include soils that have hydric named components in the map unit - NRCS

This map was created as part of a Regional Energy Planning Initiative being conducted by the Bennington County Regional Commission, and the Vermont Public Service Department.

Created: December 2016 by CVRPC GIS.

CVRPC



PLAINFIELD

Solar Resources Map

Legend

- Substations
- 3 Phase Power Lines
- Distribution Lines

Solar Potential

- Prime (No Constraint)
- Secondary (Possible Constraint)
- Parcels

Roads

- Interstate
- US Highway
- Vermont State Highway
- Town Class 1-3

Known Constraints

Areas not shown on map

Vernal Pools
River Corridors
FEMA Floodways
Natural Communities & Rare, Threatened and Endangered Species
National Wilderness Areas
Wetlands Class 1 and 2

Possible Constraints

VT Agriculturally Important Soils
FEMA Special Flood Hazard Areas
Protected Lands
Act 250 Agricultural Soil Mitigation Areas
Deer Wintering Areas
Highest Priority Forest Blocks
Hydric Soils
Elevations Above 2500Ft
Lake Shore Protection Buffer 250 Ft
Municipal Lands
Slopes Greater Than 25 Percent

Created by: CVRPC GIS 4/4/2017
N:\Region\Projects\2017\
Act174_Energy\Solar Resources 11X17

Data is only as accurate as the original source materials.
This map is for planning purposes.
This map may contain errors and omissions

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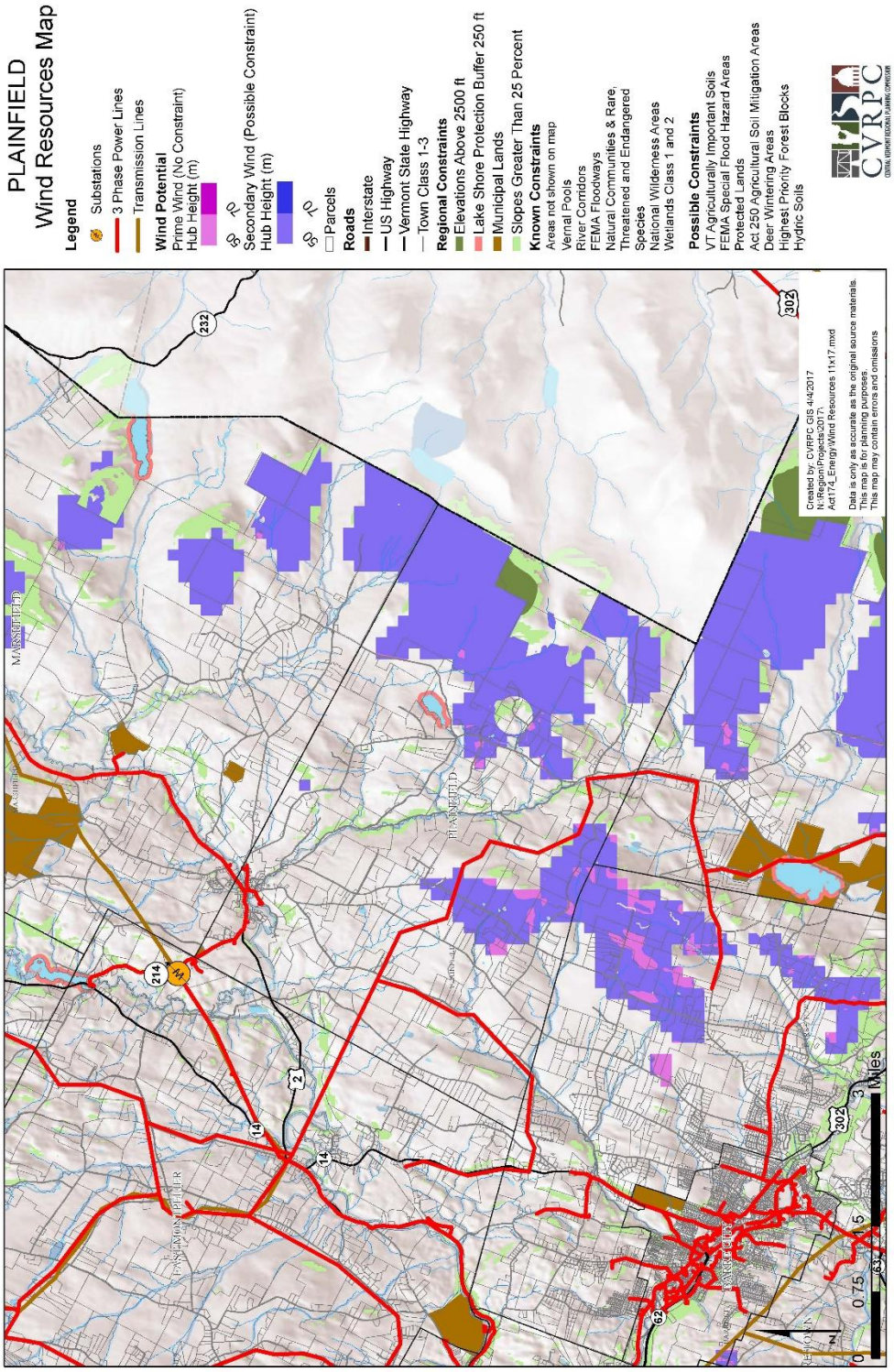
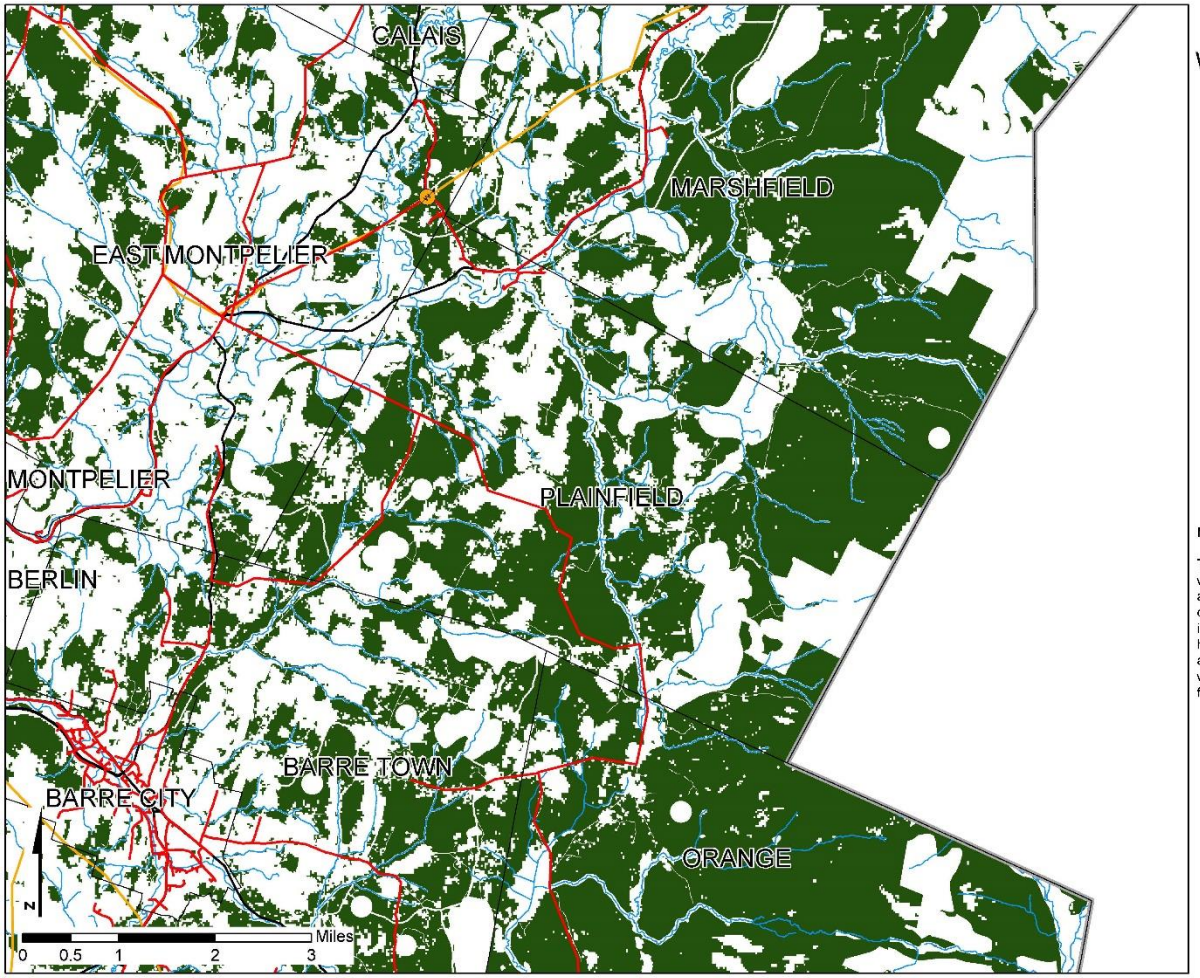
CENTRAL VERMONT REGIONAL PLANNING COMMISSION


PLAINFIELD
Wind Resources Map
Legend
Substations
3 Phase Power Lines
Transmission Lines
Wind Potential
Prime Wind (No Constraint)
Hub Height (m)
65
70
Secondary Wind (Possible Constraint)
Hub Height (m)
65
70
Parcels
Roads
Interstate
US Highway
Vermont State Highway
Town Class 1-3
Regional Constraints
Elevations Above 2500 ft
Lake Shore Protection Buffer 250 ft
Municipal Lands
Slopes Greater Than 25 Percent
Known Constraints
Areas not shown on map
Vernal Pools
River Corridors
FEMA Floodways
Natural Communities & Rare, Threatened and Endangered Species
National Wilderness Areas
Wetlands Class 1 and 2
Possible Constraints
VT Agriculturally Important Soils
FEMA Special Flood Hazard Areas
Protected Lands
Act 250 Agricultural Soil Mitigation Areas
Deer Wintering Areas
Highest Priority Forest Blocks
Hydric Soils
CVRPC
Created by: CVRPC GIS 4/4/2017
N:\Region\Projects\2017\
Act174_Energy\Wind Resources 11x17.mxd
Data is only as accurate as the original source materials.
This map is for planning purposes
This map may contain errors and omissions
0 0.75 1.5 3 Miles
N
MARSHFIELD
PLAINFIELD
232
214
2
14
62
302



PLAINFIELD
Woody Biomass Resources Map

Key

- Substations
- 3 Phase Power Lines
- Transmission Lines
- Major Roads
- Lakes/Ponds
- Rivers/Streams
- Woody Biomass

Methodology

This map shows areas of resource potential for woody biomass, i.e., locations where forested areas are. This map also considers various other conditions, such as ecological zones, that may impact the feasibility of renewable energy/alternative heating source. These conditions are referred to as constraints. This map does not include areas where other types of biomass, such as biomass from agricultural residue, could be grown/harvested.

This map was created as part of a Regional Energy Planning Initiative being conducted by the Bennington County Regional Commission, and the Vermont Public Service Department.

Created: December 2016 by CVRPC GIS.

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A.4 Milone & MacBroom Excerpt

On July 19, 2015 an intense rain took place in the headwaters of the Great Brook watershed leading to flooding and damages along the channel and in the floodplain. Thankfully, nobody was injured during the flood, yet substantial damages took place and repairs are under way. The Brook Road Bridge (#2) was overtopped and the road was destroyed on both sides of the structure. Several washouts occurred along roads - upper Brook Road, Gore Road, Gonyeau Road, Lower Road, and Upper Road. A lot of damage took place in the upper watershed near the Barre-Plainfield Town line. So much water and sediment rushed over the steep slopes that sedimentation took place in several areas such as on Brook Road and around houses.

As Milone & MacBroom is currently working on an alternatives analysis to reduce flood and erosion hazards around the bridges on Great Brook in Plainfield Village at Mill Street (#1) and Brook Road (#2), we visited the area on July 20 to observe the flood patterns and mechanisms of damage. We also spoke with members of the Town and public to learn about some of the details of the rains, flood, and damages.

A 10-year flood

Local gauges indicate that 2.5 inches of rain fell on July 19, 2015, most of it coming between 7:45 pm and 8:45 pm. Most accounts indicate that the flood level peaked between 9:00 and 10:00 pm when the Brook Road culvert was overtopped. Flood levels began slowly receding after 10:00 pm based on accounts of local flood levels.

The flood level did not reach the high water marks recorded during the spring 2011 flood, yet water was not far from this level. Field indicators of the bankfull channel that approximately occurs at the 2-year flood were submerged during the flood. The USGS stream gauge in Montpelier indicated about a 2-year flood took place downstream. The data suggest that the rains translated into approximately the 10-year flood event on Great Brook. Flood frequency estimates suggest that the 10-year flood may have a flow of 500 to 1,000 cubic feet per second.

The Brook Road Bridge (#2) is too small

Accounts of the flood and observations suggest that the Brook Road Bridge in the Village filled with water and overtopped near the peak of the flood. The bridge was reportedly passing flood waters at full capacity without initially being blocked by debris as the flood wave grew. Several large trees were observed downstream following the flood that appeared to have been transported through the Brook Road Bridge.

This observation is important as the bridge is undersized in terms of hydraulic capacity if it cannot pass the 10-year flood. There has been a lot of discussion about debris at the bridge, yet there has been little discussion about hydraulic

capacity. This structure is smaller than many of the other bridges that cross Great Brook.

A small debris jam built up at Brook Road

Just after the peak of the flood passed, observers noticed debris build up on the outside of the bend at the Brook Road Bridge. Water was hitting the concrete bridge railing and flowing over the road around both sides of the bridge.

Observations in the morning revealed a blockage of a quarter of the structure on the western side (river left, looking downstream) of the bridge opening. Fifteen (15) logs were counted in place once the flood receded. It does not take a lot of wood to begin to close off the bridge opening at Brook Road.

The debris jam during this flood was smaller than the spring 2011 flood. During spring 2011, the jam grew from the outside of the bend across the structure. The larger flow over a longer duration was delivering more wood to the structure, growing the jam from west to east, and also growing the jam vertically. In 2011, photos suggest that the jam grew so tall on the outside of the bend that water was forced to the east and destroyed the road mostly on the eastern side of the bridge. During this smaller and shorter duration flood, the jam did not grow very tall or wide and water thus went around both sides of the structure destroying the road in both locations.

Why does the Brook Road Bridge trap debris?

A lot of wood came down Great Brook and made it through some of the structures. A little even went through the Brook Road Bridge. Observations after the flood highlighted the reasons the Brook Road Bridge cannot effectively pass debris.

A rule of thumb for bridge and culvert design is that at least 20% of the height of the structure should be left open during the design flood so that wood can pass through. This common design criterion clearly does not exist at Brook Road. Wood hits the roof and concrete railing of the structure so does not pass.

The local hydraulics on the sharp bend in the river are forcing wood to the western side of the channel and prohibiting it from passing through the structure. Other Bridges such as Mill Street and near Cameron Road have straighter approaches and did not trap any wood. These bridges are also larger. The flood level was reported to be 1 to 1.5 feet from the top of the Mill Street Bridge that passed some large trees.

Observations under the Brook Road Bridge as the flood receded during the morning of July 20 revealed a standing wave under the Brook Road Bridge. This hydraulic jump is a place where fast, shallow water hits slower, deeper water. Small logs were observed sitting in the hydraulic roller before eventually moving downstream. This hydraulic feature promotes debris jamming.

Wood generation

Large wood was generated off of existing slope failures that were widened, especially in the upper watershed. Wood in the channel was remobilized during the flood. The wood deposition is more abundant in the upper watershed than from Cameron Road downstream.

Rill erosion on the compacted, gray, silty material on the steep slope failures appeared to perforate the surface material. Combined with the erosion at the bottom of the slope and additional slope failures are likely to persist on Great Brook for a long time.

Washouts

Several washouts took place and most of them occurred from erosion where flow was directed at or along a road by accumulated sediment or wood. In many locations Brook road occupies a quarter to half of the valley floor leading to increased erosional forces as flow is confined into the floodplain. Many of the road washout areas took place in these confined settings.

A.5: Table of Historic Structures in Plainfield

Map numbers refer to numbered locations on the Historic District and Designated Village Center map

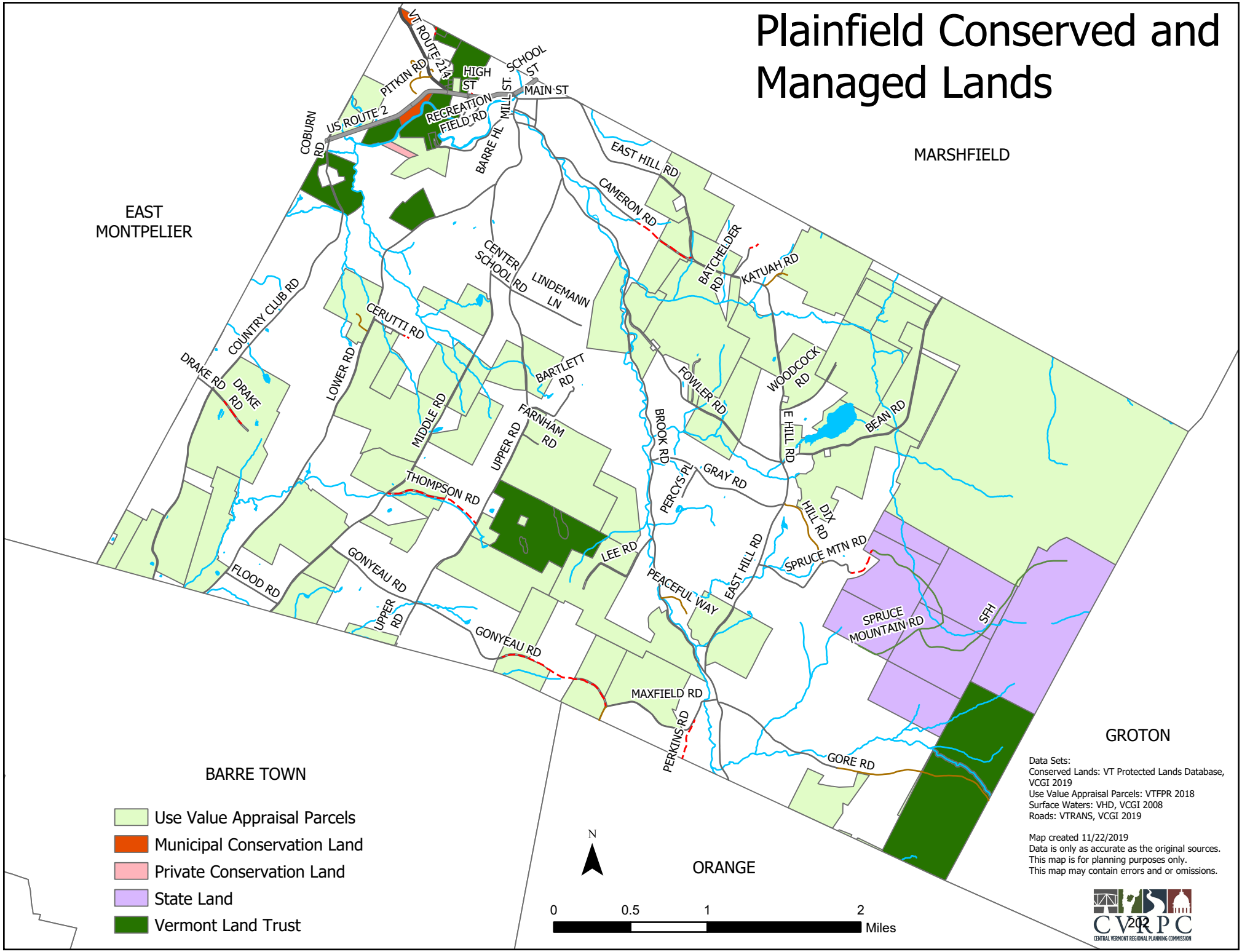
Map no.	Location	Description
1	165 PITKIN RD	
2	346 HIGH ST	
3	308 BARRE HL	
4	645 LOWER RD	
5	863 LOWER RD	
6	LOWER RD	
7	3132 LOWER RD	
8	3194 MIDDLE RD	
9	301 GONYEAU RD	
10	324 GONYEAU RD	
11	113 CENTER SCHOOL RD	
12	375 BARTLETT RD	
13	113 BARTLETT RD	
14	125 FARNHAM RD	
15	1928 UPPER RD	
16	2245 UPPER RD	
17	414 MAXFIELD RD	
18	94 MAXFIELD RD	
19	4304 EAST HILL RD	
20	3809 EAST HILL RD	
21	3496 EAST HILL RD	
22	3135 EAST HILL RD	
23	683 BEAN RD	
24	137 GRAY RD	
25	975 FOWLER RD	
26	3171 BROOK RD	
27	149 FOWLER RD	
29	900 EAST HILL RD	
29	220 BATCHELDER RD	
30	637 EAST HILL RD	
31	384 MAIN ST	
32	296 MAIN ST	
33	581 RECREATION FIELD RD	
35	4614 BROOK RD	
36	3134 COUNTRY CLUB RD	
37	865 MAXFIELD RD	
v1	182 HIGH ST	
v10	15 SCHOOL ST	
v11	61 SCHOOL ST	
v12	SCHOOL ST	

Map no.	Location	Description
v13	79 SCHOOL ST	
v14	93 SCHOOL ST	
v15	123 SCHOOL ST	
v16	143 SCHOOL ST	
v17	161 SCHOOL ST	
v18	171 SCHOOL ST	
v19	8202 US ROUTE 2	
v2	146 HIGH ST	
v20	8184 US ROUTE 2	
v21	8176 US ROUTE 2	
v22	170 SCHOOL ST	
v23	162 SCHOOL ST	
v24	142 SCHOOL ST	
v25	112 SCHOOL ST	
v26	SCHOOL ST	
v27	98 SCHOOL ST	
v28	90 SCHOOL ST	
v29	60 SCHOOL ST	
v3	124 HIGH ST	
v30	38 SCHOOL ST	
v31	20 SCHOOL ST	
v32	39 MAIN ST	
v33	53 MAIN ST	
v34	61 MAIN ST	
v35	65 MAIN ST	
v36	69 MAIN ST	
v37	87 MAIN ST	
v38	99 MAIN ST	
v39	109 MAIN ST	
v4	108 HIGH ST	
v40	117 MAIN ST	
v41	127 MAIN ST	
v42	139 MAIN ST	
v43	153 MAIN ST	
v44	149 MAIN ST	
v45	169 MAIN ST	
v46	191 MAIN ST	
v47	13 CREAMERY ST	
v48	162 MAIN ST	
v49	154 MAIN ST	
v5	88 HIGH ST	
v51	132 MAIN ST	
v52	120 MAIN ST	
v53	108 MAIN ST	

Map no.	Location	Description
v54	88 MAIN ST	
v55	78 MAIN ST	
v56	76 MAIN ST	
v57	33 MILL ST	
v58	13 MILL ST	
v59	35 MILL ST	
v6	70 HIGH ST	
v60	10 HUDSON AVE	
v61	110 MILL ST	
v61A	110 MILL ST	
v62	96 MILL ST	
v63	64 MILL ST	
v64	50 MILL ST	
v65	16 MAIN ST	
v66	1 HIGH ST	
v68	25 HIGH ST	
v69	49 HIGH ST	
v7	50 HIGH ST	
v70	55 HIGH ST	
v71	69 HIGH ST	
v72	119 HIGH ST	
v73	151 HIGH ST	
v74	173 HIGH ST	
v7A	50 HIGH ST	
v8	34 HIGH ST	
v8A	36 HIGH ST	
v9	18 HIGH ST	

A.6 Municipal Plan Maps

Plainfield Conserved and Managed Lands



Data Sets:
Conserved Lands: VT Protected Lands Database, VCGI 2019
Use Value Appraisal Parcels: VTFPR 2018
Surface Waters: VHD, VCGI 2008
Roads: VTRANS, VCGI 2019

Map created 11/22/2019
Data is only as accurate as the original sources.
This map is for planning purposes only.
This map may contain errors and or omissions.

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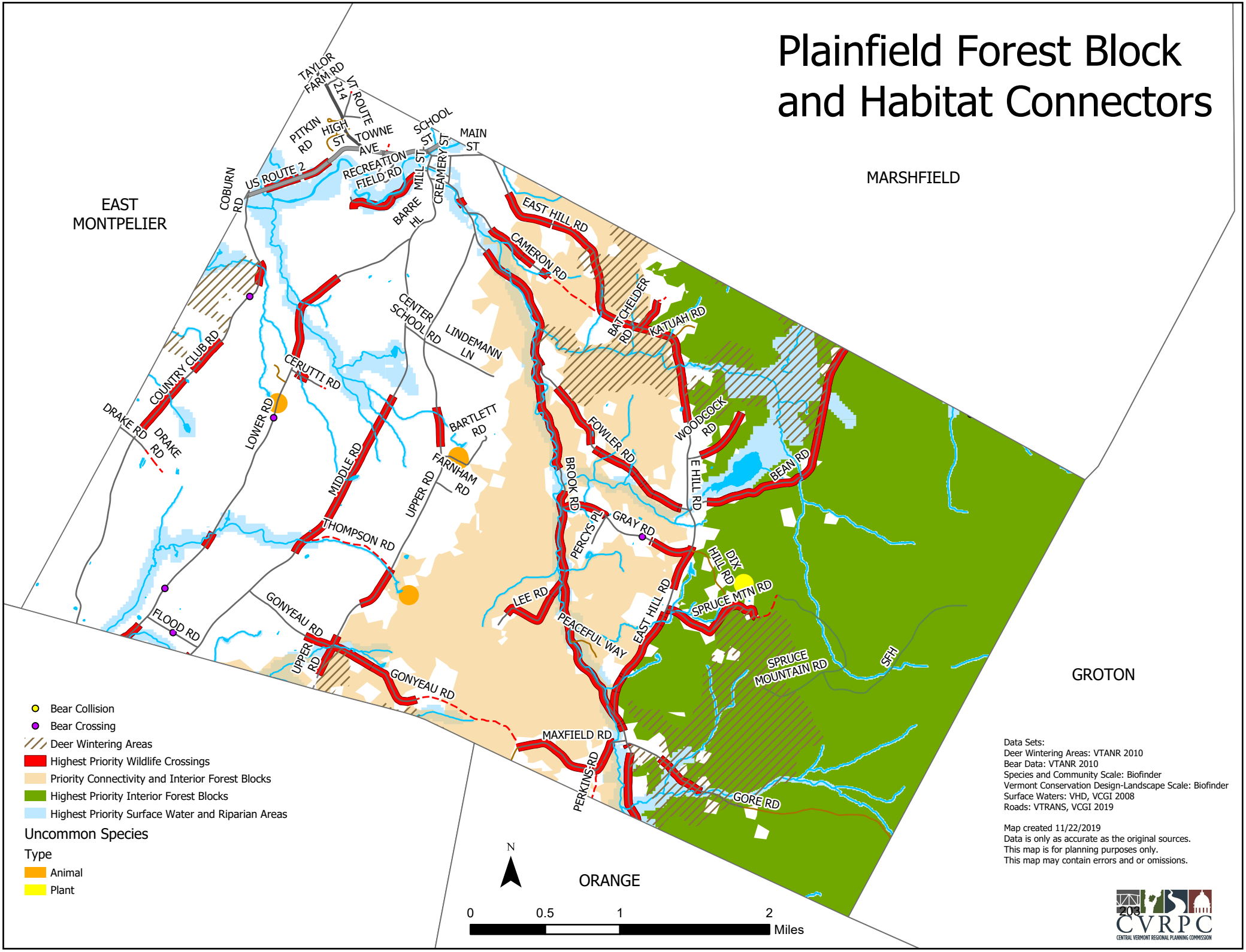
Plainfield Forest Block and Habitat Connectors



Data Sets:
Deer Wintering Areas: VTANR 2010
Bear Data: VTANR 2010
Species and Community Scale: Biofinder
Vermont Conservation Design-Landscape Scale: Biofinder
Surface Waters: VHD, VCGI 2008
Roads: VTRANS, VCGI 2019

Map created 11/22/2019
Data is only as accurate as the original sources.
This map is for planning purposes only.
This map may contain errors and or omissions.

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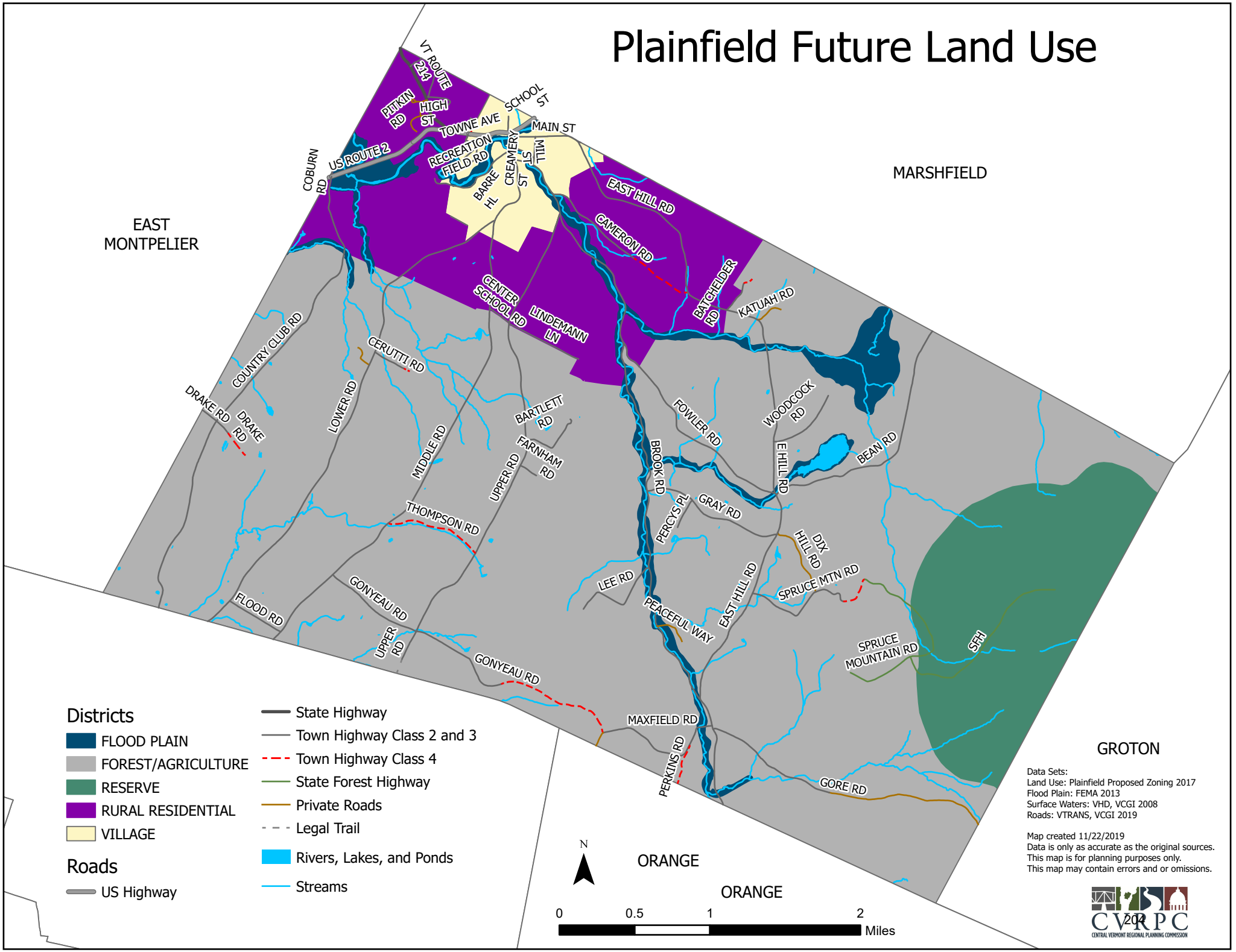
Plainfield Future Land Use



Data Sets:
Land Use: Plainfield Proposed Zoning 2017
Flood Plain: FEMA 2013
Surface Waters: VHD, VCGI 2008
Roads: VTRANS, VCGI 2019

Map created 11/22/2019
Data is only as accurate as the original sources.
This map is for planning purposes only.
This map may contain errors and or omissions.

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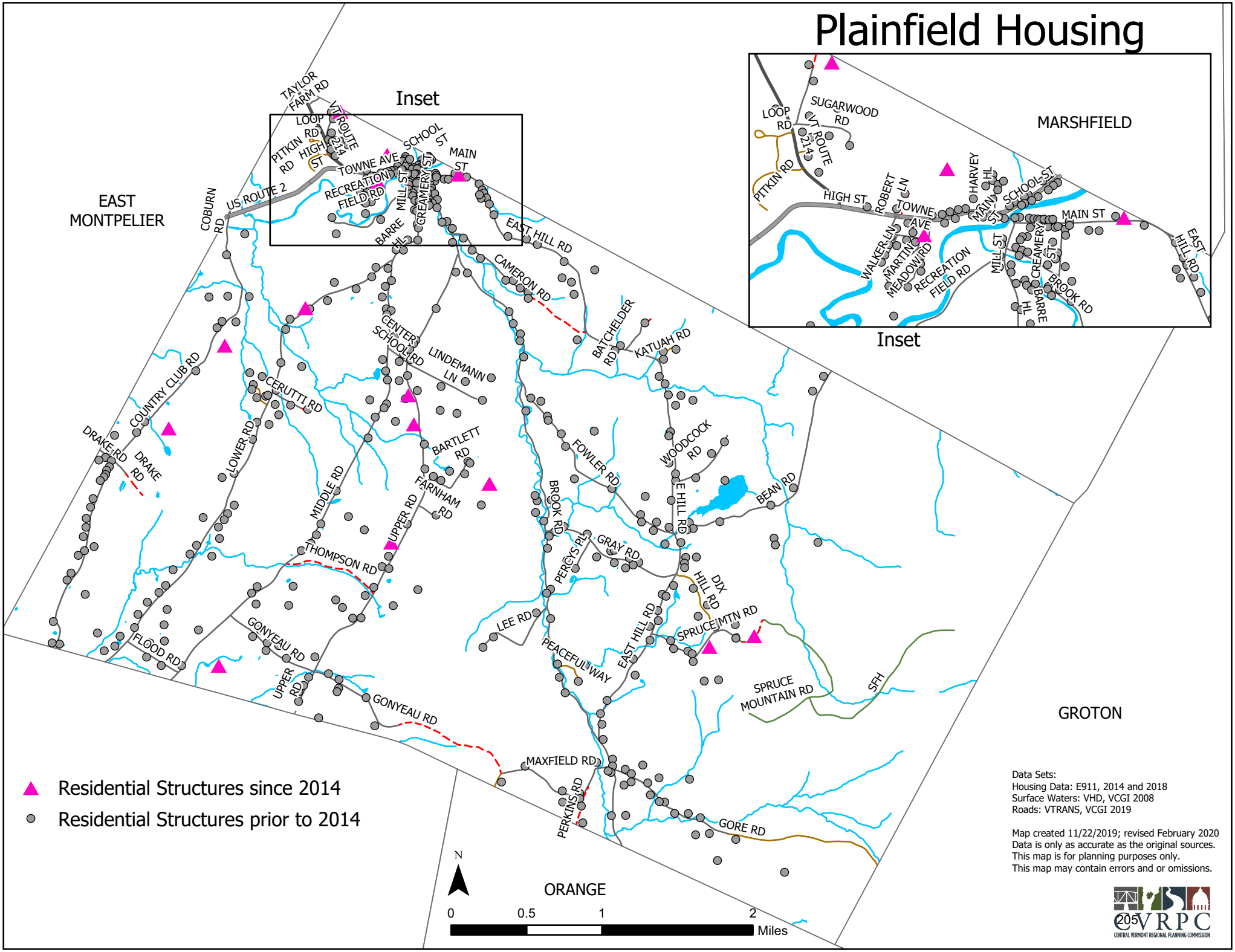
Plainfield Housing



Data Sets:
Housing Data: E911, 2014 and 2018
Surface Waters: VHD, VCGI 2008
Roads: VTRANS, VCGI 2019

Map created 11/22/2019; revised February 2020
Data is only as accurate as the original sources.
This map is for planning purposes only.
This map may contain errors and or omissions.

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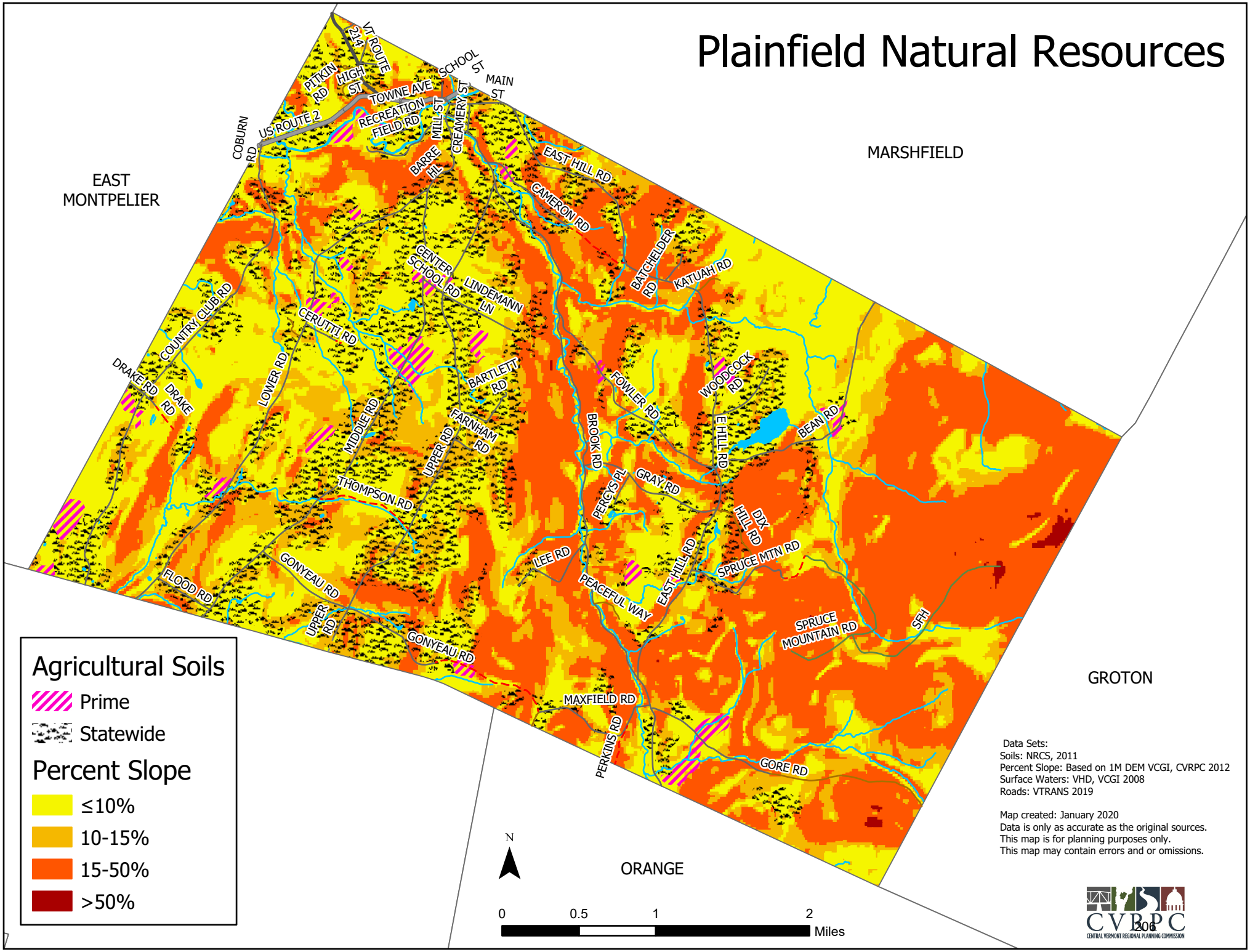
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

Plainfield Natural Resources



Data Sets:
Soils: NRCS, 2011
Percent Slope: Based on 1M DEM VCGI, CVRPC 2012
Surface Waters: VHD, VCGI 2008
Roads: VTRANS 2019

Map created: January 2020
Data is only as accurate as the original sources.
This map is for planning purposes only.
This map may contain errors and or omissions.

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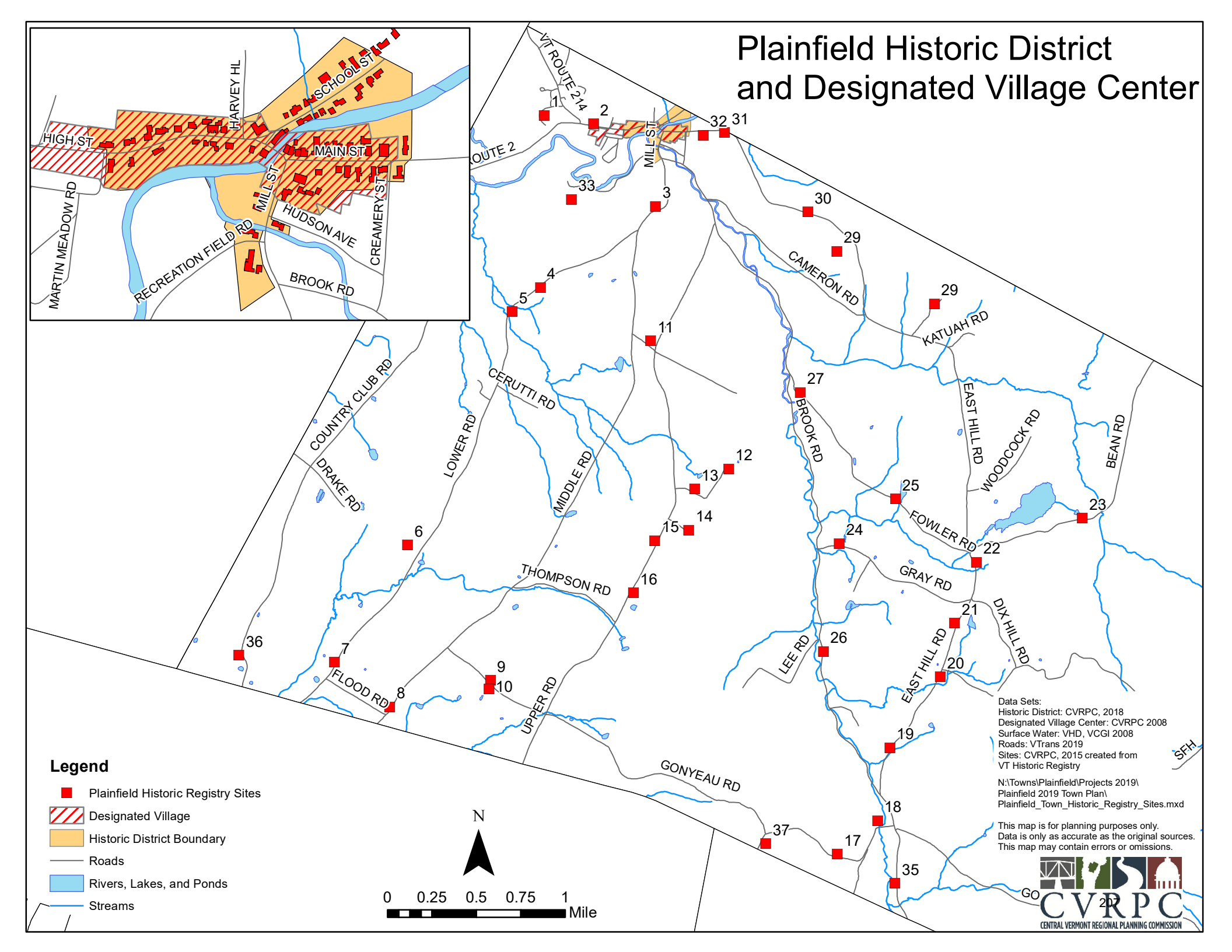
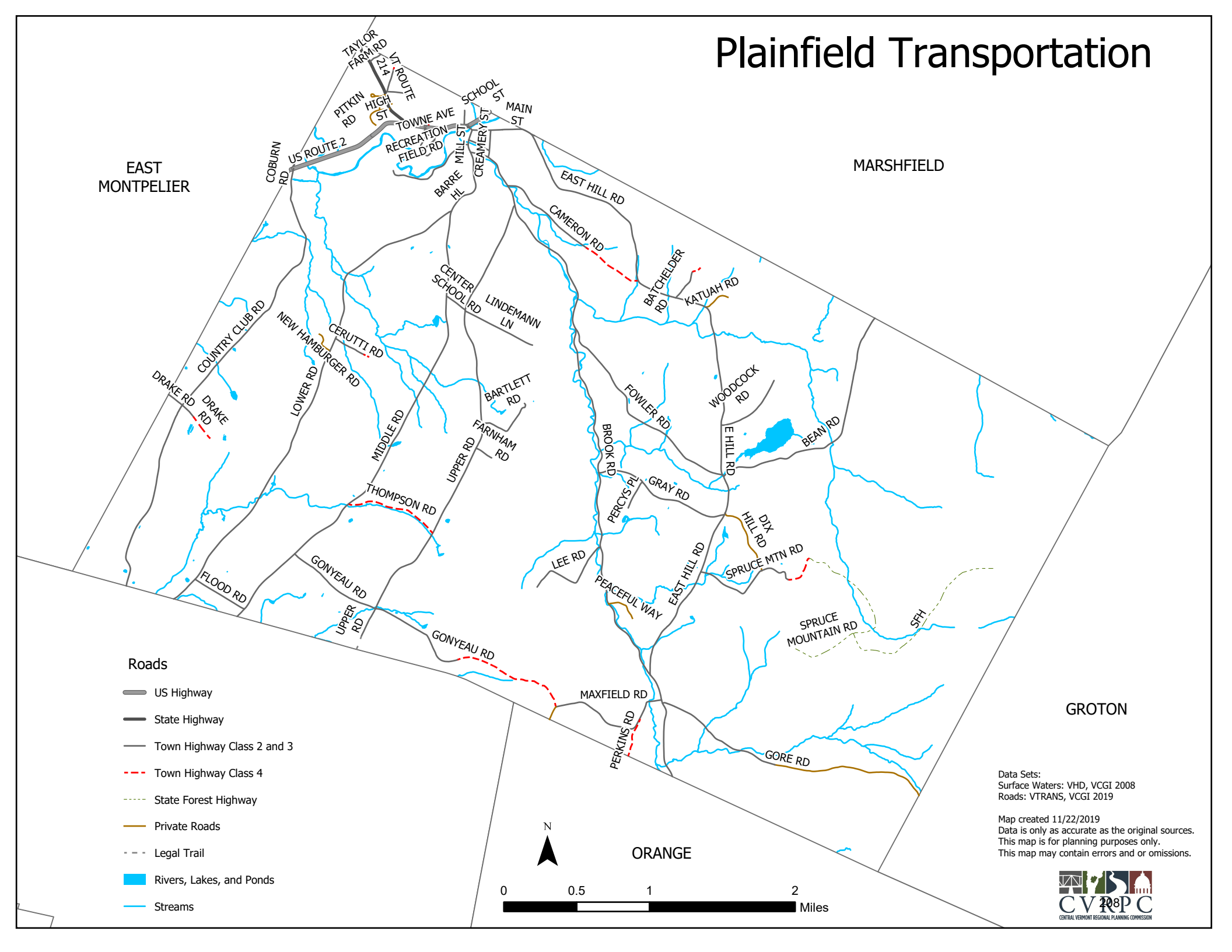
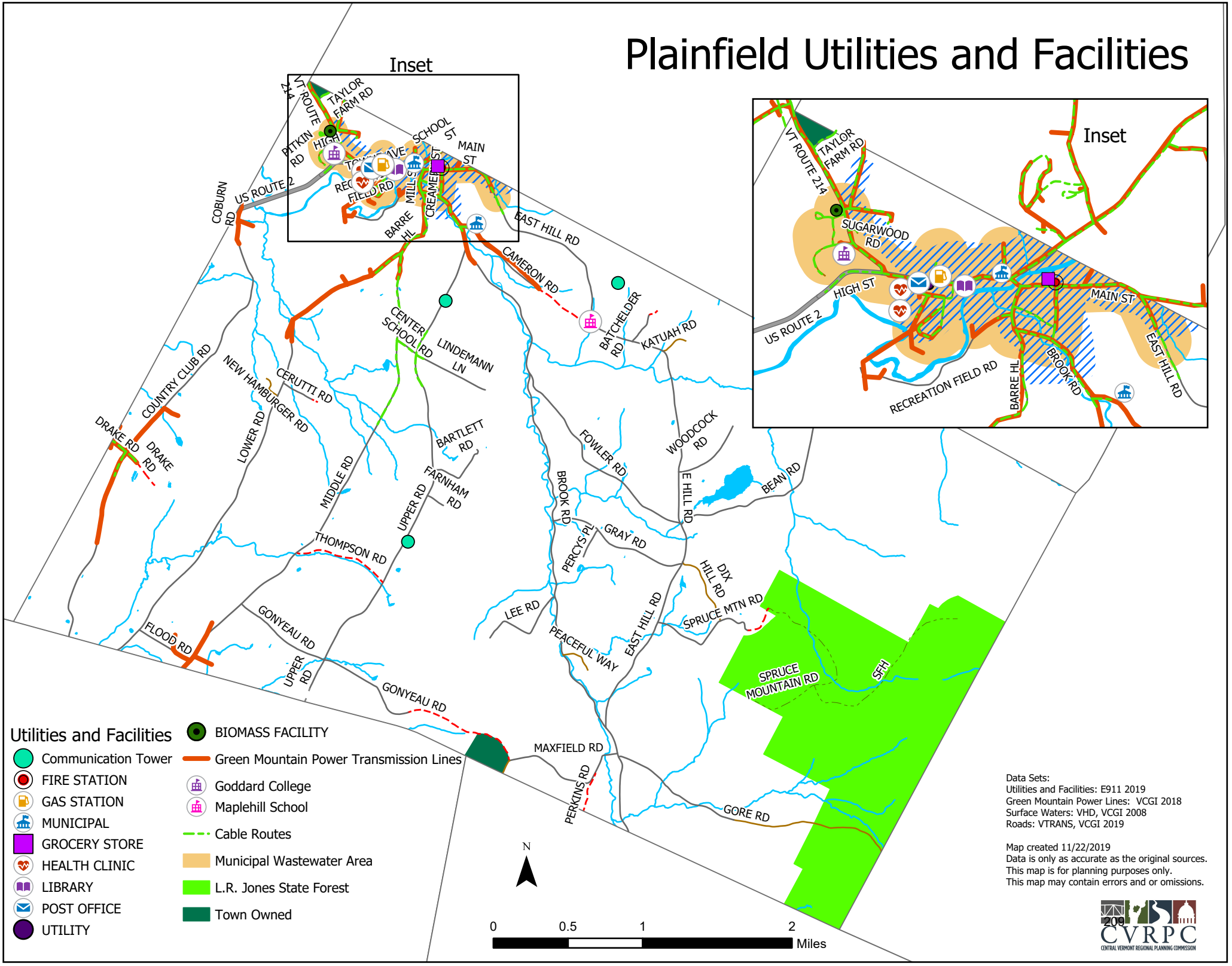
CENTRAL VERMONT REGIONAL PLANNING COMMISSION


Plainfield Historic District
and Designated Village Center
HIGH ST
HARVEY HL
SCHOOL ST
MAIN ST
MILL ST
HUDSON AVE
CREAMERY ST
MARTIN MEADOW RD
RECREATION FIELD RD
BROOK RD
VT ROUTE 214
ROUTE 2
MILL ST
CAMERON RD
KATUAH RD
EAST HILL RD
WOODCOCK RD
BEAN RD
BROOK RD
FOWLER RD
GRAY RD
DIX HILL RD
LEE RD
EAST HILL RD
COUNTRY CLUB RD
DRAKE RD
LOWER RD
CERUTTI RD
MIDDLE RD
THOMPSON RD
FLOOD RD
UPPER RD
GONYEAU RD
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
29
30
31
32
33
35
36
37
Legend
Plainfield Historic Registry Sites
Designated Village
Historic District Boundary
Roads
Rivers, Lakes, and Ponds
Streams
N
0 0.25 0.5 0.75 1
Mile
Data Sets:
Historic District: CVRPC, 2018
Designated Village Center: CVRPC 2008
Surface Water: VHD, VCGI 2008
Roads: VTrans 2019
Sites: CVRPC, 2015 created from
VT Historic Registry
N:\Towns\Plainfield\Projects 2019\
Plainfield 2019 Town Plan\
Plainfield_Town_Historic_Registry_Sites.mxd
This map is for planning purposes only.
Data is only as accurate as the original sources.
This map may contain errors or omissions.
CVRPC
CENTRAL VERMONT REGIONAL PLANNING COMMISSION


Plainfield Transportation
EAST MONTPELIER
MARSHFIELD
GROTON
ORANGE
TAYLOR FARM RD
VT ROUTE 214
PITKIN RD
HIGH ST
TOWNE AVE
SCHOOL ST
MAIN ST
COBURN RD
US ROUTE 2
RECREATION FIELD RD
MILL ST
CREAMERY ST
BARRE HL
EAST HILL RD
CAMERON RD
BATCHELDER RD
KATUAH RD
CENTER SCHOOL RD
LINDEMANN LN
COUNTRY CLUB RD
NEW HAMBURGER RD
CERUTTI RD
LOWER RD
DRAKE RD
DRAKE RD
MIDDLE RD
BARTLETT RD
FARNHAM RD
UPPER RD
THOMPSON RD
FOWLER RD
WOODCOCK RD
E HILL RD
BEAN RD
BROOK RD
PERCYS PL
GRAY RD
DIX HILL RD
SPRUCE MTN RD
LEE RD
PEACEFUL WAY
EAST HILL RD
SPRUCE MOUNTAIN RD
SFH
FLOOD RD
GONYEAU RD
UPPER RD
GONYEAU RD
MAXFIELD RD
PERKINS RD
GORE RD
Roads
US Highway
State Highway
Town Highway Class 2 and 3
Town Highway Class 4
State Forest Highway
Private Roads
Legal Trail
Rivers, Lakes, and Ponds
Streams
N
0
0.5
1
2
Miles
Data Sets:
Surface Waters: VHD, VCGI 2008
Roads: VTRANS, VCGI 2019
Map created 11/22/2019
Data is only as accurate as the original sources.
This map is for planning purposes only.
This map may contain errors and or omissions.
CVRPC
CENTRAL VERMONT REGIONAL PLANNING COMMISSION


Plainfield Utilities and Facilities
Inset
VT ROUTE 214
TAYLOR FARM RD
PITKIN RD
HIGH ST
SCHOOL ST
MAIN ST
MILL ST
CREAMERY ST
BARRE HL
FIELD RD
COBURN RD
US ROUTE 2
EAST HILL RD
CAMERON RD
BATCHELDER RD
KATUAH RD
CENTER SCHOOL RD
LINDEMANN LN
COUNTRY CLUB RD
NEW HAMBURGER RD
CERUTTI RD
LOWER RD
DRAKE RD
DRAKE
MIDDLE RD
BARTLETT RD
FARNHAM RD
UPPER RD
THOMPSON RD
FLOOD RD
GONYEAU RD
UPPER RD
GONYEAU RD
FOWLER RD
WOODCOCK RD
BROOK RD
E HILL RD
BEAN RD
PERCYS PL
GRAY RD
DIX HILL RD
LEE RD
EAST HILL RD
SPRUCE MTN RD
PEACEFUL WAY
SPRUCE MOUNTAIN RD
SFH
MAXFIELD RD
PERKINS RD
GORE RD
SUGARWOOD RD
HIGH ST
MAIN ST
US ROUTE 2
RECREATION FIELD RD
BARRE HL
BROOK RD
EAST HILL RD
Utilities and Facilities
Communication Tower
FIRE STATION
GAS STATION
MUNICIPAL
GROCERY STORE
HEALTH CLINIC
LIBRARY
POST OFFICE
UTILITY
BIOMASS FACILITY
Green Mountain Power Transmission Lines
Goddard College
Maplehill School
Cable Routes
Municipal Wastewater Area
L.R. Jones State Forest
Town Owned
N
0
0.5
1
2
Miles
Data Sets:
Utilities and Facilities: E911 2019
Green Mountain Power Lines: VCGI 2018
Surface Waters: VHD, VCGI 2008
Roads: VTRANS, VCGI 2019
Map created 11/22/2019
Data is only as accurate as the original sources.
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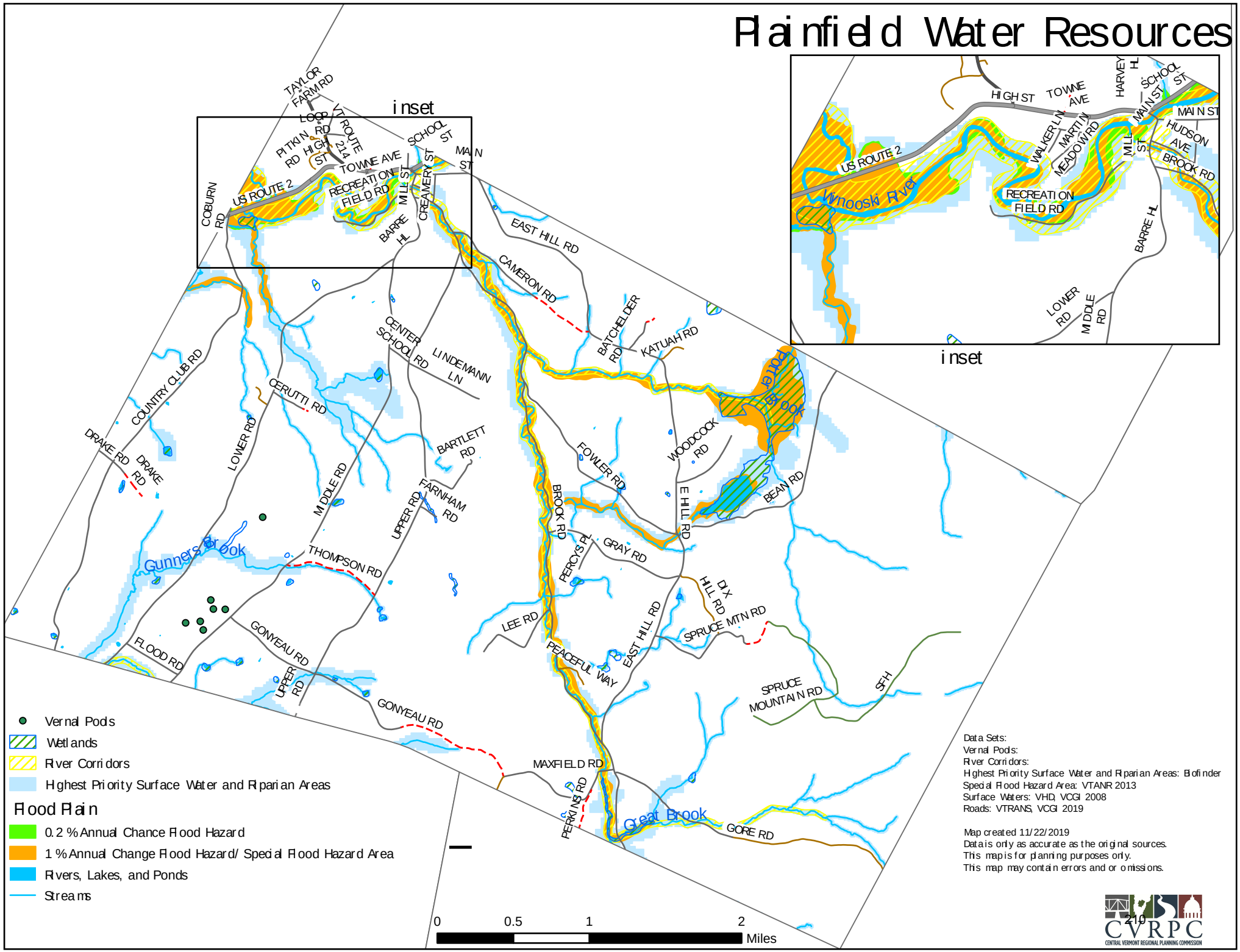
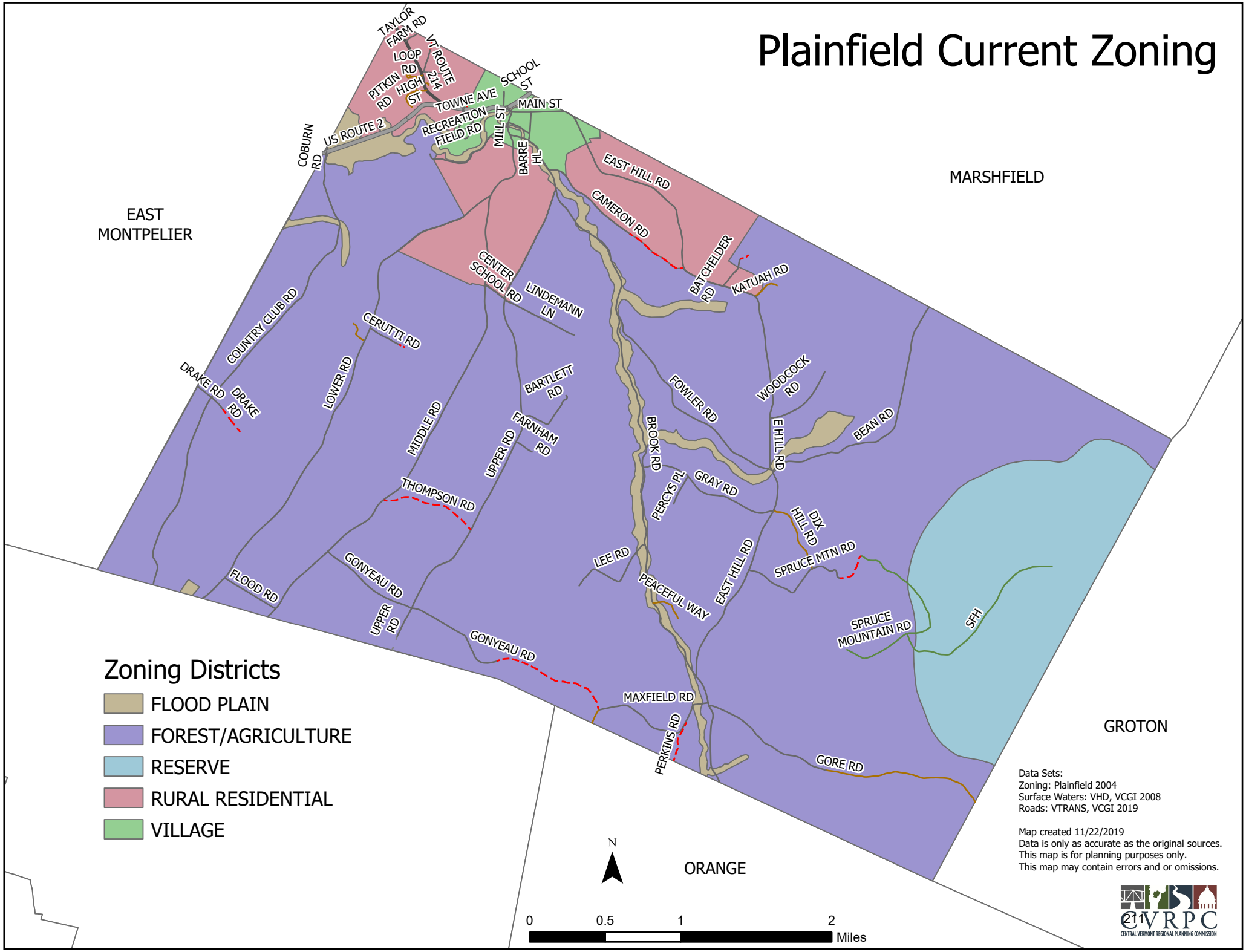

Plainfield Water Resources
inset
TAYLOR FARM RD
LOOP RD
PITKIN RD
HIGH ST
ROUTE 214
SCHOOL ST
MAIN ST
TOWNE AVE
RECREATION FIELD RD
MILL ST
CREAMERY ST
BARRE HL
COBURN RD
US ROUTE 2
EAST HILL RD
CAMERON RD
BATCHELDER RD
KATUAH RD
CENTER SCHOOL RD
LINDEMANN LN
COUNTRY CLUB RD
DRAKE RD
CERUTTI RD
LOWER RD
MIDDLE RD
BARTLETT RD
FARNHAM RD
UPPER RD
THOMPSON RD
Gunners Brook
FLOOD RD
GONYEAU RD
FOWLER RD
WOODCOCK RD
BEAN RD
E HILL RD
BROOK RD
PERCYS PL
GRAY RD
LEE RD
PEACEFUL WAY
EAST HILL RD
DIX HILL RD
SPRUCE MTN RD
SPRUCE MOUNTAIN RD
SFH
MAXFIELD RD
PERKINS RD
Great Brook
GORE RD
Winooski River
HIGH ST
TOWNE AVE
HARVEY HL
SCHOOL ST
MAIN ST
WALKER LN
MARTIN MEADOW RD
HUDSON AVE
BROOK RD
LOWER RD
MIDDLE RD
Vernal Pools
Wetlands
River Corridors
Highest Priority Surface Water and Riparian Areas
Flood Plain
0.2 % Annual Chance Flood Hazard
1 % Annual Change Flood Hazard/ Special Flood Hazard Area
Rivers, Lakes, and Ponds
Streams
0
0.5
1
2
Miles
Data Sets:
Vernal Pools:
River Corridors:
Highest Priority Surface Water and Riparian Areas: Biofinder
Special Flood Hazard Area: VTANR 2013
Surface Waters: VHD, VCGI 2008
Roads: VTRANS, VCGI 2019
Map created 11/22/2019
Data is only as accurate as the original sources.
This map is for planning purposes only.
This map may contain errors and or omissions.
CVRPC
CENTRAL VERMONT REGIONAL PLANNING COMMISSION


Plainfield Current Zoning
TAYLOR FARM RD
LOOP
VT ROUTE 214
PITKIN RD
HIGH ST
SCHOOL ST
TOWNE AVE
MAIN ST
RECREATION FIELD RD
MILL ST
BARRE HL
US ROUTE 2
COBURN RD
EAST HILL RD
CAMERON RD
BATCHELDER RD
KATUAH RD
MARSHFIELD
EAST MONTPELIER
CENTER SCHOOL RD
LINDEMANN LN
COUNTRY CLUB RD
CERUTTI RD
DRAKE RD
DRAKE RD
LOWER RD
MIDDLE RD
BARTLETT RD
FARNHAM RD
UPPER RD
THOMPSON RD
FOWLER RD
WOODCOCK RD
BROOK RD
E HILL RD
BEAN RD
PERCYS PL
GRAY RD
DIX HILL RD
SPRUCE MTN RD
EAST HILL RD
LEE RD
PEACEFUL WAY
FLOOD RD
GONYEAU RD
UPPER RD
GONYEAU RD
SPRUCE MOUNTAIN RD
SFH
MAXFIELD RD
PERKINS RD
GORE RD
GROTON
ORANGE
Zoning Districts
FLOOD PLAIN
FOREST/AGRICULTURE
RESERVE
RURAL RESIDENTIAL
VILLAGE
N
0
0.5
1
2
Miles
Data Sets:
Zoning: Plainfield 2004
Surface Waters: VHD, VCGI 2008
Roads: VTRANS, VCGI 2019
Map created 11/22/2019
Data is only as accurate as the original sources.
This map is for planning purposes only.
This map may contain errors and or omissions.
VRPC
CENTRAL VERMONT REGIONAL PLANNING COMMISSION