

TOWN PLAN

Town of Marlboro
Vermont

Adopted by the Select Board
January 13, 2022

TOWN PLAN

TOWN OF MARLBORO, VERMONT

TABLE OF CONTENTS

TABLE OF CONTENTS	i
I. INTRODUCTION.....	1
PURPOSE OF MARLBORO TOWN PLAN	1
HOW THE TOWN PLAN WAS DEVELOPED.....	1
PROCESS FOR ADOPTION, MODIFICATION AND UPDATING	1
INTERPRETATION OF THE TOWN PLAN	2
II. COMMUNITY PROFILE.....	3
HISTORY OF MARLBORO, VERMONT.....	3
POPULATION TRENDS	4
HOUSING.....	6
ECONOMIC DEVELOPMENT	7
TOWN GOVERNMENT	9
DEVELOPMENT TRENDS IN ADJACENT TOWNS.....	10
III. TOWN PLAN ELEMENTS AND STATEMENT OF OBJECTIVES.....	12
STATEMENT OF OBJECTIVES.....	12
A. COMMUNITY DEVELOPMENT, FACILITIES AND SERVICES.....	14
TOWN PROPERTY	14
FIRE AND POLICE PROTECTION	14
HEALTH AND EMERGENCY SERVICES	15
EMERGENCY MANAGEMENT	16
SOLID WASTE.....	16
RECREATION	16
OTHER COMMUNITY SERVICES.....	17
SMALL BUSINESSES.....	18
TELECOMMUNICATION SERVICES	18
TAX BASE.....	19
COMMUNITY DEVELOPMENT, FACILITIES, AND SERVICES: POLICIES & ACTION STEPS	19
B. EDUCATION & CHILDCARE	21
EDUCATION: POLICIES & ACTION STEPS.....	23
C. TRANSPORTATION.....	25
TRANSPORTATION: POLICIES & ACTION STEPS	26
D. ENERGY.....	29
IMPORTANCE OF ENHANCED ENERGY PLANNING.....	29
MARLBORO'S CURRENT ENERGY USE	30
MARLBORO'S RESOURCES, CONSTRAINTS, & POTENTIAL FOR ENERGY GENERATION.....	33
MARLBORO'S ENERGY TARGETS AND CONSERVATION CHALLENGES	34
ENERGY GOALS POLICIES & ACTION STEPS.....	40

E. HOUSING	44
TRENDS IN HOUSING	44
SEASONAL HOUSING AND SHORT-TERM HOUSING.....	45
AFFORDABLE HOUSING	45
SENIOR/ELDERLY HOUSING	46
HOUSING: POLICIES AND ACTION STEPS	46
F. SCENIC AREAS, HISTORIC RESOURCES, EXTERIOR LIGHTING, AND TELECOMMUNICATIONS.....	49
SCENIC AREAS	49
HISTORIC RESOURCES	49
EXTERIOR LIGHTING	50
TELECOMMUNICATIONS	50
SCENIC AREAS, HISTORIC RESOURCES, EXTERIOR LIGHTING, AND TELECOMMUNICATIONS: POLICIES & ACTION STEPS	51
G. NATURAL RESOURCES.....	54
WATER RESOURCES	54
SOILS AND TOPOGRAPHY	57
FOREST AND WILDLIFE RESOURCES	58
AGRICULTURAL RESOURCES	64
WIND AND SOLAR RESOURCES	65
EARTH RESOURCES: GRAVEL, SAND, AND MINERAL DEPOSITS.....	65
NATURAL RESOURCES: POLICIES.....	66
H. LAND USE.....	71
SEPTIC SYSTEM SUITABILITY	71
LAND USE INVENTORY AND DESCRIPTION.....	71
PATTERN OF LAND USE AND SETTLEMENT	72
CONSEQUENCES OF DISPERSED SETTLEMENT	73
LAND USE CLASSIFICATION	73
OTHER LAND USE CONSIDERATIONS	76
LAND USE: POLICIES & ACTION STEPS:	77
IV. COMPATIBILITY WITH TOWN PLANS AND WINDHAM REGIONAL PLAN.....	79
V. METHODS OF IMPLEMENTATION.....	80
VI. TOWN PLAN MAPS AND EXPLANATIONS.....	82
MAP 1: NATURAL RESOURCES & HABITAT FEATURES	82
MAP 2: FOREST BLOCKS & WILDLIFE LINKAGES	82
MAP 3: WATER RESOURCES & WATER PROTECTION AREAS	82
MAP 4: CULTURAL RESOURCES, COMMUNITY FACILITIES, AND TRANSPORTATION.....	82
MAP 5: SOLAR ENERGY POTENTIAL.....	83
MAP 6: EXISTING LAND USE	83
MAP 7: FUTURE LAND USE.....	83

LIST OF TABLES

Table 1. Historical Population Data.....	4
Table 2. Age of Population, Town of Marlboro, VT	5
Table 3. Population Trends in Nearby Towns, Windham County and State of Vermont	5

Table 4. Population Projections for Marlboro	6
Table 5. Housing Types & Occupancy for Marlboro	6
Table 6. New Dwelling Permits, Town of Marlboro, VT	6
Table 7. Adjusted Median Household Income	7
Table 8. Marlboro Annual Expenditures.....	10
Table 9. Marlboro School Enrollment	21

LIST OF FIGURES

Figure 1. Energy Consumption per Sector	29
Figure 2. Electricity Consumption Data From Efficiency Vermont (2017).....	30
Figure 3. Estimated Total Annual Energy Consumption of Internal Combustion Vehicles	31
Figure 4. Comparison of Owner and Renter-Occupied Housing Units and Their Respective Fuel Use ...	31
Figure 5. LEAP Results for Marlboro's Residential Heating Sector.....	35
Figure 6: LEAP Light-Duty Vehicle Efficiencies	36
Figure 7: LEAP Heavy-Duty Vehicle Efficiencies	36
Figure 8: LEAP Electricity Conservation	37
Figure 9. Marlboro's Forest Blocks.....	58



I. INTRODUCTION

PURPOSE OF MARLBORO TOWN PLAN

The Marlboro Town Plan is designed to provide guidelines for planning the future of the Town of Marlboro so that community actions, whether private or public, will (a) conform to the wishes of its citizens; (b) avoid the adverse and sometimes irreversible effects often associated with unplanned development; and (c) take into account the planning measures of the State, the Windham Region, and adjoining towns.

The Town Plan is to be used by public officials, businesses, landowners, and residents in a number of ways:

1. To recommend future community programs, actions, and studies that will help ensure a continuous planning program.
2. To provide a framework for zoning and any other bylaw or ordinance the Town may adopt.
3. To guide local decision-making in the review of development proposals, including site plan, conditional use, and subdivision reviews.
4. To serve as a basis for responding to development proposals requiring Act 250 permits or any other similar State or Federal review proceedings.
5. To guide State planning processes.
6. To provide a source of information about the Town.

HOW THE TOWN PLAN WAS DEVELOPED

In response to the passage of the Vermont Municipal and Regional Planning and Development Act (Title 24 V.S.A. Chapter 117) in 1968, a generalized planning study for Marlboro and other Vermont towns was completed by Planners' Collaborative of Syracuse, New York. That prototype Town Plan, with some modifications, was adopted by Marlboro shortly thereafter and has been readopted with appropriate and necessary modifications every five years since.

The Town Plan is designed to comply with Chapter 117, in terms of its content (i.e. its ten elements), consistency with Vermont's seventeen planning goals, and compatibility with other Town Plans and the Windham Regional Plan. The Marlboro Planning Commission provided the principal direction for the update of the Town Plan. The Town received technical assistance from the Windham Regional Commission for planning and mapping services, funded in part by a Municipal Planning Grant to the Town.

PROCESS FOR ADOPTION, MODIFICATION AND UPDATING

Formal adoption of the Town Plan will take place after public hearings of the Planning Commission and Selectboard. The Plan is adopted by a majority vote of the Selectboard. A Town Plan expires five years from the day of adoption.

Planning is an ongoing process. Once adopted, the Town Plan continues to be reviewed every few years to account for new information about the Town, new public needs and desires as expressed by the citizens

of Marlboro, and new or modified requirements of the state. This review is one of the main responsibilities of the Marlboro Planning Commission. A Town Plan can be modified and formally amended (through public hearings and adoption by the Selectboard) at any time during the 5-year period.

INTERPRETATION OF THE TOWN PLAN

In situations where the interpretation of the Plan is needed or required, it will be the task of the Marlboro Planning Commission, in cooperation with the Marlboro Selectboard, to conduct a review and issue an interpretive judgment. Throughout the text of this Town Plan many of the policy statements include imperative verbs. "Should" or "may" means that a policy is encouraged but not mandated, whereas "must" or "shall" means that the Town has strong intentions of ensuring that a policy is implemented



II. COMMUNITY PROFILE

HISTORY OF MARLBORO, VERMONT

Marlboro, Vermont is a rural hill town of 26,240 acres or 41 square miles in southern Windham County. Rugged topography and distance from commercial and resort centers have kept the Town small (2010 population 1,078), and have forestalled thus far the pressure for rapid growth and large-scale development affecting many nearby towns. As the site of several recreational facilities and cultural institutions, Marlboro has both regional and statewide importance. Its value to permanent and seasonal residents, students, and visitors alike depends on continued maintenance of its scenic, rural character.

Marlboro, also called "New Marlborough" and "Marlborough" prior to 1800, was first granted a charter from the Crown of England in 1751. Since no settlement took place, that charter was forfeited and a second charter was granted in 1761 to Timothy Dwight and his associates of Northampton, Massachusetts; these charters were all part of the New Hampshire Grants. A third charter was granted to Charles Phelps and his associates in 1764 by the Provincial Government of New Hampshire. Based on the 1761 charter, Marlboro was surveyed in 1762 with the creation of 64 equal divisions of "rights" excepting four lots in the center of the town. A copy of this original plan can be seen at the Town Office.

Marlboro's first settlers came in the spring of 1763. The Town's population peaked at nearly 1300 in 1820, but declined in the following decades in response to economic troubles, westward migration, and the decline of hill farming. As indicated in the section on population trends, there has been a high rate of growth ever since the low of 225 residents in 1940.

In 1782, there were five school districts, two in the western half of Marlboro and three in the east. By 1799 there were 313 "scholars" between the ages of 4 and 18 attending school in seven districts.

Marlboro's first Congregational Church, "a substantial building of the best timber selected from the surrounding forests" (Newton's History of the Town of Marlborough), was built in 1778 on Meetinghouse Hill, now known as Town Hill. In 1820, a second church was built near the first, which by then was in disrepair. In 1822, the Marlboro Town House was built using timbers and boards from the first Congregational Church. It was located at the southwest corner of the "New Meeting House Common" on Town Hill. Annual Town Meetings have been held in the Town House since then.

These two buildings, the Marlboro Meeting House and the Town House, were moved down the hill to the present village center between 1836 and 1844. The Marlboro Meeting House, placed near the inn, burned in June, 1931, along with two small houses and a barn. The fire started in a defective chimney of the house next door and lack of adequate water supply prevented the Brattleboro fire department to save the church. It was rebuilt and dedicated in 1933. The Town House was placed on the east side of South Road, and remained there until 1965 when it was moved across the road to its present location.

Many industries and activities have been based in the village. At various times, there were: two inns, a brick schoolhouse, a frame schoolhouse, high school classes in the Marlboro Meeting House, a carpenter, a blacksmith, a wheelwright, a wagon maker, stores, an ashery, a tan house, a post office, parsonages, a doctor-in-residence, a chair factory, the Town pound, and in recent years, the museum of the historical society. Another fire in September, 1931, on the east side of the road, was caused by a lightning strike to the large barn owned by the inn and spread to an adjacent shed then to Baxter's general store, destroying all three buildings and their contents.

After numerous studies and discussions, the town center of Marlboro Common took its present form with the building of the Town Office in 1969, located between the Marlboro Meeting House and the Town House. The structure provides for the Town Office and the Post Office.

The Marlboro of yesterday included a variety of traditional rural pursuits: agriculture in the form of dairies, grains, flax, wool, potatoes, and fruit; lumbering which involved many mills; soapstone quarrying; sugaring; soap making; and charcoal making. The ledgers of many self-employed craftsmen show typical self-sufficiency. Hogback Mountain, one of Vermont's first ski areas, was a popular alpine ski area for many years.

The Marlboro of today has inns, lodges and restaurants, artists and artisans, a college, a summer music school, a summer camp and farms, all still in a setting of natural beauty which includes three lakes and many unspoiled roads and trails. The physical characteristics and natural resources of Marlboro have influenced its history, and will continue to influence its settlement and growth in the future.

POPULATION TRENDS

In 2010, population totaled 1,078 persons. This is a growth rate of 10.22%, compared to only .58% for Windham County, for 2000-2010. Interestingly, the current population is almost equal to that of 1800. Census figures show a sharp increase in Marlboro's population between 1940 and 1950. This can be attributed to the founding of Marlboro College in 1946, which brought permanent faculty and other staff to Marlboro. Furthermore, each year, some students stayed to become Marlboro residents.

Table 1. Historical Population, Town of Marlboro, VT

Year	Population	Total Increase	Percent Change
1800	1,087	---	---
1850	896	-191	-18%
1900	448	-448	-50%
1940	225	-223	-49%
1950	311	86	38.22
1960	347	36	11.58
1970	592	245	70.61
1980	695	103	17.40
1990	924	229	32.95
2000	978	54	6.00
2010	1,078	100	10.22

Source: U.S. Bureau of the Census

Marlboro grew at an exceedingly high rate (70.61%) between 1960 and 1970. Several factors contributed to this and have continued to affect the growth rate, but the primary reason for this huge jump is that the U.S. Census in 1970 started to count the students at Marlboro College as residents of the Town.

The student population continues to influence the population and economics of the Town. According to the 2010 census, 862 individuals were living in households and 216 in “group quarters”, or on-campus college housing.

Table 2 shows age distribution in Marlboro for the 20 years from 1990 to 2010. The greatest population increase has been in children under 20 (+55), and over 64 (+61). Of special note here is the rising number over 85 (13). The median age in Marlboro is now 41.6, an increase from 36.7 ten years ago.

Table 2. Age of Population, Town of Marlboro, VT

Age	1990	2000	2010	% Change 1980-1990	% Change 1990-2000	% Change 2000-2010
19 years and under*	198	186	241	77%	-6%	29.6%
20-64 years	655	694	678	25%	6%	-2.36%
65 years and older	71	98	159	20%	38%	62.24%
Total	924	978	1,078	33%	6%	10.22%
Median age (years)	30	36.7	41.6	11%	22%	13.4%

*1990 and 2000, population divided up to 18; in 2010 divided to 19

Source: U. S. Bureau of the Census 1990, 2000, & 2010

The towns surrounding Marlboro have experienced mixed growth in the last decade. Table 3 compares Marlboro's growth with that of other nearby towns, Windham County, and the State of Vermont.

Table 3. Population Trends in Nearby Towns, Windham County and State of Vermont

Town/Area	1990	2000	2010	Total Increase	Percent Change 2000 to 2010
Marlboro	924	978	1,078	100	10.2 %
Brattleboro	12,241	12,005	12,046	41	0.3 %
Guilford	1,941	2,046	2,121	75	3.7 %
Halifax	588	782	728	-54	-6.9 %
Wilmington	1,968	2,225	1,876	-349	-15.7 %
Dover	994	1,410	1,124	-286	-20.3 %
Whitingham	1,177	1,298	1,357	59	4.5 %
Newfane	1,555	1,680	1,726	46	2.7 %
Dummerston	1,863	1,915	1,864	-51	-2.7 %
Windham County	41,588	46,449	46,720	271	0.58 %
State of Vermont	562,758	608,827	625,741	16,914	2.8%

Source: U.S. Bureau of the Census, 1990, 2000 & 2010

Table 4 lists population projections for Marlboro, which indicate a small but steady growth is expected over the next 10 years.

Table 4. Population Projections for Marlboro

Year	1990 Census	2000 Census	2010 Census	2020 Projected
Count	924	978	1,078	1,180

It should be noted that between 2000 and 2010 Marlboro had the highest percentage increase in population (+10.2%) of all of the nine Windham area towns with which it was compared in Table 3 above. This increase was more than double the next highest increase (Whitingham at +4.5%) and far exceeded Windham county as a whole (at +0.58%). The much-debated 2020 census became available to the public beginning in October 2021. This came in the midst of the drafting of this edition of the Town Plan. A thorough analysis of this data should be on the agenda of the Planning Commission as it makes updates to the Town Plan in the near future.

HOUSING

Marlboro is primarily a residential community and most of its residents live in single-family detached dwellings. Table 5 provides a picture of the types of housing in Marlboro as well as trends in total number of housing units from 2000-2010. Seasonal housing continues to represent a significant share (24%) of the total housing stock, but does not include campus housing at Marlboro College.

Table 5. Housing Types & Occupancy for Marlboro

TYPE OF UNIT	2000 NUMBER OF UNITS	2010 NUMBER OF UNITS	% CHANGE 2000-2010
Owner-occupied	272	309	13.6%
Renter-occupied	58	69	18.97%
Seasonal	153	126	-21.43%
For sale/rent	7	7	0.0%
All other vacant	7	15	114.29%
TOTAL	497	526	5.83%

Source: U.S. Bureau of the Census, 2000, 2010

Marlboro has continued to have a modest growth pattern in number of households. It had a total of 378 households in 2010, an increase from 330 households in 2000, 296 households in 1990, and 240 households in 1980. The average household size, however, has continued to decline from 2.39 in 2000 to 2.28 in 2010. In 2000, owner-occupied household size was 2.44 compared to 2.33 owner-occupied in 2010. Rental-occupied household size was 2.19 compared to 2.07 in 2010.

According to American Community Survey estimates, approximately 30% of Marlboro's housing stock is 50 years or older. Home construction was slow during the 1940s and increased slightly during the 1950s and 1960s. As shown in Table 6, new housing permits have decreased since peaking in the '70s and '80s.

Table 6. New Dwelling Permits, Town of Marlboro, Vermont

YEAR OF PERMIT	NUMBER OF NEW DWELLING PERMITS
1970-1979	126
1980-1989	84
1990-1999	46
2000-2009	45
2010-2018	23

Source: Marlboro building permits

ECONOMIC DEVELOPMENT

1. ECONOMIC CONDITIONS

Although Marlboro functions with a large measure of independence and rural self-sufficiency, its economy is closely related to that of neighboring towns, the Windham Region, the State of Vermont, and the nation. For instance, the Marlboro School of Music and Festival and Camp Neringa draw their students, patrons, and campers from a wide geographic area, and many of the Town's businesses are tourism-oriented.

In 2000 the average travel time to work was 23.5 minutes; in 2010 it was 31.3 minutes and 2017 was 22.6 minutes. (2010 Data Source: DP03 Selected Economic Characteristics 2006-2010 American Community Survey (ACS) 5-Year Estimates. 2017 Data Source: 2013-2017 ACS 5-Year Estimates).

In 2000 45 workers in Marlboro worked outside of Vermont; in 2010 this number more than doubled to 99 but then decreased to 36 according to 2017 ACS estimates. The total number of workers 16 years and older decreased from 561 in 2000 to 509 in 2010 and then to 496 in 2017 (2010 Data Source: B08007 Place of Work, State and County Level, Workers 16 years and over 2006-2010 ACS 5-Year Estimates. 2017 Data Source: 2013-2017 ACS 5-Year Estimates).

For the years 2005-2009, 8-9 households received benefits from the Supplemental Nutrition Assistance Program (formerly known as food stamps). In 2010 this increased to 35 households and then 36 households by 2017 estimates. In 2010, Marlboro had a 2.25% unemployment rate, as opposed to 6.25% in Windham County, and 8.08% in Vermont. In 2017, Marlboro's unemployment rate increased to 5% compared to the declining rates of 5.6% in Windham County and 4.4% in Vermont.

(2006-2010 ACS 5-year Estimates, DP03 Selected Economic Characteristics 2005-2009, <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>. 2017 Data Source: 2013-2017 ACS 5-Year Estimates).

Economic data is sourced from the American Community Survey (ACS) which offers more recent statistics than the decennial census. However, the ACS uses a sample to collect data and Marlboro's small population leads to very small sample sizes with high margins of error. The economic figures used are presented as percentages rather than exact counts and are used to interpret trends and patterns rather than actual numbers.

Table 7. Adjusted Median Household Income

	Adjusted Median Household Income, 1979	Adjusted Median Household Income, 1989	Adjusted Median Household Income, 1999	Adjusted Median Household Income, 2009	Adjusted Median Household Income, 2017
Marlboro	\$39,621	\$54,286	\$55,936	\$40,867	\$57,808
Windham County	\$40,472	\$48,041	\$49,197	\$63,277	\$50,831
Vermont	\$43,705	\$51,544	\$52,612	\$51,555	\$66,528

Source: American Community Survey 5-year Estimates. Adjusted to 2011, and US Census.

Note: 2017 data is the most recent at the time of the writing of this report.

One of the issues needing analysis is who is included in ACS household incomes, as Marlboro College's sizable student population may or may not have been included in the median income estimates. As mentioned previously, of the 1,078 total population in 2010, 216 lived in group quarters, reflecting on-campus students, and 75 of 862 householders were non-relatives including some off-campus students (US Census 2010). For 2017, ACS reported an estimate of non-family income of \$32,000.

Reflecting the lack of public transportation and the town's hilly nature, out of the 496 workers in 2017, 54.8% drove to work alone, 2.4% carpooled, 0% commuted by public transport, 18.3% walked to work (an increase of 89.6% since 2010), 1.4% commuted by some other means, and 23% worked at home (an increase of 67.6% since 2010). (2010 Data Source: DP04 Selected Housing Characteristics; 2013-2017 American Community Survey 5-Year Estimates).

Marlboro residents clearly value the quality of their life in town enough to commute longer distances, or adapt and work from home, rather than leave their homesteads.

Many necessary public and private services, such as heating fuel, power, medical services, library facilities, recreational facilities, secondary school, and social services are to be found outside of Marlboro. Nonresident landowners, who are important contributors to Marlboro's tax income, as well as to its tourist-oriented commerce, are much influenced by national and international economic trends.

Like that of many other Windham Region towns, Marlboro's economy has evolved from traditional bases in agriculture, natural resources and manufacturing of durable goods to new bases in services (including education and health services, construction, and real estate), and wholesale/retail trade and the arts.

The VT Department of Employment and Training data indicate that a high proportion of the workforce is employed in professional or service occupations. While most employment opportunities are centered elsewhere, there are also opportunities in Marlboro. Many of Marlboro's residents are self-employed with home-based workshops, telecommuting, or other businesses that provide work opportunities.

2. LOCATION AND SCALE OF DESIRED ECONOMIC DEVELOPMENT

The focus in Marlboro is to continue to support local, often home-based, businesses. Marlboro's settlements are non-localized, so means to increase communication both within and without the town, both in transportation and through the internet, need to be encouraged.

As Marlboro plans for its economic growth, the following factors must be considered:

- Infrastructure: Adequate infrastructure is essential to support economic activities. Marlboro does not have a public water or sewer system anywhere in Town. This limits the scale and type of businesses which can locate to town.
- Land Use: Flexibility in land use is important to allow for the expansion of existing operations while preventing expansion of commercial growth that is out of scale with existing development along the Route 9 corridor.

3. PROJECTS, PROGRAMS, AND POLICIES NECESSARY TO FOSTER ECONOMIC GROWTH

Residents choose to live in Marlboro for its esthetic, natural, and historic rural character, as well as its educational opportunities. They are willing to travel far to employment, or create a home business to be able to live where they do. These qualities must be maintained while focusing on the evidence of the difficulty of making a survivable income in town. There is an increasing number of elderly living in Marlboro whose needs must also be addressed through communication and transportation networks, and health, housing and social services.

By establishing clear commercial districts, the Zoning regulations of Marlboro adopted in March of 2018 make it possible to cluster economic development in two areas of the town (see Zoning Maps) where businesses can create hubs of commerce. These areas are both adjacent to Route 9, one along an eastern stretch and the other near the western border of town. Other development benefits of the Zoning

Regulations are to more clearly define areas for agriculture and forestry in several parts of the town and separate areas for residential development. The Town Center District is a good example of the latter.

Economic Development Policies

1. Promote economic development that provides for the wise and sustainable use of Marlboro's natural resources and preserves overall environmental quality.
2. Encourage the development of home-based work and entrepreneurial ventures which preserve and revitalize Marlboro's rural character and minimize adverse impact on the community's environment or infrastructure.
3. Prevent scattered development.
4. Encourage local manufacturing and marketing of value-added agricultural and forestry products.

In order to maintain the character of Marlboro and foster its economic growth, the following projects will be promoted:

1. Town-wide high-speed broadband service of highest priority.
2. Public transportation to and from the center of Marlboro, the college campus, and other locations to Wilmington and Brattleboro.
3. Establishment of a community center/cooperative store to enhance communication and community projects.
4. Continued support for community projects facilitated through the Marlboro Alliance.
5. Exploration of affordable senior housing and other joint projects with the new owners of the former Marlboro College campus.
6. Support existing diversity of economic base. Participate in economic development planning with neighboring towns and Windham Regional Commission.

TOWN GOVERNMENT

The government of the Town of Marlboro derives its authority from its general charter and from the Vermont Constitution. There are three selectmen for the Town each of whom serves a three-year elected term. Selectmen are responsible for the general supervision of the affairs of the Town and must see that all duties imposed by Vermont State Statutes upon towns and school districts are performed.

The Town functions through the active participation of its residents and volunteer groups. Many residents serve on various boards and committees and either join or financially support various associations in Town. The Town employs several road workers and an administrative assistant and provides stipends or salaries to the following elected officials: Town Clerk, Town Treasurer, Selectboard, School Board, Auditors, Listers, and Town Constable; and the following appointed officials: Assistant Town Clerk, Assistant Town Treasurer, Zoning Administrator and Health Officer. The Marlboro School District employs 30 individuals who are involved with administration, teaching, support services, and health services.

The Marlboro Planning Commission consists of up to nine (9) members who are appointed by the Selectboard. The Commission is the legislative body responsible for drafting the Town Plan and creating both regulatory and non-regulatory tools that implement the Town Plan, including writing bylaws and performing any pertinent planning studies.

The Marlboro Development Review Board (DRB) is also appointed by the Selectboard and consists of five members, with two alternates. The DRB is the quasi-judicial entity responsible for hearing all applications for development review, including applications for site plan, subdivision, variance requests, conditional use applications, appeals of the decisions of the Zoning Administrator, and any other reviews authorized by the bylaws.

The following ordinances and bylaws are in force in the Town of Marlboro: Zoning Regulations (including Flood Hazard Regulations), Subdivision Regulations, Driveway Ordinance, Road Naming Ordinance, and Dog Ordinance.

Local revenue is generated through property taxes, State funds, permits and licenses, fees and charges for services, and other miscellaneous reimbursements. Property taxes comprise roughly 86% of the total income for both Town and School expenses. Table 8 shows how Town expenditures were dispersed in 2000, 2005, and 2010.

Table 8. Marlboro Town Expenditures

	2000	2005	2010	2015
Select Board Budget	\$427,027	\$ 435,685	\$483,860	\$608,636
Adopted School Budget	\$1,061,797	\$1,983,454	\$2,048,173	\$2,697,898

Source: Marlboro Town Reports, 2001, 2006, 2011, and 2016

Note - This table simplifies and replaces one from previous editions of the Marlboro Town Plan. It is an effort to track for readers the growth of spending for the town and the Marlboro Elementary School. It represents the amount budgeted for both and approved at Town Meeting but does not cover the actual amount spent which for some years is a minor difference.

Future Growth in Population and Housing

Marlboro's population growth has been affected by several factors. Good highway access has made it possible for those working in nearby, more populated areas to live in rural Marlboro. The excellent reputation of the Marlboro Elementary School has attracted families from surrounding communities. In addition, many of Marlboro's formerly seasonal residents have chosen to reside here. Finally, the presence of the Marlboro School of Music and Festival draws faculty, students, and visitors, some of whom become new permanent residents. This trend is expected to continue.

DEVELOPMENT TRENDS IN ADJACENT TOWNS

Marlboro shares boundaries with Brattleboro, Halifax, Newfane, Dummerston, Wilmington, Guilford, and Dover. Marlboro's neighboring towns are small to medium in size and principally rural except for the regional center of Brattleboro. Wilmington and Dover (home of Mount Snow) serve as the hub for year-round recreational activity in the Deerfield Valley.

Marlboro residents and businesses depend on Brattleboro for its full range and diversity of institutional (including schools), governmental, cultural, and recreational opportunities. Although some Marlboro residents and businesses may rely on Wilmington commercially, the Deerfield Valley does not provide the same level of services that Brattleboro does, except, of course, for commercial recreational and cultural activities. The greatest impact that Marlboro faces from its Deerfield Valley neighbors is the year-round visitor traffic along Route 9, and increasing traffic along roads in Marlboro, such as Higley Hill Road, and Upper Dover Road. As was clear during Tropical Storm Irene, Ames Hill Road is a major East-West corridor when Route 9 is closed, and it is a high priority that it be maintained to be able to

perform this service. Another impact is the development pressure for vacation homes and housing for seasonal employees.

Census data shows that new residents moving into Windham County choose to live in rural areas, and therefore move to smaller towns like Marlboro and its neighbors. New residents seek not only a rural environment, but also to avoid higher tax rates found in Brattleboro. The scenic landscape of Marlboro is attractive and will continue to draw new residents.



III. TOWN PLAN ELEMENTS AND STATEMENT OF OBJECTIVES

The Town Plan is based on a Statement of Objectives, which outlines a direction for the future of Marlboro. Following the Statement of Objectives are several chapters, which provide background information about the Town's physical features, natural and cultural resources, community facilities, and land use. An effort has been made to provide users of the Plan with sufficient background material and inventory data to support the policies and objectives articulated in the Plan.

The Statement of Objectives shall serve as the foundation of this Town Plan and is given further definition through policy statements. Policy statements will be interpreted as guidelines and standards by the Planning Commission and Selectboard for implementing the Town Plan. Town Plan policies are also intended to guide the Windham Regional Commission and the State of Vermont in their planning efforts; and to assist the District II Environmental Commission in evaluating applications submitted under Act 250.

STATEMENT OF OBJECTIVES

When Vermont's Growth Management Law, Act 200, was passed in 1988, Vermont set up a system for communities to work in concert with their neighbors and with agencies of State government to shape the future. As envisioned, decisions on local growth issues are to be made by the local communities; decisions of regional significance are to be made by the region's communities acting in consort. Each State agency action and program that affects land use is to be based on agency plans developed in consultation with communities and regions to be compatible with approved municipal and regional plans.

To achieve a unified vision for the future, plans at all levels are to be consistent with the 16 Vermont planning goals and compatible with one another. The Town of Marlboro analyzed the 16 goals and established the following planning objectives for the Town's future.

This Plan has been prepared by the Planning Commission for the people of Marlboro who wish to maintain Marlboro's rural character by:

1. Protecting significant natural areas and locations of special educational, recreational, scientific, historical, architectural, and scenic significance;
2. Encouraging and supporting the continued use of lands for agriculture, forestry, wildlife habitat, recreation, scenic appreciation, and production of renewable energy resources;
3. Maintaining the Town's characteristic pattern of settlement typified by a small, historic village surrounded by settlement along roadway and undeveloped areas.
4. Increasing local communication through the community center, the bimonthly newsletter The Mixer, Front Porch Forum, and on-line resources.
5. Promoting limited and appropriate growth, especially by encouraging local economic growth and sustainability of home businesses through increased transportation and broadband services;
6. Encouraging supportive services for a growing senior population;
7. Promoting development activity that will not jeopardize public and private investment or damage environmental quality;
8. Addressing changing needs through an ongoing planning program;

9. Identifying areas in Town most suitable for accommodating the projected population and related facilities and services in a manner that will be compatible with the objectives and policies stated in this Plan;
10. Identifying areas especially worthy of protection;
11. Encouraging a strong, stable, and balanced rural economy that provides satisfying and rewarding opportunities to meet the needs of Marlboro's residents without detracting from aesthetic or environmental standards;
12. Fostering strong local government based on broad citizen participation, voluntary, elected and appointed officials, and continued active membership in the Windham Regional Commission;
13. Providing quality education for the Town's young people and encouraging adults to take advantage of community educational and vocational training opportunities;
14. Maintaining a safe and scenic rural transportation system;
15. Encouraging the use of practical energy-conserving measures and renewable energy resources;
16. Providing for local use of available natural resources with a minimum of environmental and scenic damage;
17. Encouraging the availability of safe and affordable childcare;
18. Continuing to encourage the use and construction of a diversity of safe and affordable housing types; and
19. Providing for the public health, safety, education, and general welfare of the community.



A. COMMUNITY DEVELOPMENT, FACILITIES AND SERVICES

Marlboro has a strong history of community development. Maintenance of a strong balanced economy is vital to Marlboro's future. Because of Marlboro's small size, rural location and the nature of its resources, future economic development should be closely related to that already existing. Recognizing the challenges of maintaining communication in a small rural town, the town's committees regularly disseminate information about meetings, community events, and regulatory changes on the town website (www.marlboro.vt.us), at the Elementary School, the Town Office, in addition to publishing such information in the bimonthly newsletter, the Mixer.

Community facilities are either owned or maintained by the Town of Marlboro, and include structures, lands, and equipment. Community services are provided directly by the Town, provided by others under contract with the Town, or provided by non-profits and small businesses. School facilities and transportation facilities are described in subsequent chapters.

To anticipate facility and service problems and to take advantage of opportunities for service efficiencies, this chapter and the Education and Transportation chapters should identify capital needs and projects that need attention in the next five years. A capital need or project is any major, non-recurring expenditure, such as land or road equipment purchase, or building construction or improvement. These differ from regular, ongoing operating and administrative expenses, such as salaries, utilities, and road maintenance.

TOWN PROPERTY

The Marlboro Town Office Building, located in the village, houses the Town Clerk's Office, a meeting room, and provides office space for the U.S. Postal Service and various Town boards and commissions. The Town Garage, which was renovated and enlarged in 2005, provides storage for all Town Highway Department equipment and houses the recycling containers. Other facilities owned and maintained by the Town include the Muster Field, Town Meeting House, the Town Park, the Hogback Mountain Conservation Area, and the Marlboro Elementary School.

FIRE AND POLICE PROTECTION

Marlboro is served by the Marlboro Volunteer Fire Company, a private, non-profit organization that operates solely through contributions of time and money. Given the constraints imposed by this type of support it has neither the financial nor the human resources to provide the level of fire protection that would be required by large-scale development.

Marlboro Volunteer Fire Company aims to be the first to arrive on the scene in emergencies: medical calls and motor vehicle accidents comprise the vast majority of responses.

The Fire Company is a member of the Southwestern New Hampshire and Deerfield Valley mutual aid associations. Officers and personnel of the Fire Company include a Fire Chief, a Communications Officer, an Assistant Fire Chief, a Training Coordinator, and about 10 active firefighters. MVFC makes all efforts to recruit or hire fire-fighting personnel to protect Marlboro residents. Members attend training courses sponsored by Vermont and New Hampshire when available. The Fire Company has been granted a Class C rating by the Vermont Fire Underwriters.

The firehouse, located on South Road ½ mile south of the village, is a two-story structure with an upstairs meeting room. Fire apparatus includes a 1968 1000-gallon pumper/tanker, a 1983 1000-gallon pumper/tanker and a rescue vehicle. Water sources include five fire ponds with seven dry hydrants and one flusher, and other small ponds scattered throughout the Town, which are usable most of the year. Numerous additional small ponds may be used seasonally.

In Marlboro, police protection is provided by the Vermont State Police and the police departments of surrounding towns. The Windham County Sheriff's Department is contracted to provide services on a part-time basis.

HEALTH AND EMERGENCY SERVICES

The Marlboro Health Officer is appointed by the State Secretary of Human Services on recommendation of the Selectboard. The Health Officer's responsibility is to make sanitary inspections and to respond to complaints regarding public health hazards.

The nearest clinics to Marlboro are the Deerfield Valley Campus of the Southwestern Vermont Medical Center and an office of the Windham County Mental Health Clinic in Wilmington, seven miles west from Marlboro's center. The nearest hospitals are Brattleboro Memorial in Brattleboro, Grace Cottage in Townshend, the Southwestern Vermont Medical Center in Bennington, and Dartmouth-Hitchcock Medical Center in Keene, NH, (Cheshire Medical Center) and Lebanon, NH. The Vermont State Department of Health provides various services available to Marlboro residents, including well-child and immunization clinics, various screening clinics, including epidemiology, and consultations.

Also available are the services of the Southern Vermont Home Health Agency and Bayada Home Health Services, which offer a broad range of comprehensive home care, and Health Care and Rehabilitative Services, providing mental health services to persons of all ages. The Town contributes to other social service programs and agencies as listed in the Annual Report.

Equipment and supplies for medical emergencies are carried in Marlboro Volunteer Fire Company trucks, plus they have a dedicated EMT rescue vehicle. Ambulances and rescue vehicles are available on call from Deerfield Valley Rescue, Inc. in Wilmington, Rescue, Inc. in Brattleboro, and through Mutual Aid Dispatch.

The COVID-19 virus that arrived in the country in the winter of 2020 and quickly moved up into all counties in Vermont has had a significant impact on the public health as well as the viability of social, economic, housing, business, and arts organizations across the state.

As of December 15, 2021, Vermont has identified 56,317 total cases of COVID with 436 deaths. Windham County has had 3,225 cases identified and 28 deaths. (Vermont Department of Public Health)

The impact that COVID has had on Vermont's population growth as people move away from the congested cities and seek safer communities in rural areas like Vermont, is recognized but the actual validated data is not available at this point. What is known is that there are significantly more people buying houses in Vermont than in the past, and that has driven up the price of housing and created an affordable housing crisis for low- and middle-income workers in Vermont. This increase in population has also had an impact of new enrollments of youth in Vermont's elementary and high schools. The other impact that COVID has had is the closure and/or new restrictions on businesses, recreational, and arts organizations across the state. The recent and dramatic increase in open and un-filled jobs is also adding additional pressures to all employers.

EMERGENCY MANAGEMENT

The Town now has an Emergency Management Director. Residents are adequately served by various public safety agencies, available by calling into the E-911 system when assistance is required. Emergency assistance is limited by non-existent cell phone coverage in many parts of town. It is important that the Town keeps up with advances in communications technologies and participates in their implementation. While such services will ultimately provide for more timely and accurate provision of emergency response, it is also very important that individual privacy be carefully protected as such systems are implemented. In addition, the fire company and highway department maintain the ability to communicate via two-way radio.

The town has established an Emergency Management Committee, and developed an all-hazards response plan and an Emergency Operations Center (EOC). It is working on the following issues:

- Development of a warning plan
- Assistance to residents during emergencies
- Communication during emergencies
- Emergency shelters and information kiosks

SOLID WASTE

Marlboro is a member of the Windham Solid Waste Management District and is bound by that membership to abide by District regulations and participate in District programs. The Town does not provide for refuse collection. Residents may contract with one of several private waste haulers, or take their refuse to the District transfer station in Brattleboro themselves. A recycling station for papers, cardboard, glass, cans, and many plastics was re-located from next to the Marlboro Elementary School on Route 9.

Many Marlboro residents have shown a sincere interest in working with the District to implement recycling, waste reduction, and hazardous waste programs that will reduce the need for technology-intensive alternatives in the future. These programs involve participation by all members of the Town from school age on up and receive full support from Town officials. The most effective means for reducing the amount of solid waste produced is to limit activities which produce such waste (e.g., eliminating hazardous materials from the waste stream, limiting purchases of heavily packaged or disposable goods, or changing methods of production in favor of those which make more efficient use of raw materials). Modern packaging methods and throwaway products are a great convenience, but the disposal of the resulting increase in solid waste requires the use of expensive highly specialized technologies (e.g., lined landfills and mass-burn facilities) to limit environmental contamination.

RECREATION

Outdoor recreational activities in Marlboro include hunting, tracking, fishing, hiking, horseback riding, primitive camping, canoeing, boating (non-motor), snowmobiling, sailing, swimming, skiing, snowshoeing, ice-skating, and bicycling. These activities are important for residents and visitors to the Town.

The Marlboro Park Association (whose membership is open to Marlboro voters upon payment of a modest fee) has an arrangement with the Marlboro School of Music and Festival, which in turn leases the use of Camp Kenmore on South Pond from the Ames Hill-Marlboro Community Center. This

arrangement provides for general recreational use of the premises including the beach area. Membership is also available to Marlboro residents in the Ames Hill-Marlboro Community Center.

Hogback Mountain, is known for its spectacular view as well as habitat for wildlife, along with its associated commercial buildings. In 2010, the Hogback Mountain Conservation Association, a non-profit group founded in 2006, bought 591 acres and donated them to the town of Marlboro to manage as a conservation area. It is now maintained as a town forest and conservation area, with oversight by the Hogback Preservation Commission. The area provides a large travel corridor for wildlife stretching from Massachusetts through Halifax and Marlboro to Newfane and beyond, and is conserved through a formal agreement held by the Vermont Land Trust.

Interest in cross-country skiing, mountain biking, hiking, and horseback riding indicates a need for a designated trail system. The location of existing private trails and unplowed Town roads suggests that it would not be difficult to plan a series of north-south trails connected with at least one east west trail traversing the Town. The extensive multi-use trail network in the Hogback Mountain Conservation Area would likely be a major component of such a designated Town trail system. The Hogback trails also form the connecting link in a lengthy through-trail system which includes the Town of Wilmington's Lake Raponda Trails and the Molly Stark State Park Trails.

With the hoped-for approval of the new owners of the former Marlboro College campus, the Marlboro Music Festival, and a group that promotes cross-country skiing, the Marlboro Nordic Ski Club (marlboronordicskiclub.com), the trail system developed by the outdoor program of Marlboro College is being maintained with the help of volunteers, and will be used by members and local skiers during the winter and hikers during the other three seasons. This, along with the trails at the Hogback Preserve, is one of the most well used recreational opportunities in the town. Parking for the use of these trails is encouraged at the campus and discouraged on the narrow roads that cross the trails.

A small town-owned parcel near the center of town has been developed into a park used for recreation or summer events as well as providing a quiet spot to linger and enjoy the out-of-doors.

OTHER COMMUNITY SERVICES

Non-profit organizations with an educational, cultural, religious or public service purpose are valuable assets, increase the diversity of the town, provide cultural opportunities to townspeople and others, and may have a potentially beneficial effect on the Marlboro economy.

During 2021, an agreement was reached whereby the campus formerly housing Marlboro College was purchased by the Marlboro School of Music and Festival. The campus has been the home during the summer months of the Marlboro Music Festival since 1950.

The town is also home to Camp Neringa, Marlboro Meeting House, and Marlboro Historical Society, and the Southern Vermont Natural History Museum.

The Marlboro Alliance is an all-volunteer, community-focused charitable organization. Incorporated in 2005, it works to support the individuals and families in our small, vibrant community. The Alliance raises funds for emergency assistance, disaster relief, educational scholarships, educational enrichment programs, community events, and contributing to many other community resources such as food and heating assistance, the Marlboro Library, The Marlboro Fair, and Marlboro Cares. It also has recently completed the conversion of the ground floor of the Marlboro Meeting House into a Community Center, Café, and Library.

The organizations currently included in the Alliance are:

- Marlboro Cares, a community support volunteer program which provides non-emergency assistance for residents with needs such as transportation, simple handyman tasks, running errands, or referrals to other agencies;
- Marlboro Community Center, which opened in early November, 2018 in the space formerly occupied by the Meeting House School, includes a Library and a flexible space for meetings, classes, a film series, an art gallery, and a café. A staff of 1 part-time employee and many volunteers makes this a major addition to the character and function of the town.
- Marlboro Mixer, a bi-monthly newsletter available to all residents by mail and in various venues throughout town, which provides information about local events and personalities;
- Marlboro Fair Committee, which runs the town fair every autumn as a festive celebration for persons of all ages.

SMALL BUSINESSES

Marlboro's small local businesses include gift shops, lodgings, restaurants, and professional services. A variety of home enterprises are found scattered throughout the town, providing an important component of local economy and often community services, such as yoga and exercise classes. Due to changes in state law, the possibility now exists for retail cannabis sales.

TELECOMMUNICATION SERVICES

Lack of cell phone coverage in Marlboro continues to be an urgent problem. Like the rest of the country, residents of Marlboro increasingly rely on cell phone coverage for their personal lives (e.g. Keeping track of teens, remembering to pick up the milk), and work.

In addition, increasing numbers of telecommuters and home-based businesspeople rely heavily on the internet, and are negatively impacted by lack of broadband in Marlboro. Although the former Marlboro College campus and Marlboro Elementary School are served by a high-speed T-1 line, the provider limits its use to the schools only. The lack of adequate cell service and internet service continues to be a significant challenge to the Town, and the town has formed a committee (Marlboro Committee for Universal Broadband) and is currently partnering with neighboring towns to promote a town-wide high-speed internet access.

Aesthetic criteria for location of cell or internet towers have been outlined in Section F Scenic Areas and Historic resources.

In addition, freestanding telecommunication towers or antennas over 20 feet in elevation shall not be located in any of the following locations, without a plan to prevent impingement on the potentially affected area:

1. Within 300 ft. horizontally of a State or federally designated wetland.
2. Within 300 ft. horizontally or twice the tower elevation whichever is greater, of the boundary of the habitat of any State listed Rare or Endangered species.
3. Closer than 300 ft. horizontally or twice the tower elevation, whichever is greater, to the boundary of the property on which the tower is located.
4. Closer than 500 ft. horizontally or twice the tower elevation, whichever is greater, to any structure existing at application which is used as either a primary or secondary residence, to the property of any school, or to any other building.

5. Within 300 ft. horizontally or twice the tower elevation, whichever is greater, of any river or perennial stream.
6. Within 300 ft. horizontally or twice the tower elevation, whichever is greater, of any known archeological site.

TAX BASE

Although State and Federal financial aid are vital to the Town, local property taxes remain the most important source of revenues. The Town's ability to raise local revenues without increasing the taxpayer's burden to unacceptable levels depends on maintenance of the tax base.

Currently through Act 68, the State levies Education taxes on towns. These taxes coupled with sharply increased property sales locally have stressed local taxpayers in recent years, increasing pressure on the Town and school district to maintain a high level of efficiency in current budgeting.

COMMUNITY DEVELOPMENT, FACILITIES, AND SERVICES: POLICIES & ACTION STEPS

Community Development, Facilities, and Services Policies:

1. The projected capacity of community facilities and services must be consistent with the natural environment and the Town's rural character.
2. In the absence of a capital budget and program, which would define current and projected capacities of community services, the Town's rate of growth should be limited, cautious, and consistent with the Town's ability to provide services.
3. Proposals for large-scale development, which require review under Act 250, shall include a statement of impact on existing Town facilities and services, and of measures which will be taken to minimize the additional burden which a major development will place on them.
4. The Town shall not accept privately owned municipal-type facilities or services such as water or sewage systems unless the cost and impact of owning and maintaining the facility is outweighed by advantageous attributes that will further the objectives of this Plan and be a positive gain to the Town as a whole. However, the Town shall require adequate surety from the owner or developer in the event that the Town is required to assume responsibility for any services or facilities.
5. Broad and voluntary participation in Town government to avoid the necessity of hiring a town manager or other administrators is encouraged. This broadly based local commitment is designed to foster a sense of pride and personal responsibility toward the Town, as well as sensitivity to the Town's limited ability to provide services.
6. Developments and major subdivisions are responsible for providing adequate water resources, sewage disposal, dry hydrants, and satisfactory year-around emergency access to the property.
7. The Town should encourage the creation of additional small private ponds for fire protection as well as for recreation. Well maintained private fire ponds, impoundments, and hydrants are encouraged.
8. Dry hydrants of approved design should be installed in areas of concentrated development.
9. Development which is responsible for unique or large amounts of solid or liquid waste shall be required to demonstrate that the methods of disposal will not adversely affect the environment or place an unreasonable burden on the Town or the District. New development shall put in systems that will comply with District requirements or take advantage of District separation or recycling facilities.

10. The Town shall continue to meet the requirements of all State solid waste laws and participate in District solid waste programs.
11. The Town highly values recycling and the importance of making recycling facilities available to the community.
12. The Town shall support and encourage the development of recreational opportunities appropriate to the Town's rural character.
13. Residents shall display their house numbers in such a way that they are clearly visible from the road.

Community Facilities Action Steps:

1. The Town shall explore means to support community use of Town properties, including the school (see educational section).
2. The Town shall encourage volunteer non-profits, such as the Marlboro Alliance, to create and maintain space and activities for the Town.
3. In conjunction with volunteer organizations, the Town will conduct a needs assessment and create a plan for future Town services.
4. The Town shall cooperate with all appropriate agencies to maintain a recycling facility for glass, paper, wood, household-hazardous waste, plastics, and metals and should encourage methods for reducing waste.
5. The Town should study the feasibility of creating in cooperation with the Windham/Windsor Housing Trust and other funders, a small number of affordable housing or assisted living units in the Village district to be supported by a common septic and solar power system.

Community Services Action Steps

1. The Town will make all efforts, in coordination with the Marlboro Volunteer Fire Company, to recruit fire-fighting personnel to protect Marlboro residents adequately.
2. The Town will make all efforts to equip the Town Office with needed emergency equipment as specified in the Emergency Plan.
3. In conjunction with volunteer organizations such as Marlboro Cares, the Town will conduct an assessment to determine the individual emergency needs and resources.

Small Businesses Action Steps

1. Encourage the Town to hold a public dialogue in the near future to assess the plusses and minuses of a CBD/THC retail store that might seek to locate in Marlboro so that the consensus of the town might be known.

✧ ✧ ✧

B. EDUCATION & CHILDCARE

Marlboro is a town that values education and, for a community of approximately one thousand people, has a wide range of educational facilities and a reputation for educational and cultural excellence that reaches far beyond its municipal borders. Educational institutions in town include (1) the Marlboro Elementary School (Pre K-8) and (2) a variety of opportunities for informal education and cultural enrichment. (See Community Facilities and Transportation map for the locations of these institutions.)

1. The Marlboro Elementary School (MES) and its associated activities are an important focus for community involvement and community identity. As it is in many rural towns, the local school is traditionally a central component of the community. The town's public school facility consists of a building with six classrooms, a library, several conference rooms, a nurse/guidance room, and two offices. A large detached all-purpose room with two storage areas was added in 1994 as space for physical education, art, music, and other school and community activities in need of a large space. This building and the playground occupy approximately seven acres of land along Route 9. The school facilities have a capacity for approximately 120 students.

As of January 14, 2021, 76 students attended MES and 36 attended area high schools. The school continues to make small gains in population. Figures for individual classes are:

Table 9. Marlboro School Enrollment

MES		Area High Schools		
Grade Level	Number of Students	Grade Level	Public Number of Students	Private Number of Students
Preschool	11	Grade 9	6	2
Kindergarten	6	Grade 10	5	3
Grade 1	8	Grade 11	6	2
Grade 2	6	Grade 12	5	7
Grade 3	7			
Grade 4	9			
Grade 5	8			
Grade 6	5			
Grade 7	8			
Grade 8	8			
TOTAL: MES	76 Students	TOTAL: Area High Schools	22 Students	14 Students

Marlboro belongs to the Windham Central Supervisory Union.

Enrollment due to pandemic	
Homeschool students	21
Remote students	13
Total Out-of-School	34

To clarify, Marlboro Elementary School's enrollment would have been 110 (76 + 34) if the pandemic had not occurred. However, the State does not recognize the homeschoolers as current Marlboro School students.

Per-student costs have risen to \$19,647.63 per "equalized pupil," with this figure coming from the state. Secondary school education is obtained by tuitioning students to nearby secondary schools selected by each student's family, including private schools (as permitted by state statutes). In the

last ten years, the majority of Marlboro's secondary school students have attended Brattleboro Union High School. Program mandates (such as special education and public school assessment standards) continue to be imposed on towns. The financial burden lies more heavily than ever on local property taxes.

A 21st Century Grant is currently funding after school activities open to all students. This meets some families' need for childcare and also provides high quality programming with paid instructors. This grant is due for reapplication in fiscal year 2022.

The school offers both breakfast and lunch daily. After upgrading the kitchen and making improvements to the wastewater system the school is able to provide nutritious meals to all students. As of January 14, 2021, 55% of school families qualify for free or reduced price meals.

2. Marlboro College was a private, 4-year liberal arts college located on 360 acres in the southwest quadrant of town. The student population historically averaged 330 full-time equivalent students with some 40 faculty and 65 staff members, with a high of 350 students in 2004. However, by the fall of 2019 the student population had fallen to 155 students. Due to this decrease in student population, the College trustees in December, 2019, merged Marlboro College with Emerson College in Boston, Massachusetts. This merger was approved by the trustees in spring, 2020, and resulted in the closure of Marlboro College in June, 2020.

During the summer, large parts of the former college campus are taken over by the Marlboro School of Music and Festival. (See Section 4, below, for additional information.) The Marlboro School of Music and Festival in Spring, 2020, has constructed on the campus a new music library/rehearsal facility and a new dormitory building on land the Music Festival has leased from the College under a 99 year lease.

The presence of Marlboro College (housing the Marlboro Music Festival in the summer) is related to topics in other sections of this Town Plan. For example, the College was a major employer of townspeople; traffic to the College and Music Festival had a significant impact on road use; and the MOOver route included South Road thirty weeks each year because of the College. A large number of College employees live in Marlboro, though the number buying houses in the community has decreased in recent years. It should also be noted that a significant number of Marlboro residents attended the college and settled in the town after graduating. Therefore, the closing of Marlboro College has had a significant impact on the Town of Marlboro.

3. Marlboro is the home of institutions and organization that have education as part of their mission, including the Marlboro Historical Society, the Marlboro Music Festival, and the Southern Vermont Natural History Museum.
 - The Marlboro Historical Society (MHS) is housed in Ephraim Holland Newton House in the center of town. The purpose of the Society is to maintain the Newton House museum, provide genealogical assistance, recall and record Marlboro's past, and honor the present-day community with educational events. The museum is open during July and August, and the MHS organizes lectures, exhibits, and educational walks throughout the year. Currently it is working in partnership with the Marlboro Elementary School in recording oral histories from town residents for the Community History Project.
 - As mentioned in Section 2, above, each summer the former Marlboro College campus is the home of the Marlboro School of Music and Festival. Founded in 1951, Marlboro Music brings together master concert artists and young professionals from around the world for seven weeks.
 - Marlboro Music's unique artistic model depends on an isolated, quiet, and protected rural setting. The natural beauty of the location was a large part of the original draw of the location for its founders, and remains central to its success. Marlboro Music requires world-renowned musicians

to forego substantial compensation to spend a summer in Marlboro, and the setting is an important part of its appeal.

- At the same time, Marlboro Music requires some additional local housing every summer, and tight rental markets can pose a challenge. Audience members also often need local inns, hotels or houses to rent, and places nearby to eat. For Marlboro Music, it is important that such options exist, but that they not be too close to the campus to affect its rural setting.
- Marlboro Music's open rehearsals and five weekends of public concerts are held in 642-seat Henry Z. Persons Auditorium, located at 2472 South Rd. Events take place from mid-July to mid-August., and are well attended by residents of Marlboro and neighboring communities, and many from out of town and out of state. Marlboro Music also offers occasional lectures, films, and other events. Some of the people associated with the Music Festival (and the Festival itself) own homes in the community. The impact of Marlboro Music is also felt with increased traffic for concerts.
- Founded in 1996, the Southern Vermont Natural History Museum is located on Route 9 at the Hogback Mountain Scenic Overlook. The mission of the Museum is "to foster an interest in nature, the environment, and the natural sciences through exhibition, research, and educational activities." The natural history collection includes over 600 native New England birds and mammals in 150 small dioramas, one of the largest collections of its type in the northeast. The wild animal specimens were collected by Luman Ranger Nelson between 1900 and 1962 with most of the collection obtained during the 1920's and 1930's. The Museum has over 200 members and a staff consisting of an executive director, an assistant director, and several volunteers. Visitors include tourists passing through the region as well as school and other local groups.

EDUCATION: POLICIES & ACTION STEPS

Education Policies:

1. As long as financially possible, the Town shall continue to maintain its local public school with the goal of meeting the needs of individual students all along the learning continuum.
2. Community uses of MES facilities should be encouraged during evenings and vacations when such use does not conflict with normal school activities.
3. The use of MES facilities shall be made available to appropriate private activities for a fee.
4. The Town should encourage the expansion of toddler and early infant day care programs within the community.
5. The different educational organizations in town should work together whenever possible, calling upon the strengths of each institution and fostering inter-institutional initiatives.
6. The Town should encourage local life-long learning opportunities.
7. The Town should work to expand the range of after-school programs.

Education Action Steps:

1. Consider ways to create and foster new day care programs in town to meet local needs.
2. Maintain a list of all childcare programs in the area and their capacity.
3. Foster the creation of more opportunities that bring together people from the different educational organizations in town.

4. Expand the degree to which local educational organizations co-sponsor events, with each other or with other groups in town. These could be short-term, small-scale endeavors (e.g., a speaker on environmental issues) or larger initiatives (e.g., a joint project on the Town history).
5. Remain involved with the Marlboro School of Music and Festival, new owners of the former Marlboro College campus, and its potential impact on the Town.



C. TRANSPORTATION

Marlboro's transportation system includes about eight miles of State highway, 15 miles of Class 2 roads, and 39 miles of Class 3 roads. Route 9, the Region's major east-west highway, passes through the Town, linking it with southern Vermont, the northeastern United States, and New York. Major inter-town (Class 2) roads carry regular and year around traffic between Marlboro and adjacent communities. Minor intra-town (Class 3) roads are used for access to residences and properties. Marlboro has a total of 26 bridges, two of which are maintained by the State, with the remaining 24 owned by the Town. Numerous other bridges are maintained by the owners.

Many of Marlboro's roads provide vistas of high scenic value. These routes are enjoyed by motorists, pedestrians, and bicyclists. The major traffic load affecting Marlboro is the east-west traffic passing through Town on Vermont Route 9. Local motorists from Marlboro and surrounding towns, visitors to the Region's attractions, and commercial vehicles and interstate haulers traveling through southern Vermont comprise the bulk of the traffic load. This traffic has been increasing as well as the rate of vehicle speed and these trends are expected to increase especially as more road improvements are completed.

Route 9 has been designated by the State of Vermont as part of the National Highway System with the purpose of "providing an interconnected system of principal arterial routes which will serve population centers, international border crossings, airports, public transportation facilities and other major travel designations, meet national defense requirements, and serve interstate and interregional travel." This designation enables the towns and State to access Federal funds allocated for National Highway System roads for new construction and reconstruction. Towns throughout Windham County have determined that one of the top priorities of our residents is preserving the quality of life and rural character of the region. Expanding Route 9 to better serve interstate commerce is contrary to this goal. Interstate traffic is more than adequately served by the existing Interstate Highway System.

The present Route 9 has a very low State sufficiency rating, and should have some necessary improvements made for the traffic it will carry. Possible improvements supported by the Town include lowering design speed, police patrol for speeding vehicles, removal of brush and ledge for better visibility, increased drainage to reduce frost heaves, warning signs and lights, shoulder widening, and pedestrian/bicycle paths. In some cases, however, improvements to Route 9 have created dangerous conditions. Increased speed on improved segments has made access points more dangerous. Transitions between improved and unimproved segments have also created dangerous conditions. Improved cautionary signs could improve safety at critical points for a relatively small cost. With global climate change, the weather patterns are changing that are currently increasing icy conditions on Route 9. This causes frequent traffic accidents on Route 9, often with road closings.

With assistance from Windham Regional Commission, the speed limit on Route 9 was reduced in 2017 to 40 mph near Marlboro's Elementary School and digital speed displays were installed to calm traffic in this area.

As a result of the fluvial erosion and flooding that occurred after Tropical Storm Irene in 2011, major sections of Route 9, Augur Hole Road, Ames Hill Road and other Class 2 and 3 Roads washed out, isolating the Town as a whole until a temporary repair on Ames Hill Road was made for limited vehicular traffic. Many bridges (both private and public) washed out, and some buildings washed away, stranding residents who had not evacuated during the Hurricane. Through many volunteer activities coordinated by the Town and Marlboro Alliance, emergency assistance was provided quickly to affected residents, with

coordinated referrals to local, state, and federal flood assistance programs. Highway improvements, especially concerning ditches and bridges, have occurred in the last five years.

Future planning is needed to create decentralized emergency communication and shelters. With assistance from WRC, the Town mapped out fluvial erosion areas as part of its new zoning regulations on Flood and Fluvial Erosion, which were approved by the State (see proposed Town Plan Map # 4). Due to the close proximity of Route 9 to the Whetstone Brook, making future flooding a near-certainty, the commercial business district along sections of the road was reduced in the new Zoning Regulations.

The Town Meeting of 1968 voted overwhelmingly against any new arterial route cutting through the Town. The consensus of Marlboro residents remains today to prohibit such a route. A limited-access highway passing through the Town would divide the Town in two more than it already does, and seriously restrict north-south movement by property owners, residents, and visitors. Furthermore, any new major highway in the neighborhood of the Town would have a damaging impact on the environment extending beyond the right-of-way itself.

Marlboro's transportation system is essential to its economy and residents. The Town must provide adequate transportation services while preserving its natural and scenic resources, as well as community values. Due to the rural nature of Marlboro, public transportation is limited to Route 9 and South Road (when Marlboro College was in session). The MOOver Bus is free and will pick up and drop off anywhere on the route. Marlboro Cares offers limited short term non-emergency transportation to those over 60 years of age. Connecticut River Transport offers one ride per week to those over 60.

Marlboro's aim is to fit the pattern of traffic, both present and future, within a rural setting, rather than let the demands of motorist and engineers dictate the shape of the town. While the rustic nature of our back roads is part of the character of Marlboro, it is also recognized that the elements of this character such as narrow roads, trees, and utility poles close to the roads, and stone walls lining the roads contribute to enhanced traffic safety through traffic calming resulting in slower vehicle speeds. These features should be preserved and back roads not over-improved.

TRANSPORTATION: POLICIES & ACTION STEPS

Transportation Policies:

1. Construction of new roads or road improvements should be carried out in conformance with State Road Specifications. The Road Specifications should be reviewed on a regular basis. The Town is aware that it must have implementation plans in place by 2020 for hydrologically-connected road segments as per Vermont Department of Environmental Conservation. Marlboro's roads and bridges should be adequately maintained to ensure safety.
2. When improving Town roads, the scenic value of the road, potential fluvial erosion hazards, and the impact that greater traffic speed and volume will have on the rural character of the Town must be considered. Roads should be improved only when necessary for safety and year-round maintenance.
3. The Town advocates continued gradual Route 9 improvements as long as design speeds to limit traffic speed, volume, traffic noise, and potential fluvial erosion hazards are used in engineering and construction phases of all roadway projects.
4. When improvements to Route 9 are being planned the Town should work with State Agency of Transportation officials to ensure identified wildlife corridors crossing Route 9 will not be impacted by the improvements.

5. Although Route 9 is a major East-West thoroughfare in Southern Vermont, the Town encourages the diversion of future traffic load on Route 9, especially heavy trucking, to routes with less impact on Marlboro, such as existing interstate highways.
6. The Town should limit the impact of increased resort traffic on secondary roads, particularly Higley Hill Road, by working with adjacent towns and regional commercial interests to keep through-traffic on Route 9. The Town strongly discourages any new arterial route cutting through the Town.
7. Developers are responsible for relieving traffic problems created by their development. In resort areas, commercial interests must share responsibility for relieving traffic problems generated by resort area users.
8. Unsafe access to and from highways should be avoided. This is especially true for sections of highway which are poorly designed or carry more traffic than that for which they were designed. Access points should be kept to a minimum.
9. Energy efficient modes of transportation, such as public transit and carpooling, should be encouraged. The Town Energy Committee has recommended installing electric charging stations, which the Town should pursue as long as they meet public needs.
10. The development and expansion of government and public utility facilities and services should generally occur within existing highway or public utility rights-of way corridors to reduce adverse physical and visual impact on the landscape and achieve greater efficiency in the expenditure of public funds.
11. The Town should be vigilant monitoring reclassification of its roads and reclassify them as needed. The retention of Class 4 roads for recreational use is encouraged.
12. The siting and design of any new parking areas in Marlboro village shall not impair the visual, architectural, or historical significance of the village.
13. State laws concerning snowmobiles and all-terrain or off road vehicles should continue to be enforced, and local ordinances for control of such vehicles should be formulated and adopted.
14. In order to promote traffic calming, discourage the widening of back roads.

Transportation Action Steps:

1. The Town strongly supports working with the agency of Transportation to ensure that bicycle lanes are included in their upcoming repaving of route 9, as it is critical for the safety of the increasing number of cyclists, especially e-bikers, who wish to travel on the road.
2. Cautionary signs and speed control should be implemented on South Road and other heavily traveled roads in town to improve safety without the need for physical improvements.
3. Traffic problems, particularly along Route 9, South Road, and other heavily traveled routes should be alleviated through alternative methods such as public transit systems, carpooling, traffic calming, and mass-transit to resort areas.
4. The development of pedestrian and bicycle paths or lanes as alternative and safe modes of travel should be promoted and encouraged in general and in particular with the expansion of any highway.
5. The Town should explore the possibility of establishing regular stops by regional mass transit providers (such as MOOver) at the Town Office/Post Office.

6. The Town should explore possible siting of an electric recharging station to encourage electric vehicles.
7. Work with the Town highway department to discourage the widening of back roads.
8. Work with the Town highway department to ensure that stone walls along roads are not negatively impacted by road work or snowplowing.



D. ENERGY

IMPORTANCE OF ENHANCED ENERGY PLANNING

Introduction

Our economy and society are built on a foundation of easily available and relatively inexpensive energy resources. We have come to depend on reliable and affordable deliveries of oil and gas to heat our homes, schools, and businesses; of gasoline and diesel to fuel our fleet of personal and commercial vehicles; of electricity that seamlessly flows to Marlboro across regions and nations from hydro dams and fossil fuel generating facilities.

As these sources of energy become scarcer and more expensive, and as we are confronted increasingly by the environmental and political costs of our continued reliance on them, we look toward ways that we, as residents of the town of Marlboro, can support patterns of energy use and development that are sustainable, globally aware, and locally based.

Though Vermont's energy transformation may take years to implement, it will enhance the vitality of the state and local economy by reducing money spent on fuels pumped, mined or generated elsewhere, improve our health through reduced emissions and increased bicycle and pedestrian mobility options, and improve the quality of our local and global environment through reduced greenhouse gas emissions. This robust energy plan is used as a tool to advance the economic and environmental well-being of Marlboro, thereby improving the quality of life for its residents. Furthermore, these energy goals will reduce Marlboro's vulnerability to energy-related economic pressures and, in the long-term, climate change-related natural disasters, and promote long-term community resiliency in a variety of contexts.

The cost of energy in Marlboro, including residential, commercial, and governmental use (for heating, electricity, transportation, etc.) is estimated to be \$2,683,769 per year (see Energy Costs & Expenditures section below). Because a large majority of this energy is imported from outside of the town and Windham Region, most of the money spent on energy does not directly benefit the local economy. Efforts to reduce the use of energy sources from outside the Town, or shift reliance to locally produced energy, can improve household financial security and strengthen the local economy.

From an environmental perspective, petroleum and other hydrocarbon-dependent energy is a significant cause of localized environmental damage where those fuels are produced and refined, and the emissions from their use is responsible for human-induced climate change, related climate-change disasters, and ecological degradation. The Town of Marlboro finds that wind, photovoltaic, and hydro energy is an abundant, renewable, and nonpolluting energy resource and that its conversion to electricity will reduce our dependence on nonrenewable energy resources and decrease the air and water pollution that results from the use of conventional energy sources

While Marlboro can do little to shift the broader state or federal policies, we can influence energy use and production on a local level. In this energy plan, we hope to address Marlboro's local actions for increasing our energy efficiency and promoting renewable energy generation, and overall pathways to become more resilient.

However, we recognize that our town's efforts at energy efficiency and independence cannot be achieved without our regional infrastructures, including transportation, power transmission, and broadband networks.

Success at creating a better energy future will only be possible if we are able to work with other towns across the state to press the legislative and executive branches of government for higher funding of energy initiatives to support energy efficient home construction, alternative energy production, improved public transportation, and electric vehicle use. Likewise, the State of Vermont needs to work with other states across the country to press for the same goals for the nation. The political process to make this happen must be seen as a vital part of our energy plan.

Long-Term Vision & Petroleum Dependence

There is a trend toward factoring the “societal costs” into the price of energy; society pays for health costs associated with pollution, environmental clean-up, military protection of petroleum sources, and the continued failure of the Federal government to address the disposal of radioactive wastes. And in the long-term, communities who depend on fossil-fuels are vulnerable to risks associated with their price and production volatility.

These challenges may significantly increase the cost of conventional energy sources within the next ten to twenty years. As a result, Marlboro will seek to establish reliable energy resources for townspeople and municipal operations, to hedge against the increasing volatility of hydrocarbon prices, and to reduce the environmental impact of our energy use. The role of clean, alternative energy sources will be expanded and supported.

MARLBORO’S CURRENT ENERGY USE

The following paragraphs describe Marlboro's current estimated energy demand in detail. These current use estimations provide a starting point from which the town can develop informed energy policies that directly address its current context and opportunities going forward.

In order to provide a more accurate picture of the energy planning requirements in Marlboro, energy consumption, generation targets, and efficiency targets need to be broken down into three distinct energy sectors. Those sectors are electricity, heating, and transportation.

Figure 1 shows how energy consumed in the town is divided between these sectors. The sections below break down the calculations and describe the assumptions made to arrive at these final demand figures.

Comparative Totals: Energy Consumption (MMBtu) (Standard 5a)		
13,375	Electricity	
59,827	Heating	
44,100	Transportation	
117,302	Total estimated annual energy consumption in town, in million Btu's.	

Figure 1: Energy Consumption per Sector

Current Electricity Demand

Marlboro's electric energy supply comes from Green Mountain Power.

Electricity consumption data from Efficiency Vermont was produced for each zip code in the state, and is the primary source of this information. This data set combines the energy supplied from all potential electricity providers to that town. It also separates the usage for both the residential and commercial or industrial sectors (see Figure 2 below).

Electricity Consumption Data From Efficiency Vermont (2017)
(represents multiple service providers)

City	County	Sector	2014 (kWh)	2015(kWh)	2016 (kWh)
Marlboro	Windham	Commercial & Industrial	1,142,420	1,146,989	1,160,788
Marlboro	Windham	Residential	2,844,303	2,789,606	2,758,975
		Total	3,986,722	3,936,595	3,919,763
		Sector	2014 (MMBtu)	2015(MMBtu)	2016(MMBtu)
		Commercial & Industrial	3,898.11	3,914	3,961
		Residential	9,705	9,519	9,414
		Sector	2014 (Gwh)	2015 (Gwh)	2016 (Gwh)
		Commercial & Industrial	1.142419802	1.14698909	1.1607881
		Residential	2.844302579	2.789606029	2.758974871

Figure 2

Though the commercial/industrial sectors use generally more electricity than residential, the two are relatively comparable.

To translate this energy demand into dollar amounts, we can estimate a cost of \$0.1435 per kilowatt-hour (Vermont state average for electricity costs across all sectors in 2015). Based on the above data, residences in town paid almost **\$395,913** dollars in 2016 for **2,758,975 kWh**. Commercial and industrial facilities paid just over **\$166,573** dollars for their **1,160,788 kWh** of electricity. In Marlboro, electricity usage places the highest energy cost burden on its homeowners and businesses.

Current Transportation Use

According to 2010 U.S. Census Bureau data, Marlboro has 378 primary housing units, (not vacant or used for seasonal/recreational purposes). Based on that number of households, it can be estimated that there are 649 light-duty vehicles on Marlboro's roads, which consume **335,576** gallons of fossil fuel each year. Below is a table summarizing the averages and estimates used to arrive at those figures.

378	Number of primary housing units.
649	Number of fossil-fuel burning light-duty vehicles (LDV).
11,356	Estimate of the average annual number of miles travelled by an LDV in the area (for Vermont as a whole, total vehicle miles traveled per registered vehicle was around 12,500. The vast majority of LDV in Vermont can safely be assumed to drive between 9,000 and 15,000 miles annually).
22	Estimate of the average fuel economy of fossil-fuel burning LDV fleet in

	the area, in miles per gallon (state-wide average fuel economy).
335,576	Estimated number of gallons of fossil fuel consumed annually, calculated from the values above.
121,259	Number of Btu in a gallon of fossil fuel, computed as a weighted average of the individual heat contents of gasoline (95%) and diesel (5%).
44,100	This is the estimated total annual energy consumption of internal combustion vehicles in the area, in millions of Btu.

Figure 3: Estimated Total Annual Energy Consumption of Internal Combustion Vehicles

To estimate the cost of this consumed energy, we assumed a cost of \$2.34 per gallon (Vermont state average in 2015). In Marlboro, consumers spent over \$785,248 on transportation related fuel costs alone.

Current Heating Demand

To account for the different building types and their respective uses, the following estimates divide thermal energy demand by either residential or commercial use (industrial building thermal demand is not included).

For residential buildings, it was assumed that the average annual heating load of area residences is 110 million Btu, for both space and water heating (Vermont state average). With 378 primary housing units in the town, this arrives at an estimated 41,580 MMBtu annual total heat consumption. Furthermore, census data also provides information on the home heating fuels used for both owner-occupied and renter-occupied housing units (both are considered “occupied”). Figure 4 below shows a comparison of owner and renter-occupied housing units and their respective fuel use.

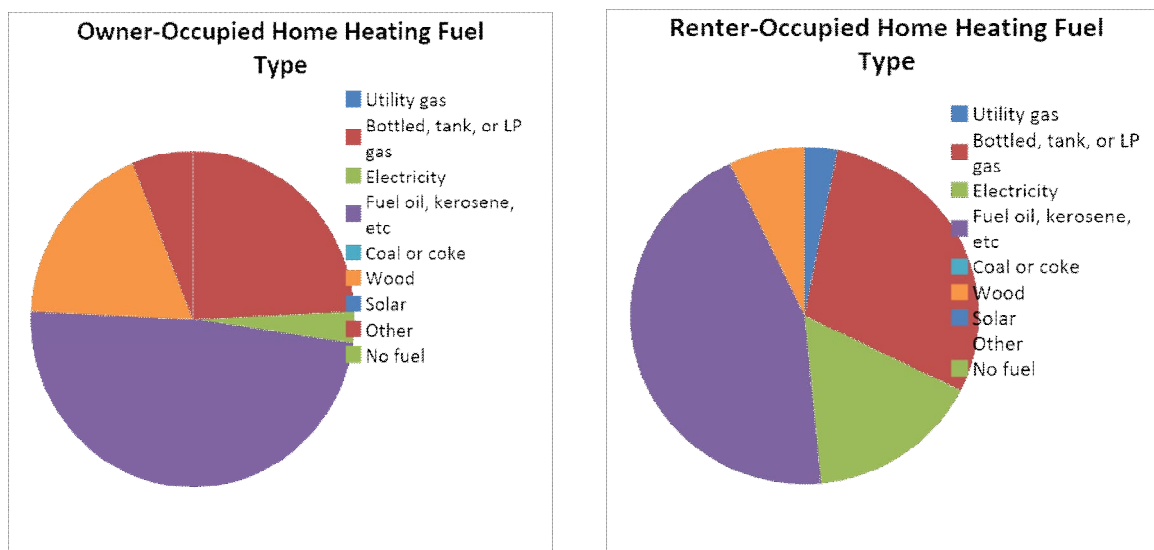


Figure 4: Comparison of Owner and Renter-Occupied Housing Units and Their Respective Fuel Use

For both housing unit ownerships, an estimated total of just over \$851,612 was spent in home heating (roughly \$757,671 from home owners and \$93,941 from renters).

In Marlboro, there is also a high percentage of seasonal homes (75% of housing units are primary/“occupied” homes, while 25% are seasonal/“vacant” homes). Based on the energy model

projections from the state (created by the LEAP, or Long-Range Energy Alternatives Planning model), it can be assumed that seasonal homes only use about 15% of the energy of a primary home, due to more occasional use and a presumed higher energy efficiency. As such, seasonal homes in town are estimated to consume about 2,079 MMBtu annually (compared to the 41,580 MMBtu for primary residences).

For commercial establishments, it is estimated that the total heating load is 15,821 MMBtu each year. For the state, the average is in the range of 700 MMBtu to 750 MMBtu per year but the average for any given area is very likely to be significantly higher or lower, as the mix of businesses from region to region is highly variable. Based on the types of commercial buildings in Marlboro, the heating load was calculated to be less than state average. With 16 commercial establishments, there is an estimated thermal energy demand of 15,821 MMBtu. These businesses pay about \$483,483 each year in heating expenses.

Total Energy Costs

In sum, Marlboro pays a staggering amount in energy across the three use sectors. The total estimated cost to the town for electricity, heating, and transportation is roughly \$2,683,769 each year. There are real financial incentives for the town to move toward energy efficiency, on behalf of both the residents and its business owners.

MARLBORO'S RESOURCES, CONSTRAINTS, & POTENTIAL FOR ENERGY GENERATION

Energy resources within Marlboro are all renewable resources: wood, solar, hydro, and wind. In order to reduce dependence on conventional energy sources, of which the costs and availability are outside residents' control (see the section above), the use and generation of alternative energy sources is encouraged.

Resource Mapping Process and Policy Tool

The suite of maps included with this Energy Element were developed using state-wide GIS data that modeled resource potential for solar and wind energy, identified potential constraints on renewable energy development, and created an energy potential map.

This energy potential map provides energy planners and developers with a "coarse screen" method to roughly identify areas in Marlboro that may have energy generation potential. These maps are not siting maps, and further site analysis would need to be done to determine if a proposed generation facility is appropriate and comports with Marlboro's Town Plan policies. Instead, these maps provide Marlboro planners with tools to develop sound and informed energy generation policies within this Energy Element.

Solar Resource Maps

The Town of Marlboro has good modeled solar resource availability. The Town supports solar facilities that are properly sited, the where the development conforms to the siting policies outlined in this Town Plan. Refer to the "Energy Goals, Policies, and Action Steps" section below for policy statements regarding solar generation.

Wind Resource Maps

Residential or small-scale wind turbines may be acceptable, so long as they conform to the Town Plan for that respective land use, and do not adversely affect the surrounding landscape or communities. Refer to

the “Energy Goals, Policies, and Action Steps” section below for policy statements regarding wind generation.

Marlboro’s Preferred Locations

The Town of Marlboro supports locally sourced and renewable energy generation facilities in a manner that supports existing and proposed land use designations, does not adversely affect the landscape pattern or character of the Town, and supports positive community development.

Generally, the Town promotes energy generation development in locations that are previously disturbed and do not offer significant opportunities for future development. These areas may include former gravel pits, landfills, etc. Extra consideration should be given to these under-utilized and previously disturbed areas that exist within the areas modeled to have prime resource potential (see Energy Maps), and do not conflict with existing and proposed designated land uses. Refer to the “Energy Goals, Policies, and Action Steps” section below for policy statements regarding preferred generation sites.

Commercial and utility renewable energy generation proposals for Marlboro need to consider proximity to electric transmission lines, 3 phase power lines, location near the end of utility distribution lines for grid support, existing road infrastructure, known and possible constraints, current and proposed land use, health and environmental impacts and criteria outlined in Vermont Public Utility Commission Rule 5.100. See policies under energy goal 4 in the town plan for criteria regarding preferred locations for renewable energy generation.

Areas Unsuitable for Renewable Energy Siting

As shown in the Known Constraints map, there is a suite of geographic characteristic that are deemed to exclude any energy generation development. They are mapped vernal pools, Class 1 and 2 wetlands, DEC River Corridors and/or FEMA floodways, National Wilderness Areas, and State-significant Natural Communities and Rare, Threatened, and Endangered species.

The Possible Constraints are a set of data layers that don’t necessarily exclude energy development, but give a signal to potential developers and planners that more site analysis may be required. These layers include hydric soils, FEMA Special Flood Hazard Areas, protected lands, deer wintering areas, Vermont Conservation design highest priority forest blocks, and agricultural soils. If generation facilities are proposed in these areas, due diligence is required in the siting of those facilities to ensure there is no adverse effects on the landscape.

Aside from these state-identified constraints, the Town of Marlboro determined that energy generation facilities are generally not compatible with the Conservation or Resource land uses, as described in the Land Use chapter of the Town Plan. These areas have very high resource value and significant natural resource barriers to development, and include lands in and around the Hogback Mountain Conservation Area.

MARLBORO’S ENERGY TARGETS AND CONSERVATION CHALLENGES

The Windham region was given an overall renewable energy generation target, as determined by the Department of Public Service, based on its percentage of the state’s population (which directly affects its share of statewide consumption). The Windham Regional Commission (WRC) then determined energy generation targets for each of their member-towns, based on both the resource availability in town and its population. The resulting town generation targets are an average between those two characteristics.

Energy Generation Targets

In Marlboro, it is estimated that 2,943 megawatt-hours of renewable energy should be generated each year. This figure is an average of 1,486 MWh (based on the town's share of the regional population), and 4,400 MWh (based on the percent of regional resource availability). This estimated generation target serves as a starting point from which the town can develop policy to address its energy needs.

To translate this figure into what kinds of installations would be required, 2,943 MWh of renewable energy each year would require a total of 2,260 kilowatts of solar photovoltaic installations (using the assumption that only solar energy would contribute to the overall energy generation target, not any other generations source).

On the landscape, this could mean that the town identifies 2,781 acres of solar-capable land. This is a very conservative figure; assuming that each megawatt of energy requires 60 acres (on average, solar installations produce a single megawatt over 8 acres equating to 18 acres of actual installations). Using the 60 acres/megawatt energy production rate is for contingency; meaning that it reserves space for landowner, grid, or spatial constraints that may limit development. This ensures enough space would be delineated.

If other renewable energy sources were to be used, this amount of solar photovoltaic installations would decrease. Although renewable energy generation can occur in the town and supply its residents with reliable, affordable, and clean power, the town is challenged by the current amount of energy being consumed. In order to minimize the amount of energy generation required, the town must first develop strategies to reduce the amount of energy consumed.

Projected Energy Use: LEAP Model Results

To help inform the town's policies on energy conservation measures, the town used guidance from the LEAP (Long-Range Energy Alternatives Planning system) model, conducted by the Vermont Energy Investment Corporation as part of the state's comprehensive energy planning initiative.

The LEAP model is used to guide the state's regions towards reducing the amount of greenhouse gas emissions and consuming 90% renewable energy by 2050 (referred to as the "90x50" goal). To accomplish the state's energy goals, there are several interim benchmarks built into the LEAP model which ensure a progressive pace in attaining that "90 x 50" goal. The state energy goals are:

Greenhouse gas reduction goals of 50% from 1990 levels by 2028 and 75% by 2050.

25% of energy supplied by renewable resources by 2025 (25 x 25).

Building efficiency of 25% of homes (80,000 units) by 2020.

Incorporating those goals into the model produced energy generation, conservation, and fuel conversion targets for benchmark dates for all regions in the state, and is informed by the region's current energy profile. The WRC received the results from this model and was tasked with making those results relevant to its member-towns. The WRC therefore divided its region-wide benchmark targets among its towns based on their population (which is assumed to most directly impact the amount of energy the towns consume).

The following paragraphs and figures show Marlboro's LEAP model results, and how much energy could be conserved in order to reduce the burden of energy generation facilities in the region.

Residential Heating Conservation & Fuel Conversion

In order to determine how much energy would have to be conserved or how much fuel conversion to renewable energy, the LEAP model produced both a “Reference” and “90x50” scenarios. The Reference scenario is meant to depict energy use over decades if no major changes were made in our energy profile. It is the “business as usual” scenario. The “90x50” scenario shows one pathway that communities can adopt in order to reduce greenhouse gas emissions, conserve energy, and generate renewable energy so as to meet the state’s goals. This pathway is translated to Marlboro’s use, and is shown below. It is another data estimate that serves to help inform the town to develop its own policies for energy conservation and fuel conversion.

Figure 5 below shows the LEAP results for Marlboro’s residential heating sector. In both the Reference and 90x50 scenarios, energy consumption is modeled to decrease (on account of technological improvements, building innovation, and home efficiency improvements).

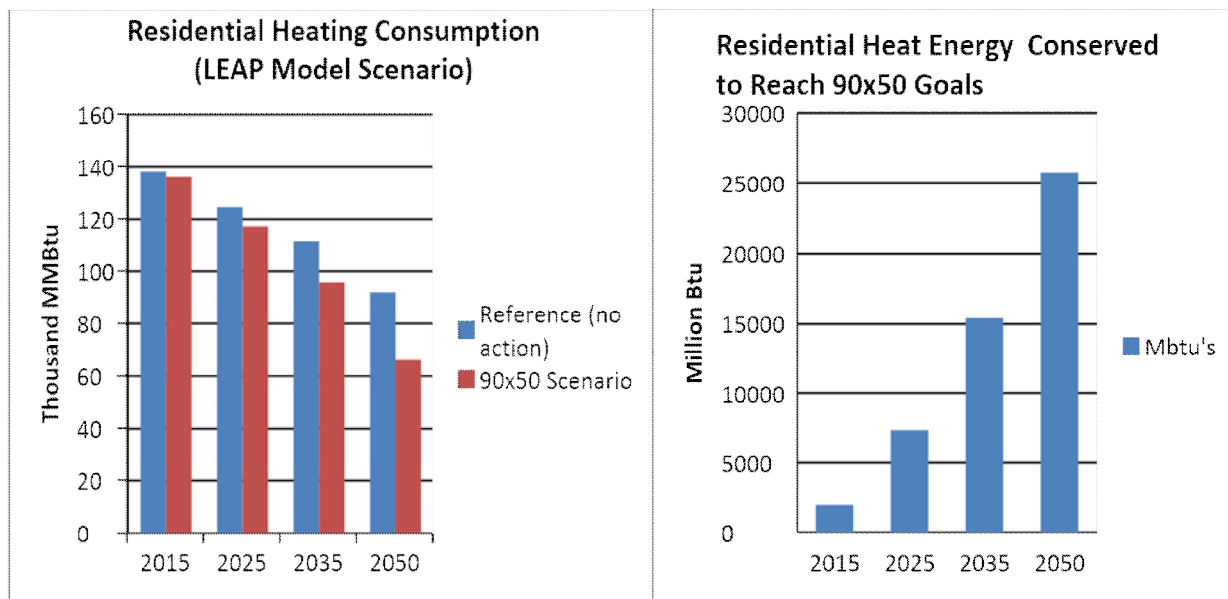


Figure 5: LEAP Results for Marlboro’s Residential Heating Sector

However, the 90x50 scenario shows a sharper increase in the amount of energy conserved in residential heating. Figure 5 shows how much energy should be conserved, through 2025, 2035, and 2050, to help the town arrive at these energy goals. Not only would energy need to be solely conserved by building efficiency measures, but fuel conversion to more efficient energy sources would be promoted.

In order to attain the renewable energy goals, the following targets have been established for Marlboro for years 2025, 2035, and 2050.

- Percent and number of households to be weatherized over benchmark years to meet efficiency targets: 23% (120), 44% (234), 91% (480)
- Residential and Commercial Thermal Fuel: Estimated new efficient wood heat systems overall (in units) in the LEAP 90x50 scenario (this includes both wood stoves and wood pellet burners for homes and businesses). 342, 321, 314

- Estimated residential and commercial new wood pellet systems (in units) in the LEAP 90x50 scenario: 63, 69, 86
- Estimated new efficient wood heat systems overall for residential and commercial (in units): 342, 321, 314
- Estimated new heat pumps for residential and commercial (in units): 111, 219, 310
- Percentage of fuel sourced by renewable energy: 56%, 67%, 93%

Transportation System Changes

The LEAP model created benchmark targets for both light and heavy duty vehicles, assuming a difference in residential and industrial energy needs and changes over time. Below are the two interpretations of these sector's efficiencies over time.

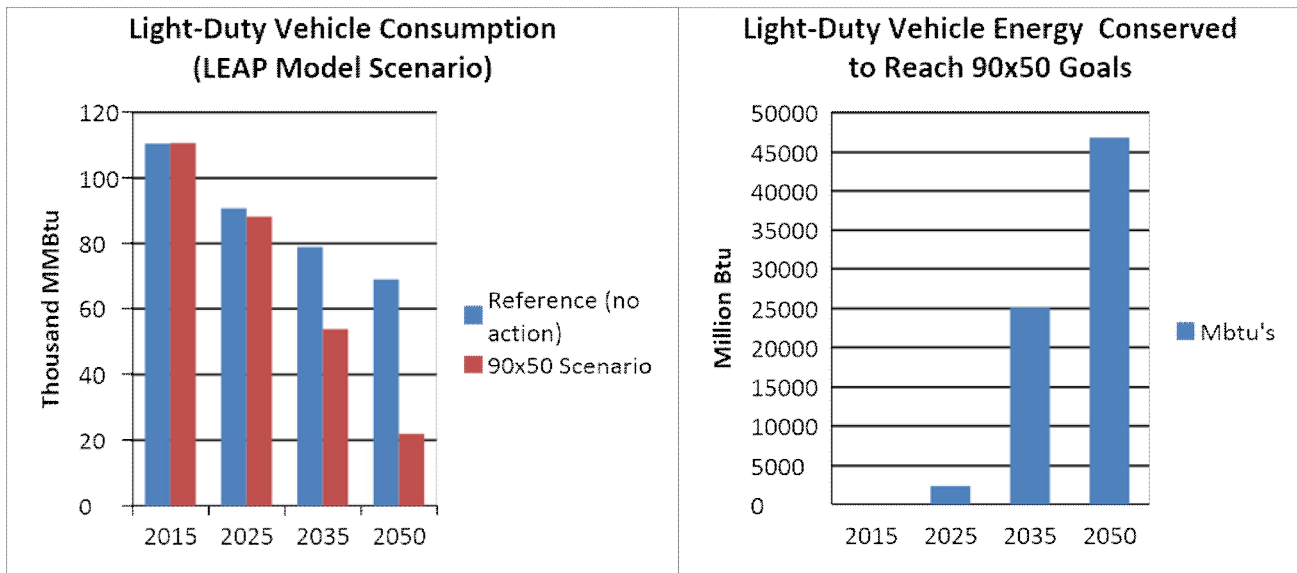


Figure 6: LEAP Light-Duty Vehicle Efficiencies

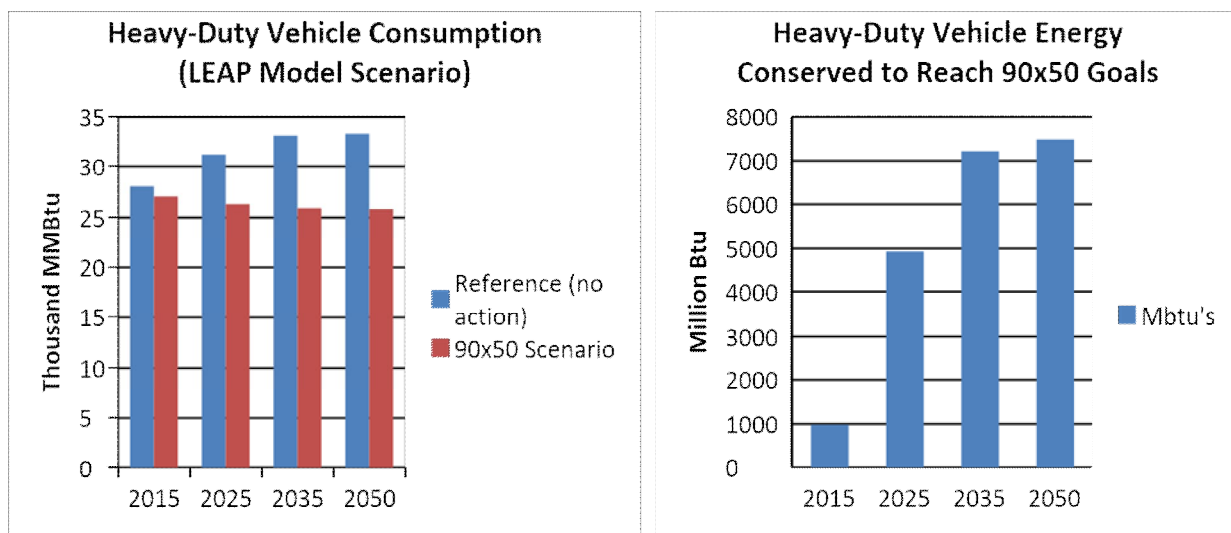


Figure 7: LEAP Heavy-Duty Vehicle Efficiencies

Light-duty vehicle consumption represents a larger portion of the total amount of energy consumed by the transportation sector, and there is a large amount of energy conservation required. The LEAP model projects much of this conservation of energy comes from the electrification of the vehicle fleet, especially as market demand changes and technology improves. This reduction in gasoline consumption and electrification of the car motor comes in addition to increased cluster developments and other land use changes that improve the efficiency of our community's transportation network. The following targets for the years 2025, 2035, 2050 are set for the town's transportation fuel conversion:

- Estimated number of new electric vehicles for the target years: 77, 542, 1,144
- Estimated number of biodiesel-powered vehicles for the target years: 117, 224, 388
- Percentage of fuel sourced by renewable energy by the target years: 10%, 31%, 90%

Heavy-duty vehicle consumption doesn't show the same curves as per light-duty vehicles, since commercial and industrial applications for this vehicle fleet isn't anticipated to change as much. However, efficiency in this sector is achieved by changing the fuel type for these vehicles from diesel to bio-diesel.

Electricity Conservation

Over the benchmark years, electricity rates are anticipated to increase in the Reference scenario, due to a combination of more amenities, appliances, and motors being supplied by electric power, and an increase in the number of people using those products. The 90x50 scenario promotes electricity conservation in the form of energy-efficient appliances, lighting, and heating/cooling. Pursuing these upgrades, the town is targeted to save the following in electrical conservation measures for target years 2025, 2035, 2050:

- Percentage of buildings to have upgraded by the target years: 42%. 68%. 100%..
- Number of kilo-watt hours to be conserved, annually, over the target years: 258,300, 422,100, 617,400

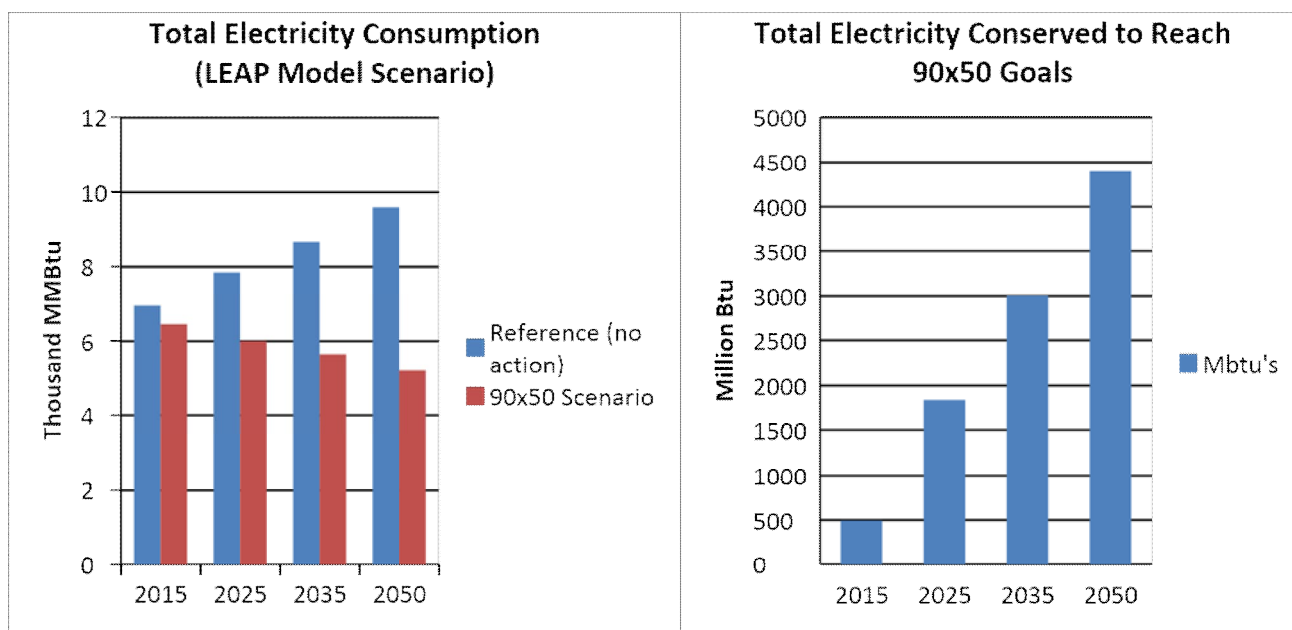


Figure 8: LEAP Electricity Conservation

Conservation and Efficiency Strategies

With total energy expenditures in the town in excess of \$2,683,769, there is considerable opportunity for savings from various energy conservation and improved efficiency measures. Because most of the energy use in Marlboro is for private uses (home heating, commuting, etc.), savings would accrue primarily to residents. Public education is one of the most effective strategies to bring about savings through energy conservation and improved efficiency, though there are some specific policies that can also move the community in that direction.

Most new construction in Marlboro is required to meet or exceed the Vermont Building Energy Standards (for both residential and commercial buildings) through the use of insulation, heating systems, and weatherproof windows and doors. Current building codes provide basic energy efficiency requirements for buildings; however, technology advancements have generated higher standards such as net-zero energy construction standards in which buildings generate as much energy as they consume. Green construction and LEED Construction (Leadership in Energy and Environmental Design) standards promote the use of natural, recycled, and durable building materials, as well as energy efficiency. These efficiency standards are also applied to landscaping, advocating for native plantings that are low maintenance.

The siting, design, and construction of buildings strongly influences the amount of energy needed for heating as well as the amount of electricity needed for lighting. Proper subdivision design, building orientation, construction and landscaping provide opportunities for energy conservation such as less vehicular travel, and by designs incorporating passive solar space and domestic hot water heating, natural lighting and photovoltaic electricity production.

Energy savings can be realized by retrofitting existing buildings with insulation, installing high-performance windows and doors to reduce heat loss, weather-stripping, replacing incandescent lights with fluorescent, and using energy efficient appliances. The following programs are available to residents of Marlboro:

Southeastern Vermont Community Action (SEVCA): SEVCA is the service provider in Windham County that runs the Weatherization Assistance Program. Weatherization services, which include an energy audit, diagnostic tests, analysis and installation measures, are available at no cost to income-eligible homeowners and renters. SEVCA is also available to help in the event of a heating emergency. They can help purchase oil, kerosene, propane, or wood. In addition, they also work with electric companies in order to prevent disconnection and help negotiate payment plans.

Efficiency Vermont: Efficiency Vermont is the State's provider of energy efficiency services. They provide technical and financial assistance to electrical consumers for the purpose of improving the efficiency of existing and new facilities.

ENERGY STAR Home Rebates: Energy Star Homes meet strict energy efficiency guidelines set by the U.S. Environmental Protection Agency and U.S. Department of Energy. Efficiency Vermont provides free financial, design, and technical to help build an ENERGY STAR qualified home. Benefits of being an ENERGY STAR home include financial incentives such as product rebates; utility savings; higher resale value; increased comfort and air quality; and other environmental benefits.

Vermont Housing Finance Authority's Energy Saver Loan Program: Administered by Windham Housing Trust, this program offers low interest loan funding for homeowners for an energy audit and improvements specified in the audit.

Transportation-related efficiency strategies are a very significant part of Marlboro's efforts, since it represents a significant portion of the energy demand. Simple changes, such as ride-sharing, combining trips and using alternative transportation, will conserve fuel and reduce wear and tear and maintenance costs on individual vehicles. Fuel efficient and electric cars will use less gasoline and emit less pollution.

Effective land use planning can promote energy conservation. Targeting new development toward areas located close to the community's major roads and existing settlements will minimize the energy consumed by residents commuting, and will reduce the energy required to deliver essential services to residents and businesses.

ENERGY GOALS POLICIES & ACTION STEPS

These goals and action steps proposed by the Town of Marlboro will have a much greater chance of success with the active support of legislative and executive actions for higher levels of funding of energy initiatives. The political process must be seen as a vital part of our energy plan.

Goal 1: Marlboro will reduce its total energy use by promoting energy conservation and efficiency measures, while encouraging a shift toward renewable sources.

Energy Policies

1. Maintain and improve as needed the energy efficiency of municipal buildings.
2. Inform town residents, businesses, and organizations of energy goals and conservation measures, providing support especially for low and moderate income households.
3. New construction, including additions, should comply with residential and commercial building energy standards. Existing buildings that undergo renovation, alteration, or repairs should also comply with the energy standards.
4. Decrease the use of fossil fuels for heating, and promote the use of alternative and renewable fuels, such as electric heat pumps.

Energy Action Steps

1. Re-establish a Town Energy Committee to help keep the town informed of all significant energy issues, and communicate those issues with residents through regular public events.
2. Provide information about resources for building energy efficient homes and businesses, including The Vermont Residential and Commercial Building Energy Codes and LEED (Leadership in Energy and Environmental Design) standards.
3. Have energy audits and weatherization projects in town facilities, including the both indoor and outdoor lighting, and identify strategies for reducing energy use.
4. Provide informational materials to owners or builders to inform property owners about available energy programs such as Efficiency Vermont and SEVCA.
5. Provide informational materials for energy conservation to be used in site plan or conditional use review. Whenever possible, development should be encouraged in areas with characteristics most suitable for maximum energy conservation.
6. Consider the adoption of stretch codes for energy conservation.
7. Residential energy conservation programs that conduct energy audits and/or provide weatherization services for existing homes, especially for low income homes, should be fully utilized and promoted through information outreach.

8. Encourage the retro-fitting of existing structures with energy saving measures such as insulation, storm windows, efficient heating equipment, and energy efficient appliances.
9. Promote switching to "high efficiency" EPA certified for wood-burning devices, liquid biofuels, biogas, geothermal, cold-climate heat pumps, and/or other energy efficient heating systems.
10. Promote awareness of the benefits of passive solar heating and enhanced insulation as effective tools for reducing the use of fossil fuels.

Goal 2: Reduce transportation energy demand/use while providing for safe, convenient, economic and energy efficient transportation systems that respect the integrity of the natural environment, including public transit options and accommodations for pedestrians and cyclists.

Energy Policies

1. Marlboro will promote strategies to reduce transportation energy demand and single-occupancy vehicle use, and encourage use of lower-emission energy sources for transportation, bicycle/foot paths as a means to encourage non-automobile travel, carpooling, ride-sharing, public transit, private multi-passenger service, and infrastructure that encourages telecommuting.
2. Promote the use of alternative fuel and electric vehicles, and explore potential locations for an electric vehicle charging station. Consider these options for a municipal vehicle purchases, where available and appropriate.

Energy Action Steps

1. Encourage public transit companies to provide additional transportation options, including additional points of access, improved routing and greater frequency.
2. Promote full utilization of existing routes, in particular those of the Moover.
3. Promote initiatives for ride-share, vanpool, and/or car-sharing, and identify potential parking areas for park-and-ride opportunities. Promote the use of the Go Vermont website. Explore the possibility of a commuter parking lot, including electric vehicle charging stations.
4. Provide education and outreach to potential users of alternative fuel vehicles.
5. Consider implementing improvements that support safe and convenient walking and biking.

Goal 3: The Town of Marlboro will promote appropriate land use patterns and development densities that result in the conservation of energy. (See related Land Use sections of the Marlboro Town Plan).

Energy Policies

1. Support settlement in the town's village center when physically feasible and appropriate. Promote the development of compact, affordable housing where appropriate.
2. Promote land use and conservation policies that encourage ongoing forest management to maintain a local source of fuel-wood and local agriculture to maintain and increase the supply of locally produced food.
3. The production of locally sourced foods contributes to a reduction of transportation fuels. In addition, support for local food products can help to keep more land in agricultural production and help to retain those ecological functions provided by those lands, and contribute to a resilient local and regional economy.

Energy Action Steps

1. Work towards the establishment of a Town Septic in our village center.
2. Identify appropriate sites for affordable housing.
3. Work with the Vermont Land Trust, or other appropriate non-profit organizations to encourage the voluntary protection of productive agricultural, forest lands, and critical natural areas. Techniques such as conservation easements or donation of land should be actively explored.
4. Encourage participation in the Vermont Land Use Appraisal Program to support the viability and maintenance of farm and forest land.
5. Propose the formation of a Local Food Committee to help coordinate and promote the access to locally produced food. Encourage the development of local markets and CSA's.

One way to reduce transportation costs is to locally source foods. In addition to reducing energy costs expended on the transport of food products, increasing the amount of food sourced locally or regionally and supporting more lands in agricultural production can help retain ecological functions provided by those lands as well as contribute to a resilient local and regional economy.

Goal 4: Marlboro encourages the siting of renewable energy generation facilities based on resource potential and development constraints.

Energy Policies

1. Support renewable energy generation in Marlboro, including bio-mass using local wood supplies, dispersed, small-scale wind, solar and hydro-power sources.
2. Promote the siting of renewable energy generation facilities within the compatible Land Use districts, namely within Rural Residential, Educational and Commercial Districts, and in such a manner that minimizes site disturbance and development, reduces impact on local roads and infrastructure, and maximizes energy resources availability so as to provide the most benefit.
3. Encourage any commercial renewable energy generation facilities to be within the areas deemed most suitable as described in this Enhanced Energy Element and as described below:

Criteria for preferred renewable energy generation sites ("preferred sites"):

Per Vermont Public Utility Commission Rule 5.100:

- a. Rooftops
- b. Historic impervious surfaces with no adverse ecological impact from development
- c. Gravel pits
- d. Municipally designated "preferred sites."

Favorable characteristics in considering "preferred sites":

- 1) Proximity to existing transmission lines and 3 phase power lines to reduce the need for utility infrastructure expansion.
- 2) Existing road structure suitable for installation and maintenance.
- 3) South facing slopes having low quality agricultural soils.
- 4) Location on agricultural soils only with facility design compatible with continued agricultural use.

Unfavorable characteristics in considering "preferred sites":

- 1) Disruption of a significant viewshed.
- 2) Significant impact on the agricultural use of high quality soils.

- 3) Disruption of wildlife travel corridors or living habitat.
- 4) Interference with riparian buffers, aquifer recharge areas, or forests used for wood products.

Energy Action Steps

1. Support incentive programs for small-scale net-metering energy production and energy conservation for private use.
2. Support small-scale, up to 15kW, active and passive solar installations, specifically on rooftops, rather than large-scale ground mounted utility installations.
3. Support small-scale, residential wind generation facilities where there are no adverse visual, ecological, or sound affects to nearby residences.
4. Support permit-able small-scale micro-hydro systems where there are no adverse effects on the geomorphic stability or ecological health of the respective water body.
5. Consider no property tax and/or no permit fee or permit needed for residential rooftop installations.
6. Support solar installations that allow compatible agricultural uses and are sensitive to the accommodation of wildlife, especially pollinators.

✧ ✧ ✧

E. HOUSING

Housing conditions in any community are affected by economic and demographic trends, local and state property taxes, and town land use regulations. This section will offer data to provide some insight into Marlboro's current housing, an overview of general attitudes held and issues faced by townspeople, and finally, an attempt to lay out policies and action steps we can take to improve the housing situation here.

From May to August 2005 the Planning Commission (PC) conducted a housing survey of voters, property owners, and residents of Marlboro. The first section of the survey asked for opinions about existing conditions and concerns; the second dealt with housing strategies, priorities, and possibilities for increasing the affordability of existing and new development. When the results were tabulated and analyzed, the Planning Commission hosted a series of public discussions on housing, and explored various methods, both regulatory and non-regulatory, for achieving greater affordability of current and future housing in town.

As one result of these efforts, the PC drafted regulations implementing density bonuses for affordable Planned Unit Development (PUD) projects and completely rewrote subdivision regulations, both measures which the voters approved in March 2007. These subdivision regulations now need to be reviewed and revised.

The survey also provided insight into the dilemma of rising values of real estate and land, and what role the town might play in exploring affordable housing options for those who would like to live here. If Marlboro is to maintain an adequate housing supply and meet the housing needs of all members of the community, the Town needs effective planning that anticipates projected permanent population growth and addresses community, social, environmental, and economic impacts, as well as the nature, density, and impact of future housing development.

Marlboro's creation of a Development Review Board (DRB), established in the summer of 2007, has freed up the PC to work more intensively on the development and implementation of affordability strategies, such as community land banks, accessory apartments, mixed-use, and elderly housing, and assisted living facilities, and to deepen the level of public awareness and involvement in the process. The adoption of a new Village District in the revised Zoning Regulations of 2018, State designation of same, and completion of a septic feasibility grant for the Village District in 2020 has provided an opportunity for smaller and more affordable lots and houses in this area, pending development of a wastewater treatment system for this area of town.

With funding from Vermont Housing and Conservation Board and others, the Congress for the New Urbanism published a Zoning Guide to VT neighborhoods on July 1, 2020, which was distributed by the Windham Regional Commission to Town Planning Commissions. It provides useful guidance to take steps to increase affordable housing, and will be used by Marlboro Planning Commission to make future zoning recommendations (see action steps).

TRENDS IN HOUSING

Since the 1940's housing development in Marlboro has been dispersed throughout the Town, mostly along existing roads and on parcels of ten acres or more. What village pattern development once existed at the town center has long since stagnated. If this pattern continues as new development occurs, the rural nature of Marlboro will be seriously impacted in the near future. Some likely impacts include:

- Further encroachment upon productive agricultural or forestlands resulting in the net loss of this valuable natural resource base and reduction in related local economic activity;
- Increasing fragmentation of remaining natural habitats and wildlife corridors;
- Some landowners may experience difficulty in managing their lands as productive agricultural or forest lands, or wildlife habitat, because of increased economic pressures on unprotected undeveloped land;
- Increasing costs of delivering community services such as fire protection, police protection, emergency/rescue services, school busing, and road and bridge maintenance to a widely dispersed and growing population.

Single-family housing is the predominant form of local land development in Marlboro. New development tends to occur along existing roads, one lot at a time. Because Marlboro is considered a desirable place to live, the Town will come under more and more pressure for residential development. The lack of municipal water and sewer facilities makes compact village development difficult, without implementing a new septic system that was described in the recently-completed Septic Study. Demand for vacation housing will likely continue, and often occurs on parcels with scenic or conservation value to the town. The percentage of total housing units that are used as seasonal, or vacation homes has remained at about 20-30% during the last 20 years. Growth in total housing units has risen by more than 5% in Marlboro between 2000 and 2010.

The 2010 census indicates that the age distribution of the Marlboro population has changed since 2000. It will probably change again in the 2020 census, along the current distribution lines. Age distribution is a significant determinant of housing need. In their 20's people tend to live in apartments, in their 30's they look for "starter homes," which includes mobile and manufactured units. For the last twenty-five years, the "baby boomers" have driven the housing market in Vermont.

SEASONAL HOUSING AND SHORT-TERM HOUSING

As noted above, 20-30% of total housing units are used as seasonal or vacation homes. Although this percentage has remained relatively steady over the past 20 years, what has increased anecdotally is the number of short-term rentals such as Airbnb.

The advent of companies such as Airbnb and this type of short term housing is a recent phenomenon and therefore the actual number of such rentals is unknown. Although providing needed space in town for transient visitors, this business is currently unregulated, so this Town Plan has added a suggested Action Step related to this housing trend.

AFFORDABLE HOUSING

It is evident from the Housing Survey that residents and non-residents alike are worried about rising property values and taxes, future growth, and affordability of housing in Marlboro.

"The generally-accepted standard for housing affordability defines housing as 'affordable' if the household is paying no more than 30 percent of its income for rent and utilities or for mortgage, taxes and insurance. This standard may be too high when considering the rising costs of other necessities, such as health care, fuel, and childcare, but it remains the basis for defining 'affordable housing'."¹

¹ *Between a Rock and a Hard Place: Housing and Wages in Vermont*, Vermont Housing Council and the Vermont Housing Awareness Campaign, March 2007.

“Affordability is determined by two factors. The first is the cost of housing, and the second is the ability of people to pay that cost. As home prices and rents rise at a faster rate than Vermonters’ wages, housing becomes less affordable for an increasing number of people.”² The Windham Regional Commission has found that this troubling trend has continued especially in Windham County, and is currently revising the regional plan with updated statistics.

In 2007, the median price of an existing primary residence in Windham County was \$184,500.³ For that to be affordable, a household would need to be earning over \$63,000, but the median family adjusted gross income in Marlboro was \$53,969, or enough to afford a home priced at \$135,940. Recent median incomes have not changed this situation, and costs of new construction continue to rise.

We know from the 2005 survey responses that many current Marlboro residents are already challenged to retain their housing in Marlboro. Starting families and elderly on fixed incomes are particularly likely to be priced out of Marlboro.

To some extent, the affordability gap in Marlboro has been bridged by ingenuity. People rent and convert summer homes and cabins or somehow obtain the use of raw land and erect simple inexpensive housing, mobile homes, and even yurts. So long as the living conditions are safe, sanitary and in compliance with local bylaws and ordinances, such ingenuity is welcome in Marlboro.

But more needs to be done to make Marlboro affordable for the people who live here. The Town is committed to pursuing strategies that will help close the affordability gap, and provide opportunities for all residents to continue to live here and feel secure in their homes.

SENIOR/ELDERLY HOUSING

As mentioned previously, since 1985 the “baby boomers” have driven the housing market in Vermont. This age group has now reached mid- to late- retirement age. Over the past twenty years, the greatest population shift in Marlboro has been in the over 65 group, a 62% increase from 2000. Seniors in this group often find themselves “over-housed”, meaning houses are now too large, or maintenance of their home has become too onerous. Some may be facing reduced retirement incomes. In cases like these, many older seniors tend to look for smaller homes, apartments, assisted living, or elderly housing, including continuous care communities (progressing from small or attached housing, to assisted living housing, to nursing home care). Unfortunately, Marlboro has no facilities dedicated to housing its elderly citizens once they no longer want or are able to maintain their single family homes. As a result, many are forced to leave Marlboro to find suitable elderly housing.

HOUSING: POLICIES AND ACTION STEPS

Housing Policies: It shall be the policy of the Town of Marlboro to:

1. Encourage the provision of safe, environmentally responsible, and energy efficient year-round housing that offers a variety of size, cost, and location and which respects the physical limitations of the land as well as the overall interests of the community.
2. Concentrate development in appropriate areas and in ways that preserve the rural character of the landscape, particularly respecting conservation areas and corridors, as well as scenic and recreational areas.

² ibid

³ 2003-2007 Vermont Housing Data, last revised August 7, 2007.

3. Encourage the reuse and renovation of older buildings whenever possible.
4. Encourage affordable housing in the Village District on smaller lots, working to create a community wastewater system
5. Whenever appropriate to the Town's rural character and the capability of the land, and to the efficient provision of services, encourage housing developments to preserve open space, conserve energy and transportation needs, and assist in the preservation and connectedness of important resource lands especially in the Village District.
6. Accommodate a diversity of housing types, both ownership and rental, and ensure that they are coordinated with the provision of adequate community facilities and services. Explore possibilities of elderly housing on the former Marlboro College campus. Encourage the construction of housing for the elderly, including continuous care communities.
7. Support affordable residential development proposals that can help to meet the needs identified in this plan.
8. Promote development projects that can guarantee the long-term affordability of the housing.

Housing Action Steps: In support of these policies, the Town should:

1. Identify means by which people of low and moderate income can secure and maintain housing and land, such as housing subsidy programs by non-profits, and programs such as the Town's low-income housing rehabilitation program, which maintains a revolving loan fund for making housing improvements.
2. Publicize and educate residents about these programs, including the Town's Low Income Housing Rehabilitation Program and Community Loan Fund. Other housing resources include the Vermont Community Development Program, Windham/Windsor Housing Trust, Brattleboro Area Affordable Housing (BAAH), Southeastern Vermont Community Action (SEVCA), Vermont State Housing Authority (VSHA), Vermont Housing Finance Agency (VHFA), federal (HUD) and Rural Development programs.
3. Review the publication *A Zoning Guide to Vermont Neighborhoods* (2020) to consider zoning code reforms presented that, when adjusted to the Town of Marlboro, may significantly impact the accessibility and affordability of the housing in Town, including elderly housing.
4. Consider design and implementation of an affordable housing overlay district as a tool for increasing housing affordability while maintaining a balance between conserved land and needed growth. Encourage creative PUD's by allowing higher densities, graduated tax abatements, smaller frontage and setback requirements, etc.
5. Ensure that Zoning and Subdivision regulations include incentives and opportunities for creation and retention of affordable and also elderly-specific housing.
6. Review current subdivision regulations to ensure that development can be achieved in Marlboro that is both affordable and pleasant, and that conserves existing and future demands on resources.
7. Encourage diverse housing types (single family housing, rental housing, multi-family housing, accessory apartments, elderly housing (including assisted-living facilities), and mobile and manufactured homes, and ensure that they have access to adequate community facilities and services.
8. Encourage the Town to consider a possible ordinance or regulation concerning short-term rentals, including but not limited to a house, room in a house, cabin, cottage, condominium, barn, tree house, camper, or tent.

9. Support affordable and also elderly-specific residential developments when appropriate in meeting the needs identified in this plan. Such support may include, but is not limited to (a) reduction of permit fees, (b) donation of public lands or buildings, (c) density bonuses, and (d) other incentives for providing affordable units.
10. Consider changing the Zoning Regulations to allow multi-family and other houses that can be built on 2 acres of land in Current Use to reflect H. 674 effective January, 2021.



F. SCENIC AREAS, HISTORIC RESOURCES, EXTERIOR LIGHTING, AND TELECOMMUNICATIONS

SCENIC AREAS

Marlboro's scenic landscape, including its back roads and trails, its open lands and bodies of water, and its wetlands and streams, is widely appreciated by residents and visitors alike. The landscape itself is a valuable economic resource. Many of the commercial facilities and recreational and institutional facilities are in some important way related to the Town's scenic landscapes. The conservation of scenic resources may have to take precedence over development in those situations where development will create the loss of a scenic resource. Scenic areas including panoramic views and landscapes contribute to the Town's distinctive visual character and are listed in the Land Use section after "Land Use Classifications" under "Other Land Use Considerations".

HISTORIC RESOURCES

Marlboro's historic resources include existing structures, sites of significant events in the history of the Town, ruins, and remains of the Town's economic history, and reminders of the Town's settlement and transportation pattern. They are important for their economic and educational value and as direct links to the former style and quality of life within the Town. Destruction of historic resources may often be caused by lack of awareness, insensitivity, or lack of public appreciation of their value.

The Cultural Resources, Community Facilities, and Transportation Map pinpoints locations of historic sites and structures that have been identified by the Vermont Division of Historic Preservation and/or the Marlboro Historical Society. The following have significant local historical value, and deserve protection, maintenance, or preservation (see Map 3: Cultural Resources, Community Facilities, and Transportation). The following numbers correspond to numbers on the map:

1. The Ephraim Holland Newton House, now a museum owned and operated by the Marlboro Historical Society, with its adjacent building, the one-room Houghton Schoolhouse, which was moved from Cow Path 40 in 1977.
2. The Mather House, with Greek Revival columns, at the corner of South Road and Town Hill Road.
3. The Town House is a municipal structure built from re-used timbers which has hosted Town Meeting since 1822. This original structure was moved from across South Road to its present location in 1967.
4. The Whetstone Inn has been a center of town activity since the 1780's.
5. The Captain Dan Mather House on South Road has wall paintings dating from the early 1800's.
6. The Ella Adams House stands at Adams Crossroad just uphill from the Old Hogback Cemetery (12).
7. The Rice House was moved to Butterfield Road from Searsburg.
8. The Muster Field on Ames Hill Road is still in agricultural use, and is now the site of the Marlboro Fair.
9. The Colonel Williams Barn is one of the oldest in Marlboro.
10. The Phelps Cemetery is in what is now deeply wooded land.
11. The first cemetery in Marlboro is also in what is now deeply wooded land.
12. The Old Hogback Cemetery.

13. The Marlboro Meeting House church was rebuilt and dedicated in 1933 after the previous structure burned. It still houses an active congregation on the second floor and, since November, 2018, the Marlboro Community Center on the ground floor.

Many other sites or structures have significant historic or architectural interest. In addition, numerous stone walls, cellar holes, foundations, mill sites, ruins, abandoned roads, and hiking trails testify to the Town's pattern of settlement and style of life in the late 18th and early 19th centuries.

EXTERIOR LIGHTING

Light pollution or "sky glow" is a cumulative and increasing problem, especially in the commercial clusters along Route 9 and the educational/institutional cluster at the former Marlboro College campus. Light projecting upwards from these areas produces a glow near the horizon, which diminishes the natural quality of the nighttime landscape and night sky. Light from these areas is also directly visible from many distant locations in Town. As these developed areas continue to expand or intensify, special consideration needs to be given to lighting design to minimize these cumulative adverse effects.

The purpose of the "Policies & Action Steps" at the end of this section is to minimize negative effects of lighting on neighbors, travelers, and the region; to avoid glare and light pollution; to promote safety; to minimize negative impacts of lighting on wildlife habitat and movement; to conserve energy wasted on unnecessary lighting; and to promote the enjoyment and preservation of the night sky.

TELECOMMUNICATIONS

There has been phenomenal growth in the development of a global telecommunications infrastructure. This includes expansion of broadband high-density fiber-optic lines (telephone, cable television), as well as wireless communications as in the use of cell phones. The latter has been a concern of communities because of the use of cellular towers to transmit uninterrupted signals. The Town encourages use of creative means of placement and configuration of relay infrastructure to avoid adverse aesthetic impacts. The topography of Vermont is such that some installations may be problematic, yet must be located with the least negative impact.

Also of community concern has been increased pressure by the industry to locate facilities in rural areas. In some cases this can mean more structures simply because of the competitive nature of and growth of the industry. The policy of collocation is advocated by this plan, as is the use of existing structures for cellular infrastructure. The location of tower and relay structures needs to take into account nearby uses and sensitive areas.

Although the Federal Communications Commission (FCC) pre-empts local government, it should not limit the community's concerns or participation in proceedings to ensure safety of the residents and visitors and to protect the Town's historic character, rural nature, and aesthetic beauty. New Zoning Regulations have been recently passed that define the town's requirements regarding telecommunication installations and are incorporated herein by reference.

Many towns now realize the potential for adverse impacts caused by the placement of towers and related infrastructure, and seek the cooperation of all parties in resolving these concerns. The Town of Marlboro is very concerned about the aesthetic and environmental impacts of tower facilities. When planning new infrastructure or upgrades to existing systems, special consideration shall be given to any primary or secondary impacts that would reduce resource values (including but not limited to aesthetics and streetscape design, agricultural land, timber resources, natural areas, wildlife habitat, and historic sites). In addition, when a new facility is planned, there must be clear evidence that the proposed location is

necessary based upon economic considerations, potential impacts on resource values, and the resulting public benefits.

In all cases, appropriate and suitable techniques shall be used to minimize or prevent any adverse impacts from the placement of towers and related infrastructure.

SCENIC AREAS, HISTORIC RESOURCES, EXTERIOR LIGHTING, AND TELECOMMUNICATIONS: POLICIES & ACTION STEPS

Scenic Areas Policies:

1. Foster greater appreciation of scenic resources as a significant environmental and economic resource.
2. Development within the scenic areas should be carefully planned to complement these landscapes of scenic value. Give special consideration to high quality scenic landscapes and scenic corridors.
3. Ridgelines and hilltops and their upper slopes are visible for great distances and give the landscape form and coherence. Development on ridgelines and hilltops and their upper slopes should be discouraged and if allowed, should be sited to minimize incompatibility with these landscapes.
4. The visual character of stream corridors and of shore lands of lakes, ponds, marshes and other wetlands should be preserved.
5. The visual impact of development on meadowlands and fields should be minimized by careful grouping of structures and sensitive alignment of access roads.
6. Improve sites that diminish a scenic view, particularly along State and Federal highways and within scenic corridors.
7. Encourage scenic easements and implement appraisal practices that encourage donation of scenic easements to public and private natural resource/conservation agencies and organizations.
8. Encourage the scale, siting, design, and management of new development to be in keeping with the landscape and to enhance it.
9. Encourage incentives for not developing scenic lands that may otherwise be suitable for development.
10. Encourage the preservation of the rural and scenic character of the town's back roads and promote traffic calming by mowing only where necessary and by retaining trees along the edges of back roads.
11. Minimize visual impacts of communication towers and other high-elevation or ridgeline structures through collocation, design, siting, and color choice.
12. Strenuous effort should be made to influence public utility companies to be sensitive to scenic resources when trimming trees and shrubs for line maintenance.

Historic Resources Policies:

1. Lands adjacent to or including areas of historical, educational, cultural, scientific, architectural, or archaeological value should be used in a manner that will not reduce or destroy the value of the site or areas.
2. Wherever architecturally and historically significant structures become obsolete for their original use, new and compatible uses should be found which will allow them to continue as a visual and cultural asset to the community.

3. The preservation of stone walls and cellar holes shall be encouraged, and the destruction or interruption of stone walls and cellar holes shall be discouraged.

Exterior Lighting Policies:

1. Design and site communication and other high elevation towers so that they do not require nighttime illumination.
2. Illuminate structures and exterior areas only at levels and times necessary to ensure safety and security of persons and property. Exterior illumination of structures and facades should be discouraged.
3. All exterior lighting shall be installed or shielded in such a manner as to conceal light sources and reflector surfaces from view beyond the perimeter of the area to be illuminated. Shield exterior lighting so that the source light does not project above the lamp, and shield exterior lighting so that it does not project onto roads and neighboring properties.
4. Discourage exterior area illumination of regionally prominent physical features and landscapes. Ensure that any such illumination will not significantly reduce the natural appearance of the night-time landscape, will not be obtrusive in the viewshed, and will not distract unduly from the night-time horizon or night sky.

Telecommunications Policies:

1. Recently revised Zoning Regulations have incorporated appropriate guidelines and regulations governing at least the following areas: aesthetics, integrity of residential zones (that is, intrusion of commercial structures into residential areas), ridgeline protection, preferred locations (whether general or specific), and collocation or clustering of tower facilities.
2. Discourage location of telecommunications facilities and towers on regionally prominent physical features and landscapes. Ensure that any such facility or tower will not significantly reduce the natural appearance of the landscape and will not be obtrusive in the viewshed. Strongly discourage locating telecommunications facilities and towers on ridgelines, hilltops, and their upper slopes.
3. Encourage the collocation or clustering of facilities and towers.
4. Assure a community voice in the location and expansion of telecommunications infrastructure.
5. Any permits granted for these facilities shall be for a limited time period. This will allow for periodic review, and new permit conditions reflecting advances in knowledge, experience, and technology. Equipment shall be downsized as technology advances, and removed when no longer used or needed. These requirements can minimize aesthetic intrusion, while maximizing the potential to serve a greater number of users in the same physical area. A bond may be required to ensure that funds are available to accomplish these purposes.

SCENIC AREAS, HISTORIC RESOURCES, EXTERIOR LIGHTING, AND TELECOMMUNICATIONS: ACTION STEPS

Scenic Areas Action Steps:

1. Develop restrictions or regulations regarding development on ridgelines, hilltops, or their upper slopes.
2. Continue to work with the Town highway department to retain the rural and scenic character of the town's back roads and to encourage mowing only where necessary and to retain trees along the edges of back roads.

3. Promote and implement the recently enacted Zoning Regulations regarding any proposed telecommunication facilities.

Historic Resources Action Steps:

1. With the assistance of the Marlboro Historical Society: a) review and possibly expand the list of Historic Sites and Structures and b) identify and mark historic sites in the Town.
2. Encourage enactment of an ordinance that stone walls removed for temporary access (i.e., for construction or for logging operations) be restored when the opening is no longer required.
3. Work with the Town highway department to ensure that stone walls along roads are not negatively impacted by road work or snowplowing.

Exterior Lighting Action Steps:

1. Support the Zoning Enforcement Officer in implementing the lighting policies included in the recently revised Zoning Regulations.
2. Work with the new owners of the Marlboro College Campus and Hogback area enterprises to encourage compliance with the lighting policies in the recently revised Zoning Regulations. . Work toward conversion of existing lights.
3. Draft zoning regulations applying to lighting near wildlife crossings, once wildlife road crossings are determined.
4. Encourage enactment of a Town ordinance that protects Marlboro's dark night skies, and prevents light spill from exterior lighting fixtures. Encourage residents to turn exterior lights off when not needed.
5. Encourage the use of timers, sunlight activated switches, and motion detectors to prevent unnecessary exterior lighting.

Telecommunications Action Steps:

1. In interactions with governing authorities regarding proposed telecommunications facilities, encourage the application of recently revised Zoning Regulations to such proposed facilities.
2. Strongly discourage locating telecommunications facilities and towers on ridgelines, hilltops, and their upper slopes.



G. NATURAL RESOURCES

Our landscape defines us, strengthens our community, and holds it together. Marlboro's enduring rural lifestyle depends on its ecological integrity.

Marlboro has abundant natural resources that are central to its economy and the quality of life and health of its citizens and visitors. This section addresses water, wildlife, soils and other earth resources, agriculture and forestry, and wind and solar resources.

WATER RESOURCES

Marlboro has been endowed with valuable water resources that must be conserved and protected for future use to ensure maintenance of their high quality. Water is also a source of hydropower for small-scale electricity generation or other uses (see Energy section). Water resources in the Town include both groundwater and surface water. Groundwater is the water contained within surface deposits of soil, as well as within bedrock and results from the infiltration of rainwater and in some cases surface water into the soil or rock. Groundwater and surface water can be interchangeable, in that groundwater can become surface water and vice versa. Groundwater that is not used by plants or people may eventually flow into streams and ponds as springs and small unnoticeable seeps; surface water does not necessarily stay within a pond or stream, but may serve to recharge groundwater in some areas.

Surface Waters

Surface waters are significant landscape features in the Town, often influencing both the location and form of regional settlement. The Town's high surface water quality is a valuable resource: rivers and streams provide fish and wildlife habitat and help recharge the aquifers, from which a significant portion of the Town's drinking water is derived. The Town's surface waters also provide recreation, including fishing, swimming, and contemplation.

Because of its position on the larger landscape, every river and stream within Marlboro begins in Marlboro. The Rock River, the Green River, the Whetstone Brook, and Stickney Brook all have their headwaters here. Tributaries of the Deerfield River and the North River also arise from our hillsides. Because of this fortuitous situation, we are blessed with an abundance of pure water. If that water leaves our Town as clean as it arrives, we have been good neighbors to the things living in the water and to our neighbors downstream.

Because rivers and streams have created the valleys and passes that facilitate travel, roads and other forms of development are often located in their corridors. Undeveloped waterways provide water quality values in terms of shade (temperature), pollutant filtration, and bank stability. They also provide habitat values both in the water, including direct sources of food and shelter for fish, and on shore, including viable habitat for plants and feeding, foraging, and travel corridors for wildlife. Finally, undeveloped waters provide a direct benefit to society in terms of scenery, recreation, and in many cases, buffering of flood waters. According to the Windham Regional Commission "Undeveloped Waters Report," Marlboro has two undeveloped stream segments of note, a 2 mile section of an unnamed tributary of Worden Brook, and a 1.5 mile stretch of Adams Brook. Long stretches of undeveloped stream are found in the upper reaches of the Green River watershed and the Harrisville Brook watershed. These areas are noteworthy since they flow through low-gradient areas that support many wetlands.

The principal surface water planning issues are the protection of water quality from non-point sources of pollution and the protection of adequate riparian buffers. The Zoning Regulations have addressed riparian buffers and now protect a 300 foot buffer strip along each side of all undeveloped rivers and streams (more than 500 feet from a road) and a 50 foot buffer along all waterways closer to roads.

The Deerfield, Green, North, and West Rivers and their tributaries provide important cold-water fish habitats. Shaded stream banks, clean gravel and rock bottoms, and clean, cool water are necessary to maintain these cold-water fisheries. These fisheries are important for both their ecological and their economic value. Sedimentation from runoff, bacteria from septic systems, clearing of stream bank vegetation, damming of rivers and streams, and lowering of in-stream flows can all have a negative impact on these important fish habitats.

Wetlands are intermediate habitats between upland and aquatic ecosystems. Wetland communities include vegetated, shallow-water margins of lakes and ponds, seasonally flooded borders of rivers and streams, and a diversity of settings across the landscape. Marlboro is located within the Southern Green Mountains Biophysical Region, a zone characterized by shallower soils and more rainfall than is found to our east. These conditions lead to an abundance of small forest wetlands and spongy hydric soils. Wetlands also provide specialized habitats for fish, reptiles, and migratory birds. They include vernal pools—small, ephemeral waterbodies that provide essential breeding habitat for a suite of amphibians and other species. The Town's wetlands are vital for their abilities to recharge groundwater, regulate and filter surface water flow, store water, mitigate floods and provide fish and wildlife habitat. Consequently, they require careful protection. The National Wetlands Inventory (NWI) Maps show Class I and Class II wetlands. Class I wetlands are so classified through a petition process. There are currently no Class I wetlands in Marlboro. The NWI identifies wetlands using aerial photos. This process misses over 80% of wetlands under 3 acres in size and more than half of those between 3 and 8 acres in size. Class III wetlands are not mapped and are usually small, less than ½ to ¼ acre in area. While these wetlands have no regulatory protection, they are very important to the ecological vitality of our forests.

With a warming climate, wetlands play an increasingly important role by holding water on the landscape during times of drought and by absorbing and slowing the flow of water during floods. The majority of wetlands in Marlboro today have been created by the activities of beaver. This has not always been the case. Beavers were eliminated from Vermont by the fur trade. Beavers were reintroduced in Vermont in the 1920s and first returned to Marlboro around 1960. Aerial photos from 1962 show a landscape largely devoid of the open wetlands we have today. The next set of aerial photos, taken twenty years later, show ponds, wetlands, and beaver meadows along every suitable stream. Their wetland creation is hampered where their activities conflict with human land uses. In many cases, however, these conflicts can be remedied and the beavers can remain on site to do their important work. Where they dam culverts, a fence and pipe system can be installed that permits water to flow through the culvert and that regulates the size of the wetland the beavers can create. Five such devices have been installed in Marlboro. Because each site is different, and beavers are committed to their damming, investing in the work of professionally designed and installed flow devices is warranted. Such measures can add to wetland acreage while eliminating the significant amount of time the road crew spends clearing culverts. Similar devices can be installed in beaver dams to limit the size of a pond.

Groundwater

Although less noticeable than surface water, groundwater is a very important part of the Town's resources. Rainwater that falls on the Marlboro area often flows fairly quickly into streams and ponds due to the shallow nature of the soils in most of the Town; however, much of the rainwater and some of the surface water eventually seep slowly into the soil and into the bedrock through fractures. This groundwater provides drinking water for the Town through the many individual wells and springs, and it

also feeds some of the streams and ponds in Marlboro. The soils and rock can serve as a filter for the water, removing some pollutants, and in some cases adding minerals.

Water Quality

The term “water quality” is a measure of the extent to which water in the Town is free of chemical and physical alterations that would render it less habitable and healthy for all the organisms that use it, ranging from insects in a stream to a person drinking groundwater from a well. Many aspects of water quality cannot be controlled, such as the naturally occurring minerals in groundwater or influx of sediment into a stream following a storm. However, many aspects of water quality are influenced by human activities and can be controlled to a lesser or greater degree.

Degradation of water quality can be from water pollution, or from physical alteration of groundwater or surface water areas, which end up impacting water quality. Water pollution can be bacterial (e.g., from failing septic systems or runoff of animal waste), sedimentary (e.g., dirt runoff from a road or construction site), or chemical (e.g., salt runoff from a road, agricultural chemicals, or spilling of gasoline or other fuel). Pollution can be from a point source (e.g., waste running directly into a stream from a pipe) or from a non-point source (originating over a wider area, such as salt runoff from a highway during the winter, construction activity near shore lands, effluent from failed septic systems, and dirt from roads). Physical alteration of surface water and groundwater areas can range from highly visible and obvious impacts such as dams, stream straightening, or large-scale removal of riparian (streamside) vegetation, to less visible impacts such as excess withdrawal of groundwater from a well. In general, the construction of dams on streams and rivers contributes to stream siltation, water level and flow fluctuations, changes in water temperature and impeded fish passage. Clearing of riparian vegetation can raise water temperature and increase runoff, affecting fish habitat and increasing downstream flooding risks. Riparian vegetation is also recognized as being important for removing some chemical pollutants and sediment. Conversion of a forested hillside to field will result in increased sedimentation and water runoff, as well as in reduced ground water infiltration and filtration.

In Marlboro, one of the most widespread and potentially worrisome sources of pollution is the pollution resulting from human settlement. Each new house results in some amount of chemical, sediment, and bacterial impact (e.g., spilling of fuel, oil, paint, runoff from construction sites and driveways, introduction of fertilizers and agricultural chemicals, leaching of chemicals from construction materials). Properly functioning septic systems can adequately filter out most harmful bacteria before they enter the groundwater or surface water, but they can do little or nothing to filter out many household chemicals. Failed septic systems can introduce harmful bacteria quickly into groundwater and surface water.

Water Planning Issues

The principal water planning issue must be the protection of water quality, since water quality has such a great impact on people and wildlife within and outside the Town. A secondary issue, which goes hand in hand with water quality, is the protection of the recreational resource of the streams and ponds. Although it is recognized that human activities impact water quality throughout all of Marlboro, the following areas of the Town are most at risk and must be protected by regulating, restricting, or prohibiting development or large-scale land use changes such as large forest-clearing projects:

- Watersheds characterized by steep slopes (15% or more), or shallow or excessively wet soils. Development on these slopes and soils contributes to excessive erosion and stream siltation and leads to the frequent failure of septic disposal systems and the consequent flow of sewage into surface and ground waters.

- Drainage areas of upland streams (as classified by the Water Resources Board) characterized by the soil conditions mentioned above.
Within these areas, special attention shall be given to prevent (1) negative impacts on the health of streams, lakes and ponds, (2) soil erosion, and (3) pollution or contamination of ground and surface waters. All Marlboro streams are classified as upland streams, with Class B waters suitable for bathing, recreation, irrigation, and good fish habitat.
- Watersheds of public water supplies and watersheds of recreational water bodies.
Sunset Lake/North Pond supplies a portion of the Town of Brattleboro's water, and the Green River, the headwaters of which are in Marlboro, is a water source for the Town of Greenfield, Massachusetts. South Pond and Sunset Lake/North Pond are recreational water bodies.
- Areas supplying significant amounts of waters which recharge underground sources of water (aquifers).
Contamination of groundwater sources is a serious long-range consequence of poorly planned development on soils with inadequate capability for sewage disposal. Any number of biological or chemical contaminants, such as viruses, household poisons, insecticides and herbicides, petroleum compounds, and other toxic compounds, can be inadvertently introduced to the groundwater supply. Most current residents of Marlboro depend upon groundwater wells for their domestic water supply. The amount and quality of groundwater appears to be adequate for continued limited rural growth, but problems with supply and quality may occur when the land is used more intensively. Where feasible, a central water supply and wastewater treatment system to serve all units within a development is usually preferable to many individual wells and septic tanks.
- Areas with significant water storage potential for fire protection and recreation or wildlife purposes.
Because such areas are limited in Marlboro, their preservation is an important and practical objective.
- Watercourses, lakes, ponds, and shorelines.
These valuable scenic, recreational, wildlife and natural resources are relatively few, but they are widely used.
- Wetlands, including swamps and marshes with open water or with a vegetative mat over a high water table.
In addition to their value as wildlife habitat, wetlands contribute recharge waters to aquifers and serve as regulators of surface water flow. They hold great amounts of water during times of flood, and often provide a much more efficient and less expensive flood control measure than man-made dams and levees.
- Flood hazard areas with a serious 100-year flood potential.
These areas can be found along the Marlboro Branch and portions of the Whetstone Brook. In addition, many smaller streams have potential for local flooding, flash flooding, and washouts.

Three Overlay Districts have been added to Marlboro's Zoning Regulations that begin to address water quality: A Shoreland Overlay District helps to protect water quality on all bodies of water over 10 acres, which include but are not limited to Sunset Lake (North Pond), South Pond, Hidden Lake, and Marlboro Millpond; a Surface Water Buffer Overlay District regulates certain activities in designated river and stream buffers; and a Flood and Fluvial Erosion Hazard Overlay addresses activities in areas prone to flooding or erosion during high water events.

SOILS AND TOPOGRAPHY

Soil characteristics can create opportunities for, or physical site limitations to, a variety of land uses such as farming, forestry, mineral extraction, and land development. Prime agricultural soils are soils that are

rated high for crop production potential. These soils are very limited in the Town, located primarily in the river and stream valleys. Since most primary agricultural soils are relatively flat and well drained, these soils are also very developable. Soils suitable for sand and gravel extraction are also limited within the Town. Many of the Town's soils are shallow, unstable, highly erodible, wet, or poorly drained. Any of these features alone, or in combination with steep slopes, are critical factors in determining appropriate land use in the Town. A moderate risk for earthquake activity of a moderate strength exists in southeastern Vermont. This risk is based on the historical occurrence of earthquakes nearby. Unstable soil factors can accentuate the movement and damage caused by earthquake action.

The Town has adopted regulations governing certain development on slopes of 15% or more and prohibiting certain activities on slopes of 25% or more. The Town should monitor the effectiveness of these regulations in achieving the desired protection on natural resources.

Development in the Town has traditionally been encouraged on soils suitable for in-ground sewage disposal systems. Permeable soils are often closely associated with sites having high potential for aquifer recharge, and pollution of subsurface and surface waters may result from development of these soils. The rate of flow of liquid wastes, the rate of absorption, and the location of groundwater and surface waters are all important factors for consideration in planning development on permeable soils.

FOREST AND WILDLIFE RESOURCES

Beginning in January, 2018, State Planning Goals have been updated to conform to VT Act 171, which encourages towns to identify state, regional, or locally significant forest blocks and habitat connectors and include language to encourage their conservation. This new information must be included in Town Plan language and on future land use maps for municipal plans to be approved by Regional Planning Commissions.

To better understand the natural resource protections provided for in Act 171, it is important to start with the new forest planning definitions.

- **FOREST BLOCK:** a contiguous area of forest in any stage of succession and not currently developed for non-forest use. A forest block may include recreational trails, wetlands, or other natural features that do not themselves possess tree cover.
- **FOREST FRAGMENTATION:** the division or conversion of a forest block by land development other than by a recreational trail.
- **HABITAT CONNECTOR:** land or water, or both, that links patches of wildlife habitat within a landscape, allowing the movement, migration, and dispersal of animals and plants and the functioning of ecological processes. A habitat connector may include recreational trails.
- **RECREATIONAL TRAIL:** a corridor that is not paved and that is used for hiking, walking, bicycling, cross-country skiing, snowmobiling, all-terrain vehicle riding, horseback riding, and other similar recreational activity.

Act 171 is an important legislative step toward meeting the conservation goals of Vermont Conservation Design (VCD). This project of the VT Agency of Natural Resources identifies and prioritizes the landscape features that, if conserved, would maintain an ecologically functional landscape statewide and beyond. An ecologically functional landscape is one in which native plants and animals can continue to thrive and evolve.

Forest Blocks

Identifying a forest is more complex than simply identifying the locations of trees. A forest is an ecosystem with interacting assemblage of plants, animals, and the physical landscape. Forest blocks are areas of contiguous forest and other natural habitats (wetlands, old meadows etc.) that are unfragmented by roads, development, or agriculture. Forest blocks provide significant forest habitat, ecological connectivity, or physical landscape diversity. Forest blocks can vary significantly in size and are identified by the land cover of an area. They are not bounded by political or parcel boundaries; a forest block is bounded by non-forest areas, such as roads, development, or agriculture.

Forest blocks are composed of “Core Forests” and “Forest Edges”. “Core forest” refers to the interior zone of the forest block. The “forest edge” refers to that portion of the forest block that surrounds the core forest and extends to the non-forest areas, the boundary of the forest block. This forest edge, which has variously been suggested as between 100 and 200 meters, has different characteristics and serves as habitat for a different suite of species than the forest core. Given the complexity of any landscape and very different ecological conditions across the state, it is difficult to establish a minimum or maximum number of acres to define a functional forest block. The shape and location of a forest block also affects its ecological importance. A forest block that is highly irregular in shape with a high degree of forest edge may be less functional for some species than a forest block of the same acreage and a regular shape. Furthermore, a forest block that is well connected to other forest blocks functions better than one that is completely isolated. When blocks are close in proximity, animals can use several connected small forest blocks, like stepping stones, to meet their life needs.

A healthy forest pattern is one in which a town’s largest forest blocks connect to one another via smaller forest blocks and riparian areas. These large blocks also connect to large forest blocks beyond the town boundaries. Ultimately, a healthy forest pattern is a network of contiguous streams and forest blocks that extends across town, interrupted only by a few roads or non-forest land cover.

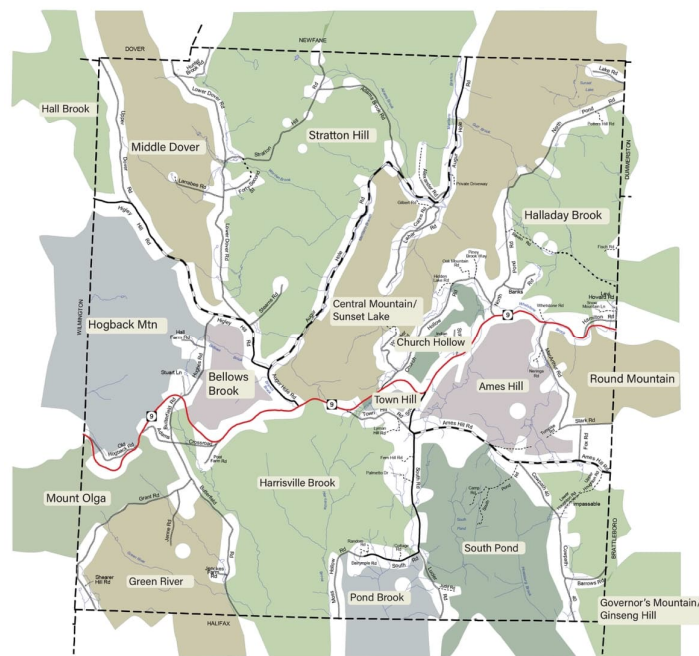


Figure 9: Marlboro's Forest Blocks

Marlboro's landscape is divided by roads into 17 forest blocks. The Vermont Agency of Natural Resources has conducted two sets of analyses on Vermont's forest blocks. The 2014 Vermont Habitat Blocks & Wildlife Corridors endeavored to "identify and prioritize, for conservation, existing contiguous forest blocks and associated linkages that allow for upward and northward movement (of species) in response to climate change." They scored each block using a combination of features, including size, the percentage of core habitat, the percentage of ponds and wetlands, and the length of rivers and streams. They also evaluated each block for threats and came up with a weighted score for each habitat block in the state. Statewide, block scores range from .08 to 8.3 with an average score of 3.9. Marlboro's scores range from 4 to 7, which makes all of Marlboro above average. Our block delineations vary slightly from the ANR's; because Adam's Brook Road and Stratton Mountain Road receive so little traffic, three blocks have been combined into one.

The 2018 Vermont Conservation Design built upon previous modeling to identify the areas of the state that are of highest priority for maintaining ecological integrity. They targeted a set of forest blocks across the state as priorities for maintaining core forest and habitat connectivity.

The State's assessment for each block is included in Table 10.

Table 10. Marlboro Forest Block sizes and ANR Rankings

<i>Name</i>	<i>Total Acres</i>	<i>Acres in Marlboro</i>	<i>Weighted Score*</i>	<i>Highest Priority Interior Forest**</i>	<i>Priority Interior Forest**</i>	<i>Highest Priority Connecting Land**</i>	<i>Priority Connecting Land**</i>
Stratton Hill	6,947	3,904	N/A	x		x	
Central Mtn./ Sunset Lake	4,665	3,565	7	x		x	
Halladay Brook	3,625	1,600	5		x		x
Harrisville Brook	3,254	2,827	7		x	x	
Hogback Mtn.	3,023	1,727	6		x		x
Governor's Mtn./ Ginseng Hill	3,130	588	6		x		x
Pond Brook	2,875	453	5			x	
Round Mountain	2,512	495	5		x		x
South Pond	2,191	1,860	6		x		x
Hall Brook	1,733	208			x		
Middle Dover	1,651	1,322	5				x
Mount Olga	1,530	526	5				x
Green River	1,487	1,188	6		x		x

Table continues on next page >>>

Ames Hill	1,123	1,123	6		x		x
Bellows Brook	547	547	5			x	
Church Hollow	284	284	4				x
Town Hill	95	95	4				x

* Sorenson, E. and J. Osborne. 2014. *Vermont Habitat Blocks & Wildlife Corridors, an analysis using geographic information systems*. Vermont Fish & Wildlife Department.

** Sorenson, E and Zaino, R. 2018. *Vermont Conservation Design: Maintaining and Enhancing an Ecologically Functional Landscape*. Vermont Agency of Natural Resources.

Habitat Connectors

Habitat connectors refer to land or water that links larger patches of habitat within a landscape to allow for the movement, migration, and dispersal of animals and plants. They can be a forest block, riparian area, or a specific road crossing that wildlife repeatedly use. Examples include small habitat blocks that serve as stepping stones between core forest, riparian habitat along streams and rivers, strips of forest cover between developed areas, hedgerows, or fencerows. Sizes can range from a fraction of an acre to one or two hundred acres.

Movement of animals from one habitat patch to another is the most common function attributed to habitat connectors. This is true for both wide and small ranged animals. Bobcats and black bears might use connections quite frequently, whereas spotted salamanders might use them only a few nights each spring to move from hibernation sites to breeding pools.

Habitat connectors should be considered at two scales: landscape and local. Landscape scale connectivity is important for connecting populations of wildlife over large areas or within a region. This allows for genetic variability and ensures migration. Much of Marlboro's forestland has been identified by the Vermont Department of Fish and Wildlife as an eco-regionally significant habitat connectivity area connecting the Southern Green Mountains and the Hudson Highlands of Massachusetts. This area has been prioritized as a significant feature at the landscape scale by the Staying Connected Initiative, a public/private collaboration of State Agencies, and conservation non-governmental organizations in northeast US and southern Canada. The Vermont Agency of Natural Resources BioFinder (<http://biofinder.vermont.gov/>) further identifies this area as highest priority and priority connectivity blocks and interior forest blocks and thus a significant feature in Vermont Conservation Design. At this broad landscape scale, it is absolutely clear that forests in Marlboro serve as vital connecting habitat for the region.

At this large scale, there is some overlap between forest blocks and habitat connectors. Very small forest blocks of minimal habitat or forestry value can function as connecting habitat. These smaller blocks serve an important connectivity role at a large landscape scale.

The network of habitat connectivity at the local scale involves a mix of smaller forest blocks that connect the larger Connectivity Blocks as well as locations where wildlife can successfully cross over (or under) the road. In some cases, fish and wildlife movement associated with specific road crossing areas is seasonal, as evidenced by salamander spawning migrations in early spring. In other cases, movement could be simple happenstance of an animal curious for new food sources on the other side of the road.

Many species of wildlife are selective to specific habitat conditions along roads and are faithful to crossing them in the same place as long as those habitat conditions persist.

Ecologically Functional Landscape

The effects of forest fragmentation are minimized when we maintain an ecologically functional landscape. In Vermont, an ecologically functional landscape is one with large areas of connected forest, riparian areas, wildlife habitat, and natural communities. A high degree of diversity and connectivity is needed to be resilient to shifts in ecological processes and to allow species to access required habitat.

The degree of ecological functionality and connectivity varies with landscape condition. Conservation of only narrow threads of trees or shrubs within a developing landscape will not maintain an area's ecological values, biological diversity, or plant and animal habitat needs. However, even narrow tree lines or hedgerows can serve as habitat connectors across short distances for some species, but wider connectors would serve more species and offer more connectivity. Conservation of corridors in conjunction with the maintenance of forest blocks with diverse habitat conditions will assist in supporting ecosystem functions and related public benefits.

An ecologically functional landscape is especially important in the context of climate change. Populations of species are already adjusting their home ranges to adapt to new conditions. Northward migration of some species is occurring in response to warming temperatures, as well as in response to more complex changes in soil moisture and micro-climates. Movement resulting from climate change may also occur in more than one direction. Therefore, the overall network of connected lands and waters made up of forest blocks and habitat connectors in Vermont and throughout the northeast region is instrumental in allowing for migration of both plants and animals as our climate changes.

Forest History

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

At present, reforestation is slowing as commercial and residential development increases. For the first time in a century, Vermont is experiencing an overall loss of forest cover. While it is hard to pin down the exact amount of acreage, a US Forest Service report indicates Vermont may have lost up to 69,000 acres of forest land between 2010 and 2015.

A look at the larger pattern shows that the primary driver of forest fragmentation is rural sprawl. This type of fragmentation occurs incrementally, beginning with cleared swaths or pockets within an otherwise unbroken expanse of tree cover. Over time, new roads, homes, businesses, driveways, and yards intrude into connected forest acres. Eventually, the contiguous forest is reduced to scattered and disconnected forest islands surrounded by land uses that threaten the health, function, and value of these forests as animal and plant habitat. Furthermore, as forest fragments become ever smaller, practicing forestry becomes operationally impractical, economically nonviable, and culturally unacceptable. In turn, we lose the corresponding and significant contributions that forestry makes to our own economy and culture.

The Benefits of Forest Blocks and Habitat Connectors

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

The following table identifies benefits and ecosystem services of forest blocks and habitat connectors.

BENEFITS	FOREST BLOCKS & HABITAT CONNECTORS
Forest Products Economy	The harvest and manufacturing of forest products contributes \$1.4 billion in annual economic output to Vermont's economy
Economics of Scenery, Fall Foliage, Tourism, and Recreation	A large percentage of recreation and tourism activities are vitally linked to the forest. Money flowing in to Vermont's economy can be attributed directly or indirectly to forest based recreation and tourism.
Flood Protection	Healthy forests play a vital role in absorbing water and moderating its movement across the landscape. Although forests cannot prevent large floods, they do temper flood frequency, intensity, and extent, which in turn significantly reduces the loss of life and damage to property caused by serious flooding.
Clean Water Supply	Forests provide clean water for drinking, recreation, and habitat. This contribution reduces, and in some cases eliminates, the need for expenditures related to manmade infrastructure designed to ensure clean water.
Clean Air	Forests intercept many air pollutants and store them temporarily on leaves and ultimately on the forest floor and within soil. Fine particulate air pollution has serious human health effects, including premature mortality, pulmonary inflammation, accelerated arteriosclerosis, and altered cardiac functions.
Wildlife Habitat	Forests provide the habitat for a great number of wildlife species. Vermonters value wildlife and recognize how wildlife uses and shapes our environment. Wildlife provides other benefits that are rarely recognized by the general public such as pest control, seed dispersal, pollination, and nutrient cycling. These contributions and others are critical for proper ecosystem functioning and sustainable delivery of ecosystem services from our forests.
Biological Diversity	Forests provide crucial habitat for healthy and sustainable populations of native plants and animals.
Climate Change Mitigation	Forests pull carbon from the atmosphere and store it in the soil, trees, and other vegetation. This process of carbon sequestration regulates atmospheric carbon, thereby moderating the rate of climate change and its associated impacts.
Public Health	Forests improve human health and contribute to Vermont's unique and exceptional quality of life. See also benefits under clean water, clean air, and climate change.
Cultural Heritage	Vermonters value the working landscape and recreational heritage.
For more information on the benefits of forests and habitat connectors see the 2015 Vermont Forest Fragmentation Report at vtforest.com .	

Threats to Marlboro's Forests

The loss of forests and their benefits reduces the overall sustainability and resiliency of our community. These short and long-term impacts can also have fiscal implications through increased costs associated with infrastructure, water quality, or emergency services previously supplied by forests.

- **FOREST LAND IS BEING LOST.** After a century of forest regeneration, Marlboro is now losing forest cover to scattered residential development.
- **INCREMENTAL DEVELOPMENT IS BREAKING UP FORESTS.** Fragmentation occurs when development physically breaks up continuous forest and often happens during low-density, uncoordinated residential development. Much of this type of development never triggers Act 250 review.
- **SUBDIVISION IS MAKING FOREST MANAGEMENT DIFFICULT.** Parcelization impacts forests, even when the land is not converted for development. Overall, economically and environmentally sustainable forest management is very difficult on parcels smaller than 50 acres. Effective forest land management plans are more difficult to achieve when multiple small-acreage landowners are involved, sometimes compromising large-scale forest functions such as wildlife connectivity and flood mitigation. Forestry operations are especially difficult in areas with many landowners of small acreage. Within Vermont, parcelization trends continue to rise. Twenty-five years ago, 19,000 family forest landowners owned parcels up to 10 acres in size. By 2012, there were 43,000 family forest landowners. The Vermont Natural Resources Council reports that between 2002 and 2010 there were 29 subdivisions in Marlboro involving 1,783 acres and resulting in the creation of 69 new lots. The average lot size was 25.8 acres and the median lot size was 10.1 acres. None of the subdivisions was subject to Act 250 review (WRC Forest Stewardship Report). In a town with fewer than 700 lots, that is a large change {almost 10%} over an 8 year period. Between 2010 and 2020 an additional 21 subdivisions took place. There were also 12 boundary line adjustments. Such adjustments were often made to accommodate development.
- Marlboro Zoning Regulations now include a Wildlife Habitat Overlay District that applies to all land more than 500 feet from a State Highway or Class 2 or 3 town road. New development in this district requires a Conditional Use Permit and a site visit and evaluation by an environmental consultant. This is an important first step toward preserving an ecologically functional landscape, but more work remains. A Wildlife Crossing Overlay District was initially proposed but not included in the final version of the Zoning Regulations adopted March 6, 2018. The Conservation Commission has been gathering data in the intervening years to refine the location of important road crossing areas for area-sensitive species such as bears, bobcats, fishers, and otters that have large territories and prefer remote habitats. Maintaining functioning road crossing areas is essential and should be addressed in the next Zoning Regulation update.

AGRICULTURAL RESOURCES

Primary agricultural lands are classified by the Soil Conservation Service as Classes Me - III and have the potential for supporting or contributing to a sustainable agricultural operation. They are sufficiently well drained to allow tillage and harvesting with mechanized equipment, are fertile or responsive to fertilizers, and are on slopes less than 15%. In Marlboro such lands are found in scattered small areas throughout the Town and in a significant area bordering the Marlboro Branch near the Newfane border, as well as in a broad band in the west-central portion of Marlboro.

Landowners should be informed about and encouraged to utilize local resource professionals in the care and management of their natural resources. These professionals include the County Forester and agents

of the Vermont Department of Fish and Wildlife, the Natural Resource Conservation District, the UVM Agricultural Extension service, as well as private forestry and agricultural consultants. One extremely valuable tool in conserving resource production land is offered by the Use Value Appraisal Program, already utilized by many Marlboro landowners. Enrolled land must be under a management plan and is taxed at its use value, rather than its “highest and best use” value. The resulting reduction in property taxes may be significant. More permanent conservation of land is available to landowners through donation, sale, or bargain sale of land or development rights to a qualified nonprofit organization, such as the Vermont Land Trust, The Nature Conservancy, or the Trust for Public Land. Other owners may wish to conserve undeveloped lands in a more “wild” state, without engaging in active management. (See, for example, the Northeast Wilderness Trust.) Marlboro land owners may also request to have their land included in the Conservation District zone.

The increasing threat from invasive exotic plants and insects, such as Hemlock Woolly Adelgid, Emerald Ash Borer, Asian Longhorned Beetle, Purple Loosestrife, and Japanese Knotweed, calls for conservation plans to educate, monitor, and address any signs of these or other invasive species that might threaten the integrity of the Marlboro biota.

WIND AND SOLAR RESOURCES

Wind and solar energy are abundant, renewable, and nonpolluting energy resources. Conversion of wind power and solar radiation to electricity will reduce our dependence on nonrenewable energy resources and decrease air and water pollution that results from the use of conventional energy sources. Distributed small wind energy systems will also enhance the reliability and quality of the power grid, reduce peak power demands, and help diversify the State’s energy supply portfolio. Small wind energy systems and use of solar panels also make the electricity supply market more competitive by promoting customer choice.

Some important factors related to the development of large scale wind energy are safety concerns (such as blade speed, breakage, and ice throw), operational noise, night lighting, impairment of scenic views, windmill height, environmental concerns (ridgeline development, detriment to existing flora and fauna), electromagnetic interference (radio and television), access road construction and maintenance, distribution and transmission lines, site abandonment, liability insurance, and siting and design standards. The Marlboro Zoning Regulations prohibit large scale wind development.

See Energy Section for a discussion on applicability of wind and solar resources to Marlboro.

EARTH RESOURCES: GRAVEL, SAND, AND MINERAL DEPOSITS

Activities involving the extraction, exploration or processing of earth resources, by their very nature, disturb the natural landscape and utility of the site. The Town's interest in regulating such activities is to ensure that they will be carried out with a minimum of environmental and scenic damage, nuisance to neighbors, expense to the Town or additional cost to the owners. The need to preserve local resources for local use must be recognized. Finally, an assurance must be provided that at the conclusion of the activities the site will be restored to a condition free of public hazards, scenically acceptable and suitable for subsequent use for other purposes.

The areas containing earth resources of potential commercial significance in Marlboro are small and scattered.

NATURAL RESOURCES: POLICIES**Water Resources Policies:**

1. Maintain or enhance existing chemical, physical, and biological quality of the region's surface waters.
2. Support identification, recognition, and appropriate management of waters with exceptional natural, ecological, recreational, cultural, or scenic values. Ensure that the management of these waters maintains the beneficial values and uses these waters provide.
3. Support surface water classification and management strategies that will effectively maintain or enhance existing water quality.
4. Maintain water flows in streams at levels that will support a full range of in-stream uses and values.
5. Maintain undisturbed buffers of vegetation along watercourses, lakes, ponds, and wetlands to protect shorelines, to minimize effects of erosion, sedimentation and other sources of pollution, to maintain scenic and recreational values, and to preserve riparian corridors as links between upland habitat areas.
6. Maintain wetlands in their natural condition by ensuring that vegetative buffers consistent with state standards are established along wetland boundaries to protect the beneficial functions of the wetlands. Wetlands mapping prepared by the National Wetlands Inventory, showing Class I and II wetlands, is available in digital GIS format for the town. The limited number of wetlands in Marlboro should be protected from development, and should not be drained for development purposes or significantly altered in any way unless there is a long-term public benefit that heavily outweighs the irretrievable loss of resource value.
7. All necessary steps must be taken to ensure that existing wells and water supplies be protected from any adverse consequences of development.
8. Development should be planned, designed, and operated to minimize water consumption to conserve water and to minimize demand for public water supply, and to lengthen the life of waste disposal systems.
9. On land within flood and fluvial erosion hazard areas, only those forms of development that will not restrict or divert the flow of floodwaters or endanger the health, safety, and welfare of the public or of other landowners during periods of flooding shall be permitted. See Zoning Regulations for guidance.
10. Identify and address any adverse environmental impacts of development proposals that could alter a stream channel or its floodplain.
11. Structural measures to control downstream flooding, for example the dams proposed for the Whetstone Brook Watershed in 1975, shall not be constructed in or allowed to flood any part of the Town of Marlboro. The Town should participate in regional study efforts on this, or other, Marlboro watersheds.
12. Where practical, watercourses, lakes, ponds, shorelines and existing public access shall be retained and maintained in a natural state.
13. Advocate that recreation, road maintenance practices, and development activities be conducted in accordance with respective "Best Management Practices," to reduce sedimentation, chemical pollution, and disturbance to surface waters.

14. Logging operations shall conform to the State Acceptable Management Practices (AMPs) especially as regards cutting near shorelines and stream banks.
15. Farms and other agricultural enterprises shall conform to Acceptable Agricultural Practices (AAPs) regarding the use and storage of manure, pesticides, herbicides, and fertilizers.
16. Prevent non-point source pollution by ensuring that on-site septic systems are properly designed and permitted by the state.
17. Marlboro shall discourage development in areas that require the use of highly technical sewage disposal systems or methods that may partially or totally fail due to their unproven, sensitive, or management-intensive nature. This includes, but is not limited to, spray-dispersal effluent control systems.
18. Town officials should cooperate with the State in enforcing water quality, health, and wetland regulations.
19. Landowners whose waste disposal systems do not comply with current Town or State standards or whose systems fail frequently should alleviate the problem voluntarily rather than delay until required to do so by legal order.

Soils and Topography Policies:

1. Avoid development on wet soils because it can cause basement flooding and failure of footings, foundations, underground piping, and septic systems. Road construction on wet sites can be damaging and prohibitively expensive. Drainage of excessively wet soils is often not an acceptable solution because of expense, rate of failure, and potential for environmental damage.
2. Avoid development on mucks, clays, silts, and other unstable soils that offer poor support for foundations or footings and are subject to slippage. Require extensive site investigation to determine suitability for any development on unstable soils.

Forest and Wildlife Policies:

1. Within significant wildlife habitats, forest blocks, and habitat connectors, as identified on Map 1: Natural Resources & Habitat Features, and Map 2: Forest Blocks & Wildlife Linkages, development shall be regulated to minimize its impact on such habitats. Development that takes place within identified forest blocks shall be located at the edges of the blocks in order to reduce fragmentation of the block by roads, clearing, and development. If there is no land that is physically suitable for development at the edge of the blocks, the development must be located in order to minimize fragmentation of the block.
2. Roads longer than 1,000 feet are prohibited within the forest blocks as identified on Map 2: Forest Blocks & Wildlife Linkages, unless a longer road reduces impacts on natural resources.
3. Where development takes place within a habitat connector, development shall be located at the edges of the connector area in order to facilitate wildlife travel through the area. In the event that there is no land that is practical for development outside the wildlife connector, the development's design must minimize impacts on the continued viability and use of the corridor.
4. Roads, driveways, and utilities shall be designed to avoid the fragmentation of identified forest blocks and wildlife connectors.
5. Habitats which support endangered or rare species of wild fauna or flora shall not be used or developed in a manner that will destroy, diminish, or imperil those species.

6. Areas with premium stands of normal vegetation, with unusual plant communities or other habitat, or of unusual wildlife significance (e.g., deer wintering areas, mast stands used by bears, vernal pools) must be protected.
7. Protect fragile areas, and critical plant and animal habitats, especially those of state and regional significance.
8. Protect habitats of threatened, endangered, and economically significant species from indiscriminate publicity by mapping them in very general terms.
9. Support state, federal, private, and conservation group acquisition of land and/or conservation easements or other instruments (means) to protect critical wildlife habitats and encourage designation of State Natural and Fragile Areas for significant features and resources.
10. Encourage private and public landowners to recognize the importance of protecting, maintaining, and enhancing fish and wildlife habitats and ecosystems by supporting a variety of community, regional, and state programs and incentives.
11. Logging operations shall conform to the State Acceptable Management Practices (AMPs) especially as regards cutting near shorelines and stream banks.

Agricultural Resources Policies:

1. Individual landowners are urged to take whatever steps are necessary to conserve and care for forestland, including enrollment in the Use Value Appraisal Program.
2. As a rule, primary agricultural lands shall be devoted to farming or to uses which will maintain the potential of such lands for agricultural use.
3. The Town supports the Use Value Appraisal Program and should implement any other programs which facilitate farmland and forest preservation.
4. Farms and other agricultural enterprises shall conform to Required Agricultural Practices (RAPs) regarding the use and storage of manure, pesticides, herbicides, and fertilizers.

Earth Resources Policies:

1. Any proposal for extraction or processing of earth resources must include a plan for site rehabilitation. The Development Review Board may also recommend that the District Environmental Commission require extractors or processors to pay for any technical assistance or legal fees the Town might need when considering any project.
2. Commercial extraction or processing of earth resources shall be done according to a site plan and a conditional use permit from the DRB. Extraction or processing of earth resources shall be carried out in a manner which respects the rural character of the town and its community values. This extraction or processing shall not unreasonably inconvenience neighboring property owners and residents, or burden municipal services and facilities; nor shall this extraction or processing have a damaging environmental impact. Accordingly, the DRB shall require any extractor or processor to show that the project poses no threat of contamination to streams, aquifers, and neighboring wells. The DRB will also require the extractor or processor to show that the project poses no threat of contamination due to equipment fueling and maintenance, chemicals associated with the industrial process, or any by-products of the extraction or processing.
3. When considering any earth resources project the DRB shall evaluate impacts on the Town with respect to: dust and noise, traffic safety on Town roads, safe access by commercial vehicles to the site, screening and fencing of the site, the effects of heavy trucks on Town roads and bridges, schedules of operation and equipment usage, total duration of the project, and rehabilitation of the site.

NATURAL RESOURCES: ACTION STEPS:**Water Resources Action Steps:**

1. Work cooperatively with neighboring towns and other groups on watershed planning initiatives such as: the state's rotational watershed evaluation, the state's basin planning initiative, the Silvio O. Conte National Fish and Wildlife Refuge, stream habitat restoration projects, and water quality monitoring. Support remedial action to improve water quality for waters that have been determined to be threatened or impaired.
2. Determine whether existing or proposed water classification of the Town's surface waters adequately protects surface water values and uses. Review and comment on any proposal for a new classification system. In particular, consider whether the Town should seek Class A designation for any surface waters that qualify.
3. Support review of water bodies to determine appropriate classification of waters.
4. Implement monitoring and management actions that will best maintain water quality, special designations, and/or classifications.
5. Conduct an inventory of wetlands.
6. Encourage the Select Board to develop a policy to manage beaver/culvert conflict sites on town roads to promote the development of new wetland sites and minimize the need for the road crew to manage beavers.
7. Develop standards for stormwater management for inclusion in Site Plan Review in Zoning.
8. Monitor the effectiveness of surface water protection standards, and consider whether certain wetlands should be given similar protection.
9. Establish a fund to provide small low-interest loans or grants for the repair of failed septic systems.
10. Determine potential development impacts resulting from changes to Agency of Natural Resources on-site septic regulations. Strengthen local regulations where appropriate.
11. Enforce the Marlboro Health Ordinance to prevent groundwater contamination from old and poorly designed septic systems.
12. Continue to identify and classify water resources in an ongoing and sustained effort.
13. Protect groundwater from all pollutants through an ongoing citizen education effort and through local regulations.

Soils and Topography Action Steps:

1. Monitor effectiveness of recently adopted "steep slope" regulations designed to avoid environmental damage, including negative consequences associated with erosion.
2. Consider whether additional measures are required to minimize areas of earth disturbance, grading, and vegetation clearing on slopes over 15% and avoid intensive development in areas dominated by slopes exceeding 25%, especially where steep slopes occur with shallow soils.

Forest and Wildlife Resources Action Steps:

1. Work with the Marlboro Conservation Commission, town residents, the Natural Resources Conservation District (NRCD), and state officials to identify and map wildlife crossings.
2. Update Town Zoning Ordinance to reflect Act 171 goals.

3. Update Subdivision Regulations to reflect Act 171 goals.
4. Investigate the feasibility of alternatives to maximum lot size to guide development density.
5. Work with local landowners in affected areas.
6. Remove “Primitive Camps” from the exemptions in the Wildlife Habitat Overlay District in the Zoning Regulations.

Agricultural Resources Action Steps

1. Identify the best agricultural soils for inclusion in the Agricultural and Forest District.



H. LAND USE

In Marlboro, a number of factors must be taken into account when planning for the future use of land and the conservation of natural resources. A plan based on one factor, or one set of factors, alone will not serve as a respectable or meaningful guide for the future. Because Marlboro is still relatively undeveloped, with most of its land in resource-related or low-intensity uses of various kinds, the Town has a unique opportunity to influence the future pattern of land use and settlement.

The Town of Marlboro is fortunate to have a wealth of valuable natural resources. The extensive forested lands, river valleys, upland headwaters of streams, ponds, gorges, waterfalls, and wetlands provide an ecosystem that sustains numerous plant and animal species, in addition to supporting human habitation. This interconnected ecosystem of humans, animals, plants, earth, air, and water can be sustained through careful resource use and preservation.

As the Town's future rests in large part on its natural and cultural resource values, lands identified as having significant resource value or potential should be planned for land uses and densities of development compatible with accepted principles of resource conservation.

SEPTIC SYSTEM SUITABILITY

In 2007 The State Agency of Natural Resources approved new rules and regulations governing on-site wastewater disposal. These changes permit new technologies that allow development in areas previously considered unbuildable. Therefore, the Town can no longer rely on limited septic suitability as a de facto land-use policy for the town. Rather, the residents of Marlboro must be pro-active in planning and zoning to secure their vision for the town's future. In addition, the state has assumed responsibility for the septic permitting process. The town no longer reviews septic design or grants septic permits, although the town continues to have an abiding interest in the septic design choices made by landowners and residents and in the proper maintenance of all installed systems.

The predominant characteristics of Marlboro soils, and those of steeper lands in general, present difficulties for the design, construction, maintenance, and proper operation of conventional on-site disposal systems. Although alternative methods of human waste disposal (e.g., composting toilets) are available, they do not replace the conventional sewage disposal system, as the need to dispose of gray water from showers and sinks still exists. It will therefore continue to be necessary to emphasize the need for limitations and controls on leaching systems on lands deemed to be too wet, shallow, or steep to properly contain and treat effluent from these systems.

In 2014, Marlboro applied for and received a state Village Center designation. This was included in new zoning regulations adopted in 2018. This designation allowed the Town to apply for and receive a grant that was used to study feasibility of developing a Village Center/community septic field on land bought by the town for that purpose.

LAND USE INVENTORY AND DESCRIPTION

Current land use was analyzed and the following characteristics of the Town's settlement pattern were determined:

- Residential land use, excluding the former Marlboro College campus, is predominantly single-family, both permanent residences and vacation homes. Many home occupations and cottage industries are associated with these residences;
- Commercial and industrial land use is very limited in its spatial impact and is mostly located along Route 9;
- Lands in public or quasi-public ownership are relatively minor compared to several Windham County towns;
- Institutional use (the former Marlboro College campus), because of its intensity and impact, is significant but represents less than 1% of Marlboro lands;
- Agricultural land use, excluding kitchen gardens and pasturage for domestic animals, represents a small acreage of Marlboro lands, a drastic decline since the beginning of the 20th century, comparable to the trend in agricultural use in many southern Vermont hill towns;
- Forested-land use is very significant and includes non-commercial forestlands, which may or may not be logged periodically.
- Large tracts of undeveloped land exist away from road access.

Much of the remaining land can be considered as held for speculation or long-term investment, or potentially available for development of various kinds (depending, of course, on the personal objectives of landowners and their financial ability to hold large parcels over a long period of time without an economic return). Meanwhile, this remaining undeveloped land provides perhaps the most important recreational and scenic resource in the Town, as it is commonly used for hunting and fishing, hiking, and other outdoor activities. Forest-related land use is very significant and includes periodic logging and sugaring. It is important to be aware of the amount and status of this undeveloped land that is potentially available for development over the next five to 30 years.

PATTERN OF LAND USE AND SETTLEMENT

Marlboro is characterized by a centrally located historic village surrounded by predominantly low-intensity rural residential development, scattered along winding secondary roads, most of which are narrow, unpaved, and often highly scenic. With a few exceptions, the off-road back-lands have remained predominantly undeveloped since the middle of the nineteenth century.

The village district itself has functioned as a center of Town government, public services, and community affairs related to the Marlboro Meeting House. The Whetstone Inn is currently the only commercial influence. The village district is the area zoned for more concentrated development.

The village is characterized by several structures with high visual architectural or scenic value. These are the Marlboro Meeting House, Whetstone Inn, Town House, Mather House, Thompson House, Kuhn House, Ephraim Newton House, and Houghton Schoolhouse. Other more modern or more modest structures in the village conform to the orderly, neo-classical design standard set by the structures mentioned above. The form of the historic village does not follow a particular architectural pattern, but is derived from the intersection of Town roads and the influence of topography. Its form can be described as "organic" in that it was not the product of early town planning but the result of the social and economic patterns and necessities of a rural farming village.

Without a strong social and economic nucleus for settlement, and no town plan guidance, residential development has been scattered at very low densities primarily along Town and State roads (Classes 2 and 3).

The Hogback Mountain area contains both commercial road frontage along route 9 and the recently-acquired Hogback Mountain Conservation Area.

The most intensive use of land in Town is found at the former Marlboro College campus, located two miles south of the village.

CONSEQUENCES OF DISPERSED SETTLEMENT

Although most townspeople appear to favor continuation of the familiar random settlement pattern, the Town should be aware of the potential consequences of this pattern, and lack of zoning restraints (almost all areas are currently residentially zoned one house in two acres). Given continued pressures for even modest growth, settlement along Class 2 and Class 3 roads may eventually resemble a pattern of rural sprawl, detracting from rather than enhancing the desired scenic rural character. Along several Town roads, this situation is already occurring.

More importantly, over a period of time, dispersed linear settlement tends to become strip development, which adds to traffic congestion, overtaxes Town roads and services, and contributes to water supply and sewage disposal problems and other undesirable conditions. In this regard, it is necessary to distinguish between the commercial and residential varieties of strip development, as each presents different problems and solutions.

Commercial strip development, characterized by a number of unrelated commercial structures, access roads, parking lots, and service areas along one or both sides of a through way, is relatively easy to control through zoning regulations and site development standards. Once the potential for strip development has been recognized, such practical controls can be applied and more desirable forms of commercial development can be encouraged.

In Marlboro historically, rugged topography has tended to discourage residential strips along most roads. On the other hand, dispersed development tends to seek out the best available, most accessible sites for low-density settlement. Eventually this may result in greater pressure for intensive development of more marginal sites such as ridgelines that would require large expenditures of public and private funds for the provision of necessary facilities and services.

Measures that should be considered to control residential strip development include the following: planned unit developments that include areas of land kept open; concentrated settlement encouraged in certain districts, additional frontage and setback standards for lots along scenic roads, addition of Wildlife Crossing areas, and encouragement of shared access roads to serve small subdivisions and residential clusters. Individual private roads from new housing increase costs to individuals.

LAND USE CLASSIFICATION

Marlboro lands are classified into Rural Residential, Village, Agricultural/Forest Production, Conservation Priority, Highest Conservation Priority, Commercial, and Cultural and Educational zoning districts, with Wildlife Habitat, Shoreland, Surface Water Buffer, and Flood and Fluvial Erosion Hazard Area overlay districts. It should be noted that the Proposed Land Use Map is not a regulatory device, except for its possible application under Criterion 10 in the Act 250 review process; its implementation requires further definition, adjustment, and clarification as the Town applies its Zoning and Subdivision regulations and other means for reaching its objectives.

Random location of commercial or industrial uses in all areas should be discouraged. Where these uses are allowed, they should be carefully controlled to avoid strip development, unreasonable burdens on town roads and services, and other adverse impacts.

A brief explanation of the criteria, purposes, and suggested development guidelines for each land use area follows.

The Rural Residential District is defined as all land in the Town that is zoned Rural Residential (RUR). Its purpose is to provide for agriculture, forestry, residential, and other compatible uses at densities appropriate to the physical capability of the land and the rural character of the Town. The Rural Residential area should be used to accommodate of permanent and vacation homes and home enterprises in Marlboro. But the development of these areas should not damage resource values as shown on the Natural and Cultural Resources Map, and should not interfere with viewsheds and critical wildlife corridors.

The Village District is defined as lands surrounding and inclusive of the existing village center and its corridor approaches. Due to Marlboro's topography and road system, activities traditionally concentrated in the Village District are best suited along a number of road corridors surrounding the existing town center. The purpose of the District is to support and expand the traditional role of the village as the focus of many of the civic, social, and economic activities that support the surrounding community, and to provide for residential, commercial, and governmental uses that serve the needs of the community. As with the RUR zone, the development of structures in these areas should not damage resource values as shown on the Natural and Cultural Resources Map, and should not interfere with viewsheds and critical wildlife corridors.

The Village Center should be maintained as a rural community of high scenic and historic value. Where appropriate, development within the Village Center should be carefully considered through a design review process, conditioned in such a way as to protect buildings and sites of architectural and historic value. In addition, any development should be planned to enhance the historic character and to avoid traffic congestion, difficulties with water supply and sewage disposal, or any other undesirable consequences.

The Agricultural/Forest Production District is defined as those areas where resources such as valuable agricultural and forestry soils and the crops or forests grown upon them are present in character and quantities suitable for significant productive use or extraction, but must be protected from incompatible development to preserve the resources for future use. The assets to be protected include, but are not limited to: soils for agricultural and forestry uses, minerals for extraction, stands of timber, or a sugar bush. Development in these areas shall be planned to ensure continued ability to utilize resources and shall be at low density, and not infringe upon Acceptable Agricultural Practices and forestry Acceptable Management Practices. Density of new development should encourage enrollment in the Use Value Appraisal (UVA) program, which requires a minimum of 25 acres, in addition to a two-acre homestead site.

The Conservation Priority Districts are defined as those large and/or contiguous blocks of essentially undeveloped land areas that are the important portions of town to protect for perpetuation and enhancement of water resources, wildlife habitat, and other resources, such as open space, and trails for recreation. The resources should be preserved for their inherent values to the maximum extent feasible. Such assets include, but are not limited to:

- Headwaters, wetlands, streams, and ponds, etc. (See this Plan's Natural Resources section).
- Wildlife habitat/occurrences and connecting corridors, especially riparian corridors.

- Significant natural communities.
- Outstanding Resources Waters, water supply Source Protection Areas (SPAs).

These lands should be used principally for agriculture, forestry, and low-intensity recreational and open space uses. Residential development in this district should be sited to protect the resource values of the land. Any use of the land shall follow Acceptable Agricultural Practices and Acceptable Management Practices (AMP's) for maintaining water quality on logging jobs in Vermont.

Within the Highest Conservation Priority District, development is discouraged, and any development that does occur shall be sited to protect the resource values of the land. If there is to be new development, it shall be at low impact and densities. Development in this district shall be subject to a heightened level of review.

The Commercial Districts include certain lands with access to Route 9 which are suitable for new and expanded commercial and related uses. The purpose of this District is to provide for recreation, commercial, and other compatible uses which will have suitable access to the state highway and minimum impact on surrounding rural residential areas, to avoid sprawl, and to minimize impacts on natural and cultural resources.

This District is divided into West and East portions:

1. The Commercial West District includes lands on both sides of Rt. 9 in the western portion of the Town, particularly enterprises ancillary to the old Hogback ski facility and similar recreation- and tourist-oriented businesses. Development in the Commercial West District shall be sensitive to and compatible with the scenic, natural, and recreational character of the area in which it is located - the Hogback Mountain Conservation Area.
2. The Commercial East District is intended to accommodate most future commercial growth within an area having the best relationship to the existing State highway corridor to minimize the impacts of such growth on Marlboro's rural character.

The Educational and Cultural District includes the contiguous former Marlboro College campus. Its purpose is to provide adequate lands for the reasonable location and expansion of institutional facilities in relation to the present campus. Other appropriate residential, commercial, and recreational uses should be permitted in this district.

Zoning Overlay Districts

Overlay districts are superimposed over the existing zoning map without altering the underlying zoning.

The Wildlife Habitat Overlay District's purpose is to encourage landowners to locate structures and development near roads rather than extending development into core forest blocks, to guide development in a manner that preserves large tracts of undeveloped interior land across property lines, and to thus accommodate the life requirements and movement of wildlife across a broad landscape. The ecological value of maintaining large areas of connected habitat is to reduce the harmful effects of habitat fragmentation is particularly important for wide-ranging animals, or for animals that require a great deal of space to meet their daily life needs.

Critical wildlife/conservation corridors are certain areas along or crossing roads that provide critical linkage of open space for wildlife travel corridors have been tentatively identified and are indicated on the Land Use map. Natural vegetation should be left intact along the corridors, and manmade barriers

avoided. Since a corridor is lost forever when inappropriate development occurs, the DRB should exercise care to protect corridors.

A "Tracking Project" currently underway by the Conservation Commission aims to document these and other wildlife corridors, collect sightings from the community, and make corridor and core site visits.

Core conservation areas in Marlboro can only offer their full potential if they are connected to other wild areas in surrounding towns, and if possible to the Green Mountain National Forest and beyond. Regional meetings of local Conservation Commissions and other interested parties are currently happening and are encouraged to address this issue.

The Shoreland Overlay District includes lands around all bodies of water over 10 acres. The purpose of Shoreland control is to preserve and enhance high quality waters, and, therefore, to require adequate development standards to achieve the purpose.

The Surface Water Buffer Overlay District's purpose is to provide standards for the protection and improvement of the surface waters and streams within the town of Marlboro and the watersheds contained wholly or partially within the town, and to protect wildlife habitat in riparian corridors.

The Flood and Fluvial Erosion Hazard Area Overlay District includes lands with a major flood hazard potential and are identified on the Water Resources map. The zoning regulations specify review procedures, permitted uses, and performance standards for development in flood hazard areas.

OTHER LAND USE CONSIDERATIONS

The Natural and Cultural Resources map, the Water Resources map, and the Proposed Land Use Map identify certain important planning and design concerns which should be reflected in Zoning and Subdivision standards and considered by landowners in their own planning.

Scenic Resources: Several landscapes and views of unusually high quality are identified on the Natural and Cultural Resources map and should be protected from development that interferes with their enjoyment by the public or that would be incompatible with maintenance of scenic values. Conservation of scenic resources may have to take precedence over development in these areas. See Land Use Policy 11. These areas include, but are not limited to:

- View generally northwest and south from Hogback Mountain (Route 9 overlook).
- View generally north and east from Route 9 in the vicinity of the "Cape" (approximately 3/4 mile west of intersection with Higley Hill Road).
- View generally southeast from Higley Hill Road at the Whitney Farm; view generally northeast from the upper end of Higley Hill Road.
- View generally east from Lyman Hill and Town Hill.
- Views east and northeast from the Upper Dover Road.
- View generally south from the former Marlboro College on South Road.
- View generally south towards the Adams Farm on Butterfield Road.
- South Pond, Hidden Lake, Sunset Lake, and portions of their watersheds visible from their shorelines.
- Marlboro Mill Pond Weir on Town Road 20 and the impoundment and low hills to the west.

LAND USE: POLICIES & ACTION STEPS:**Land Use Policies:**

1. The capability of the land and its natural resource potential shall provide the basis for judging how the lands of Marlboro shall be used to accommodate its projected population, and needs for facilities and services. In making a determination as to where development may be satisfactorily located, appropriate maps, field tests and visits may be necessary as defined by Zoning Regulations.
2. Development shall be limited, restricted, or prohibited on lands where soil conditions and topography may cause failure of waste disposal systems, where development activity may cause pollution or contamination of ground or surface waters, or where waste disposal systems will cause a major increase in water contributed to a watershed.
3. While areas for future development should be reasonably related to the existing road network, residential and commercial strip development is discouraged. Instead, development should be clustered on appropriate sites to avoid the excessive impacts of the delivery of services to dispersed areas.
4. New development should be reasonably related to the existing settlement pattern, the locations of public services, utilities, and commercial facilities, and the existing road network. With careful planning, the Town can accommodate its projected population for the foreseeable future within its traditional pattern of rural settlement, modified where appropriate by encouraging small residential or mixed-use groupings as alternatives to dispersed development, sprawl, or strip development.
5. Until advanced methods of sewage disposal have been developed, adequately tested, evaluated, and proven within reasonable limits, development shall be planned at densities which will avoid the need for private or municipal sewage disposal plants.
6. Within the limits of land capability, and within the policies of this Plan regarding resource development and conservation, a diversity of land uses shall be encouraged that maintain the character of a rural town.
7. To safeguard public investment, lands adjacent to public or quasi-public facilities, services, or lands shall be planned and used in a manner that will not jeopardize or interfere with the public's use or enjoyment of or access to the facility, service, or lands. These include but are not limited to highways, Town-owned buildings such as the Town office building, Town House, fire station, school, Town garage, cemeteries, Town Park, Marlboro Meeting House, Historical Society, and institutions.
8. The use of lands adjacent to Town boundaries should be coordinated with the Town Plans of neighboring towns.
9. Land and water areas of high outdoor recreational potential shall be protected from inappropriate development. Access to such lands should not be unnecessarily restricted. New development should be planned to minimize its effects on the land's potential for hunting, fishing, hiking and other outdoor activities.

Land Use Action Steps:**Rural Residential**

1. The Town should consider whether to create a higher-density Residential zone and a lower-density Rural zone within the Rural Residential District.

Village District

1. Investigate options for implementing a community septic system in the village center.
2. Explore possibility of creating walking trails to connect various Town facilities, Molly State Park, and the Hogback Mountain Conservation Area.
3. Explore possibility of limiting highway speed on roads going through the Village Districts.
4. Maintaining the aesthetic integrity of the Village District should include a program for the eradication of invasive plant species.
5. Renew the Village Center Designation with the authorization of the Marlboro Select Board.

Agricultural/Forest Production

1. The Town encourages enrollment in Vermont's Use Value Appraisal Program which enables landowners to choose agriculture or forestry as long term uses of their property. This results in a significant tax savings for the landowner. The Program encourages the maintenance of undeveloped land for farming, forestry, and recreation. As of April 1, 2019, 13,748 acres belonging to 105 landowners, were enrolled in the Program.
2. Towns may also provide property tax relief for qualifying farm, forest, and open space landowners by adopting local tax stabilization programs to reduce local property tax burden.

Conservation Priority

1. The Marlboro Conservation Commission will complete an inventory of wildlife corridors that can be used to overlay existing land use maps and to create guidelines for identified critical wildlife crossings, including documentation to support creation of a Wildlife Crossing Overlay
2. Investigate and review techniques to preserve the scenic nature of Marlboro's landscapes.
3. Update the inventory and mapping of critical natural resources and wildlife habitat areas so they can be protected from future development.
4. Wildlife Road Crossing Overlay District should be added to the Zoning Regulations to complement the recently enacted Wildlife Habitat Overlay District, per Act 171.

Commercial

1. To minimize strip development and traffic congestion, commercial uses shall be encouraged to share access and parking facilities, required to maintain buffers between commercial and non-commercial lots and the highway, and required to provide landscaping and planting in keeping with the character of the surrounding area.

Cultural and Educational

1. Explore with the new owners of the former Marlboro College campus the possibility of providing zoning that permits congregate housing, possibly assisted living, within the Cultural and Educational District.
2. The town should encourage new educational and cultural activities for the former Marlboro College campus.



IV. COMPATIBILITY WITH TOWN PLANS AND WINDHAM REGIONAL PLAN

Marlboro shares boundaries with Brattleboro, Halifax, Newfane, Dummerston, Wilmington, Guilford, and Dover. The status of Town Plans for these towns is:

- Brattleboro - Town Plan was adopted on May 15, 2018.
- Halifax - Town Plan was adopted on March 5, 2019.
- Dummerston - Town Plan was adopted on February 14, 2018.
- Newfane - Town Plan was adopted on July 16, 2018.
- Wilmington - Town Plan was adopted on October 2, 2018.
- Guilford - Town Plan was adopted on June 22, 2015.
- Dover - Town Plan was adopted on May 3, 2016.

The Marlboro Town Plan is compatible with the policies and programs as set forth in the Town Plans of all towns listed above.

Compatibility of Town Plans refers to more than adjacent land uses at town borders; it can include use of shared resources, for example, rivers, roads, and community facilities such as solid waste, recreation, and fire and police protection. The Marlboro Planning Commission believes the most pressing compatibility issues with its neighbors are 1) watershed protection, 2) the use of Marlboro's roads and bridges to meet regional transportation needs, 3) future planning for Route 9 and Interstate 91, 4) commercial development at Hogback Mountain and, in general, along Route 9, and 5) coordinated growth center planning with Brattleboro and area towns. The Town of Marlboro should encourage Brattleboro and Wilmington/Dover and other Windham County towns to work to maintain traditional settlement patterns by revitalizing existing downtown business, commercial, and residential areas, and by discouraging urban and rural sprawl along major highways.

In the next five years, Marlboro will work with its neighbors to actively deal with these issues and any other appropriate issues. Additionally, as Town Plans come up for renewal and adoption, the Marlboro Planning Commission and Marlboro representatives to the Windham Regional Commission will take an active role in their review and approval.

The Regional Plan is intended to provide guidelines for the planning and coordination of economic development and resource protection, which will, in accordance with present and future needs and resources, best promote the health, safety, and welfare of the citizens of the Region. As proposed, the Marlboro Town Plan is compatible with the policies and programs as set forth in the Windham Regional Plan, which was adopted on October 24, 2006. The Marlboro Town Plan when implemented will not significantly reduce the desired effect of the Windham Regional Plan.

As defined in the law, for one plan to be "compatible with" another, the plan in question, as implemented, will not significantly reduce the desired effect of the implementation of the other plan. (For complete definition see 24 VSA S. 4302 (f))



V. METHODS OF IMPLEMENTATION

Effective implementation of this Plan will require careful consideration and action by the townspeople, the Selectboard, Planning Commission, Conservation Commission, and other local organizations. As the Town continues to grow and to face new challenges, it is clear that a coordinated program and serious study of alternatives is needed if we are to guide these forces in a way that best benefits the citizens of Marlboro as a whole.

The policies and action steps set forth throughout this plan represent the best efforts of all involved to lay out a shared vision for the future of Marlboro, and they set forth the steps needed to implement this plan. At the same time we acknowledge that planning will always be a work in progress. In addition to the element-specific actions contained in the plan, use of some of the following tools and techniques will also contribute to the successful implementation of the planning program:

Capital Planning:

1. Prepare and adopt a capital budget and program which includes capital expenses anticipated within a five-year period. Items to be included are: fire and police protection, public education, community life, land acquisition, necessary municipal buildings and additions (including septic systems), any items which may be required for compliance with regional or State programs, and Town roads and bridges. By doing so, the Town will have a better opportunity to plan for and phase in its major capital expenses and avoid sudden increases in the annual budgets.

Land Use Regulations:

Zoning, subdivision, and health regulations administered and enforced at the local level are most effective when specifically directed to public health and safety, the prohibition of unsuitable uses, and the protection of water quality and highly valuable natural and cultural resources. When revising regulations, the Planning Commission should consider traditional settlement patterns, the concept of limited and cautious growth, and proceed with respect for the natural environment and rural character of Marlboro.

1. Amend zoning and subdivision regulations as necessary to ensure that allowable patterns of land use and density are compatible with identified natural, cultural, scenic, and recreational resources, and with the wishes of the people of the Town.
2. Continue to work with landowners to modify existing zoning districts. Every effort shall be made to ensure that proposals are based on the wishes of the people who live in these neighborhoods or areas.
3. Continue to ensure an efficient local permitting process.
4. Consider adoption of a building code, if deemed necessary by the amount and quality of development in the Town.
5. Update and amend the Marlboro Road Specifications taking into consideration the objectives of this Plan.

Land Acquisition:

1. Acquisition of development rights, the purchase or lease of land, or attainment by gift are all methods available to Towns. These means are the most certain methods for protecting and assuring access and enjoyment of valuable recreational and scenic lands.

2. Landowners can also negotiate conservation agreements with organizations such as the Vermont Land Trust and the Nature Conservancy, to protect productive agricultural and forestlands, wildlife habitat, natural areas, or public recreation lands. As of 2013 approximately 3,210 acres were being managed for conservation in plans worked out with the Vermont Land Trust.

Growth Moratorium:

1. If at any time growth in Marlboro threatens to outpace the capability of the Town to maintain an acceptable level of community facilities and services funded by a tax structure and rate deemed reasonable by Town citizens and officials, or is perceived to be increasing at a rate that diminishes the intent of this Plan or the effectiveness of the Zoning regulations, a limit on the total number of zoning permits issued per year or a temporary moratorium on permits may be implemented by the Planning Commission and promulgated as an Interim Bylaw as provided in 24 VSA 4410.



VI. TOWN PLAN MAPS AND EXPLANATIONS

A portfolio of large-scale maps is available for examination at the Marlboro Town Office. Full color maps may also be viewed and downloaded as PDFs from the maps page of the Town of Marlboro's website, online at <http://marlboro.vt.us/region/maps>. These maps were prepared by the staff of the Windham Regional Commission under direction of the Marlboro Planning Commission. Smaller scale maps are attached as part of this Plan.

The maps were prepared to show where and how Town Plan policies should influence future land use and development in Marlboro. Together with Town Plan policies, these maps will be used by the Planning Commission as a guide for appropriate by-laws and other measures necessary to implement this Plan.

The Planning Commission recognizes that these maps may be subject to inaccuracy and misleading interpretation when applied to small parcels of land. If this is kept in mind by landowners, these maps will be useful when making preliminary decisions about the use of land, its potential for development, and problems that call for more detailed site survey and studies. These maps, however, should not be depended upon as the only basis for investment and development decisions. The Planning Commission and the Windham Regional Commission disclaim any liability for losses incurred through inappropriate or improper use of these maps.

MAP 1: NATURAL RESOURCES & HABITAT FEATURES

This map identifies the location of natural features that need special attention because of their rarity and their importance to wildlife in Marlboro. Conserved lands are also included as a measure of the percentage of land that is protected from development.

MAP 2: FOREST BLOCKS & WILDLIFE LINKAGES

This map is a generalized representation of the large areas of forest habitat and undeveloped road segments where wildlife move between them.

MAP 3: WATER RESOURCES & WATER PROTECTION AREAS

This map includes water related resource areas, such as wetlands, shoreland areas, surface water buffers, and flood hazard areas. It also indicates which streams are perennial and which are intermittent.

Surface Water Source Protection Area – includes the Sunset Lake watershed, which is part of the public water supply for the Town of Brattleboro.

MAP 4: CULTURAL RESOURCES, COMMUNITY FACILITIES, AND TRANSPORTATION

This map identifies Marlboro's community and educational facilities, cemeteries, and recreation sites, and Marlboro's network of roads and highways. It also shows the route followed by public transportation, namely Deerfield Valley Transit Authority's MOOver bus, which connects Marlboro to stops in Wilmington and Brattleboro. Streams, rivers and ponds are identified.

Also identified are viewpoints of scenic landscapes as identified by the Marlboro Planning Commission.

Cultural resources shown on this map include thirteen historic sites and structures that were identified by the Marlboro Historical Society and/or the Vermont Division of Historic Preservation as having significant local historical value, and as deserving protection, maintenance, or renovation.

MAP 5: SOLAR ENERGY POTENTIAL

This map roughly identifies areas in Marlboro that may have solar energy generation potential. This is not a siting map, and further site analysis is required to determine if a proposed generation facility is appropriate and comports with Marlboro's Town Plan policies.

MAP 6: EXISTING LAND USE

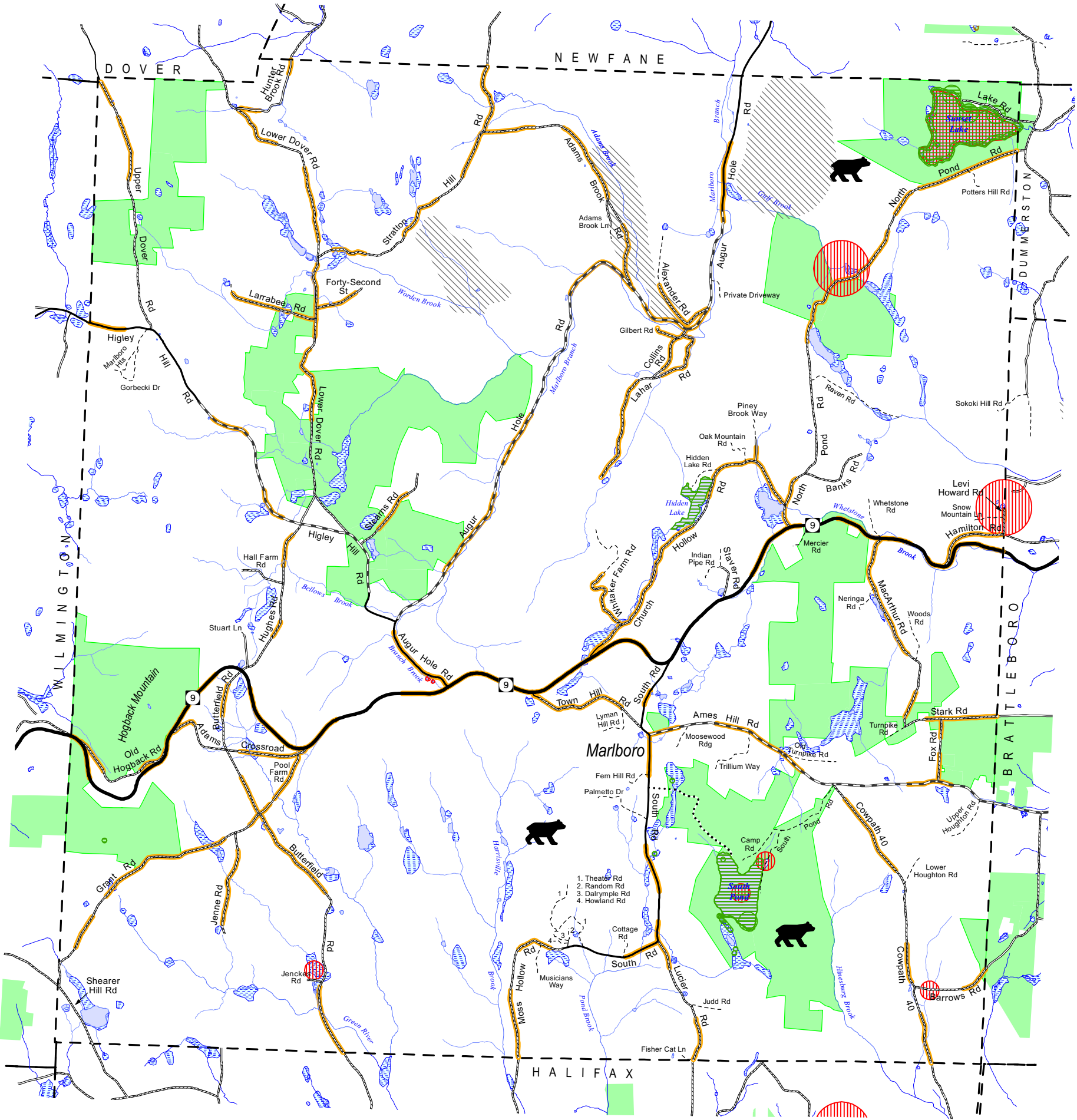
This map shows existing land use with the following categories: surface waters, roads, forested lands, agricultural/open meadowlands, public or conserved parcels, properties in the Use Value Appraisal Program, and structures (residential, commercial, and public).

MAP 7: FUTURE LAND USE

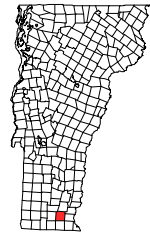
This map sets forth a land classification system for the Town of Marlboro, which reflects Town Plan policies, recognizes existing land use patterns, and considers the present and proposed road system within the Town. The Proposed Land Use Map, in conjunction with the text describing Marlboro's land use classification (see Land Use section), presents a generalized picture of the Town, as it should develop in accordance with sound planning policies.

In addition to classifying Marlboro lands, the Proposed Land Use Map identifies certain important planning and design concerns such as shoreland areas and Conservation Area connections. These types of areas should be protected in zoning and subdivision regulations or by non-regulatory means, and considered by landowners in their own planning.



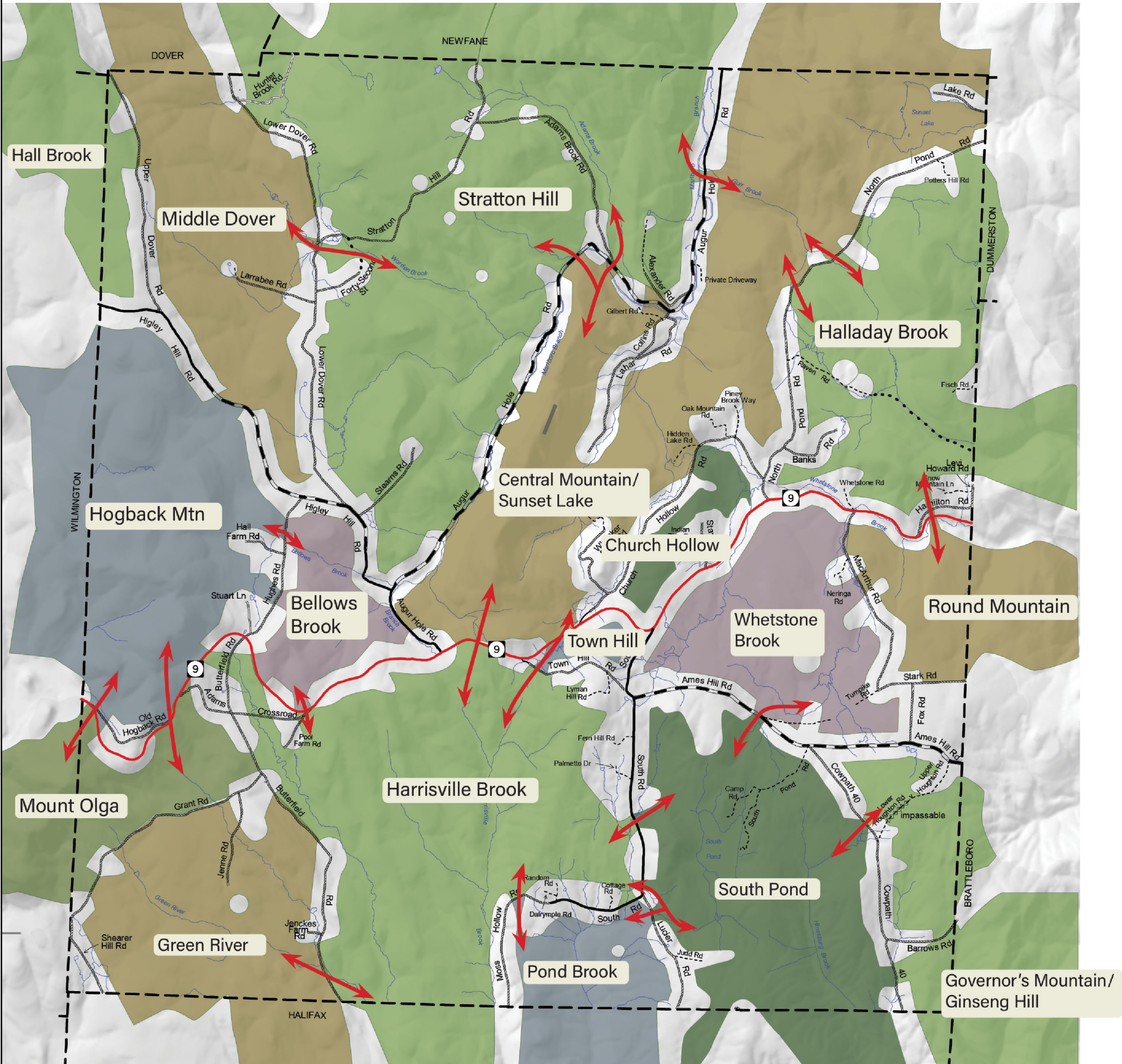


Map 1: Natural Resources
& Habitat Features
Town of Marlboro, Vt.
2022 Town Plan



1:48,000

- Sources:
- Mast stands were identified by Patti Smith, naturalist, Bonnyvale Environmental Education Center in 2020.
 - Wildland linkages were identified by the Marlboro Planning Commission based on wildlife road crossin snow tracking surveys. This work was completed in the summer of 2019.
 - Public and conserved lands data were obtained from WRC mapping, the Town of Marlboro, the Vermont Land Trust, and the Vermont Conservation Lands Database developed by UVM Spatial Analysis Laboratory. Data have been edited to match the town's parcel data, and are current to 2020.
 - Natural Heritage data are from VT Dept. of Fish and Wildlife, Nongame and Natural Heritage Program's Natural Heritage Inventory Database. This includes data on Rare, Threatened and Endangered Species and Significant Natural Communities database (VGIS layer RTENATCOM), and on uncommon species and other features (VGIS layer UNCOMSPOF), 2020.
 - Deer wintering areas are from the VGIS data layer DEERWN. Source information is from the Vt. Fish and Wildlife Dept. (VFWD), and dates back to the 1970's. Original data includes lines drawn on state highway maps, topographic maps, overlays to 1977 infrared photos, written material, and verbal information from VFWD biologists. The data have been updated in selected areas only in 2006, 2008, and 2010.
 - The wetlands shown are those included in the Vermont Significant Wetlands Inventory (VGIS data layer VSWI). For the most part, these data were derived from US Fish and Wildlife Service's 1:24000/1:25000 scale National Wetlands Inventory (NWI) maps. These maps show approximate locations of wetlands that are generally 3 acres or larger in size.

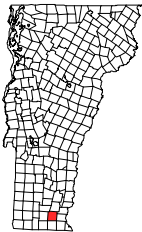


Map drawn by naturalist Patti Smith.
Text labels indicate names of core habitat blocks.

Map 2: Forest Blocks & Wildlife Linkages

Town of Marlboro, Vt.

2022 Town Plan



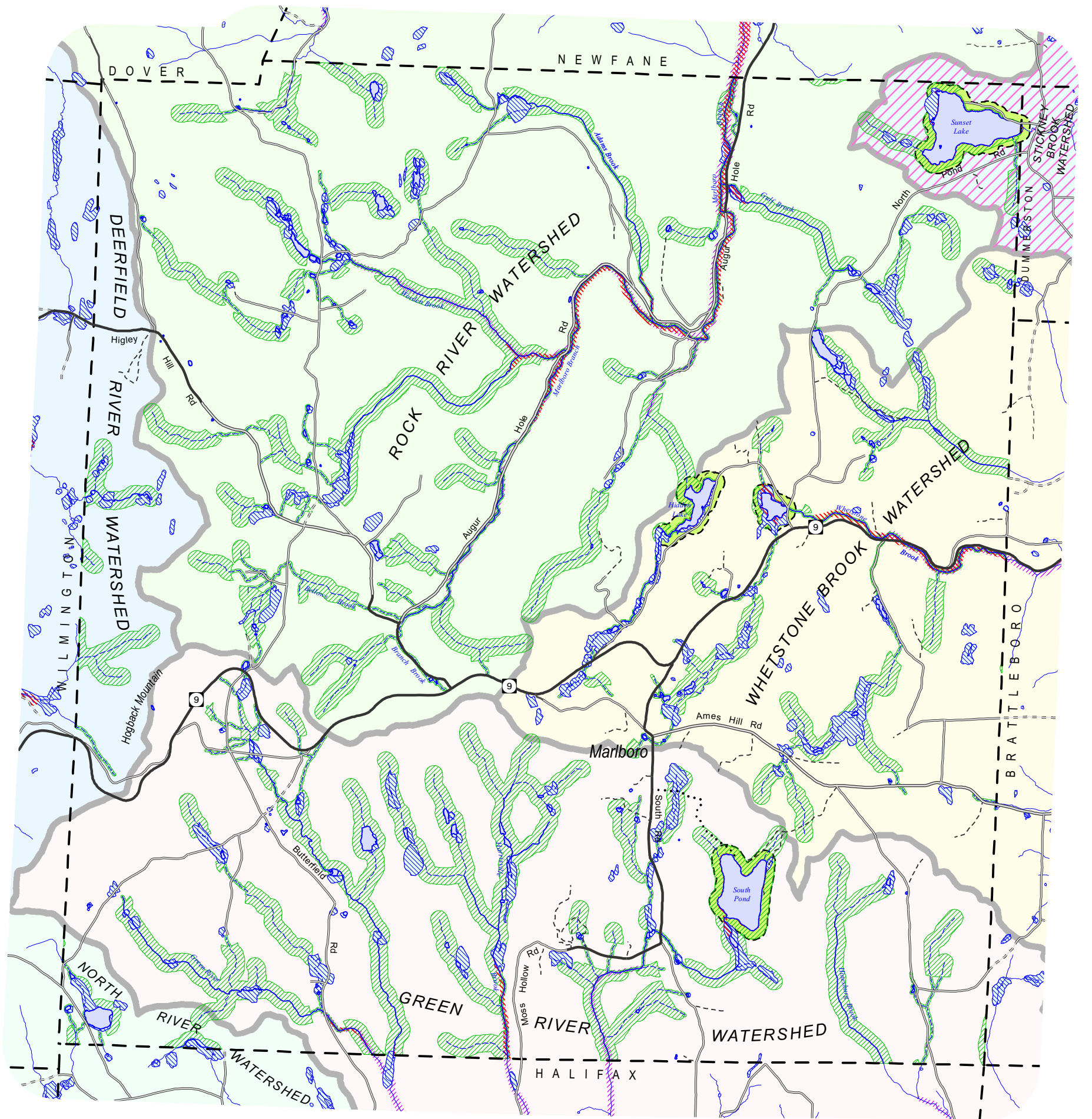
0.5 0 0.5 1 1.5 2 Miles

1:48,000

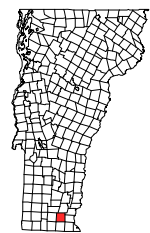
This map is a generalized representation of the large areas of forest habitat and undeveloped road segments where wildlife move between them. The core areas are 500 feet from roads, with additional buffering for houses set farther back from roads or within the forest blocks. Roads that serve just one or two houses and are not used by through-traffic are not buffered. In places where there is a minimum of 600 feet between houses on both sides of the road and where the Conservation Commission has confirmed wildlife crossing, the habitat blocks meet at the road.

Because ridge lines and the riparian areas along streams are frequently used as travel routes by wide-ranging mammals, arrows show some of the most likely routes used to cross roads by wide-ranging mammals. Animal tracking data from the Marlboro Conservation Commission confirm that wildlife cross in these areas. Some of these crossing zones are quite narrow.

Data sources:
- Core habitat blocks and linkages delineated by naturalist Patti Smith based on local knowledge and tracking data from the Marlboro Conservation Commission.



Map 3: Water Resources & Water Protection Areas Town of Marlboro, Vt. 2022 Town Plan



0.5 0 0.5 1 1.5 2 Miles

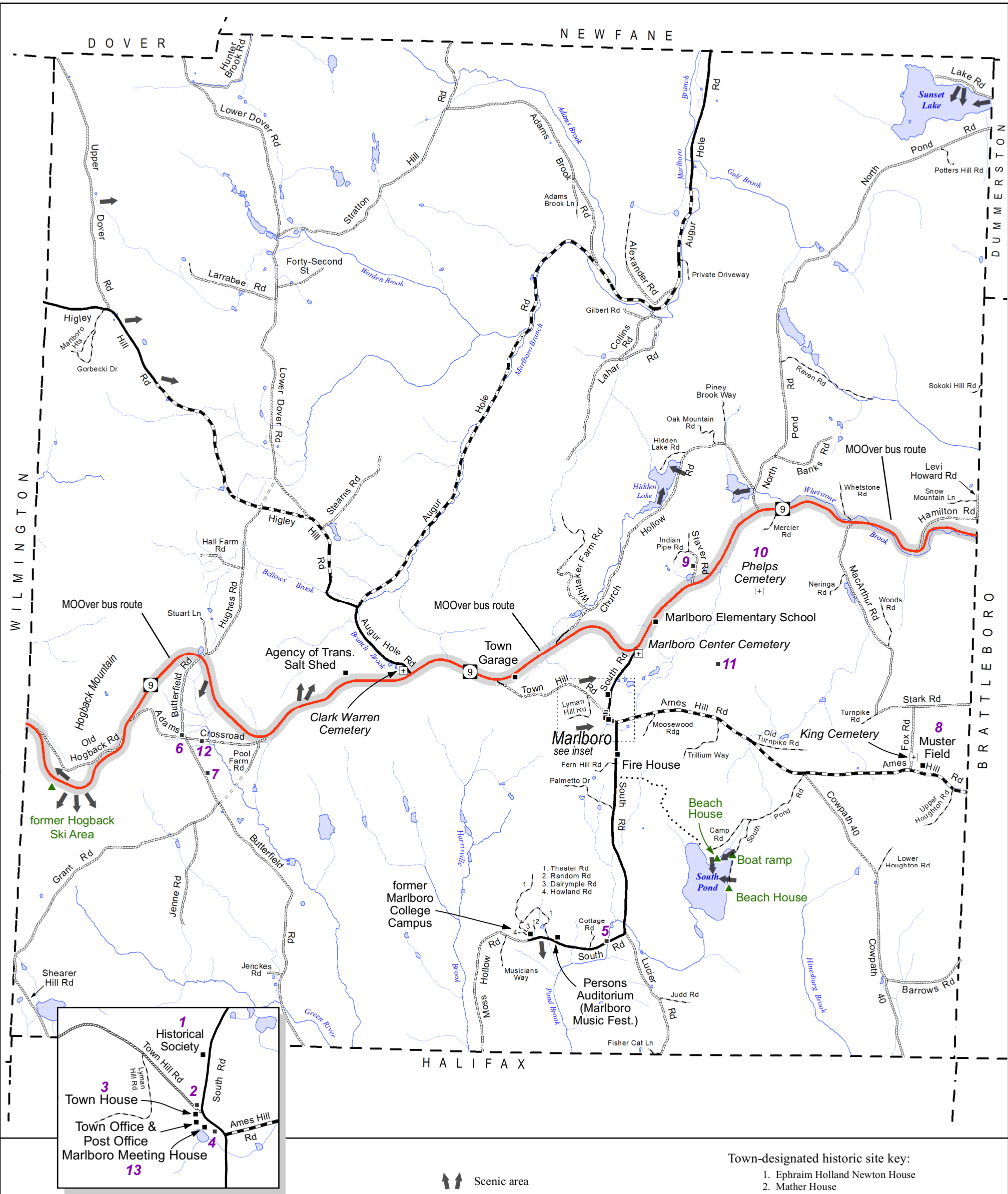
1:48,000

- Intermittent stream
- Perennial stream
- Pond or lake
- Surface water source protection area
- Wetland
- River corridor*
- Special Flood Hazard Area
- Shoreland area (300-foot buffer from major water bodies)
- Surface water buffer:
 - 50 ft from water if within 500 ft of a travelled road
 - 300 ft from water if beyond 500 ft of a travelled road (a travelled road is considered a state highway or a Class 2 or 3 town highway)

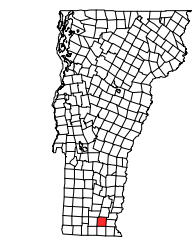
* - Official source of River Corridor data is tinyurl.com/floodreadyatlas. Where river corridors are not mapped (i.e., a stream with a drainage area of between 0.5 and 2 square miles), the corridor is measured 50 feet horizontally from the top of the stream bank.

Sources:

- Surface waters are from the Vermont Hydrography Dataset (VGIS data layer SWnnnnnnnn). The designation of intermittent versus perennial streams was taken from USGS topographic maps.
- The wetlands shown are those included in the Vermont Significant Wetlands Inventory (VGIS data layer VSWI). It shows approximate locations of wetlands that are generally 3 acres or larger in size.
- The delineated portion of the Sunset Lake Watershed contributes to Brattleboro's public community water system. It is classified as a Surface Water Source Protection Area by the Vermont Agency of Natural Resources. Boundary data are from VT ANR Water Supply Division digital data.
- Flood Hazard Area boundaries (i.e. "100-year floodplain) are from FEMA (Federal Emergency Management Agency) D-FIRM (Digital Flood Insurance Rate Map) data effective July 27, 2007.
- Statewide River Corridors are from VT ANR Rivers Program 2015 data (VGIS data layer RIVERCORRIDORS).
- Shorelands are those areas within 300 feet of a major water body, as defined by the Town of Marlboro.

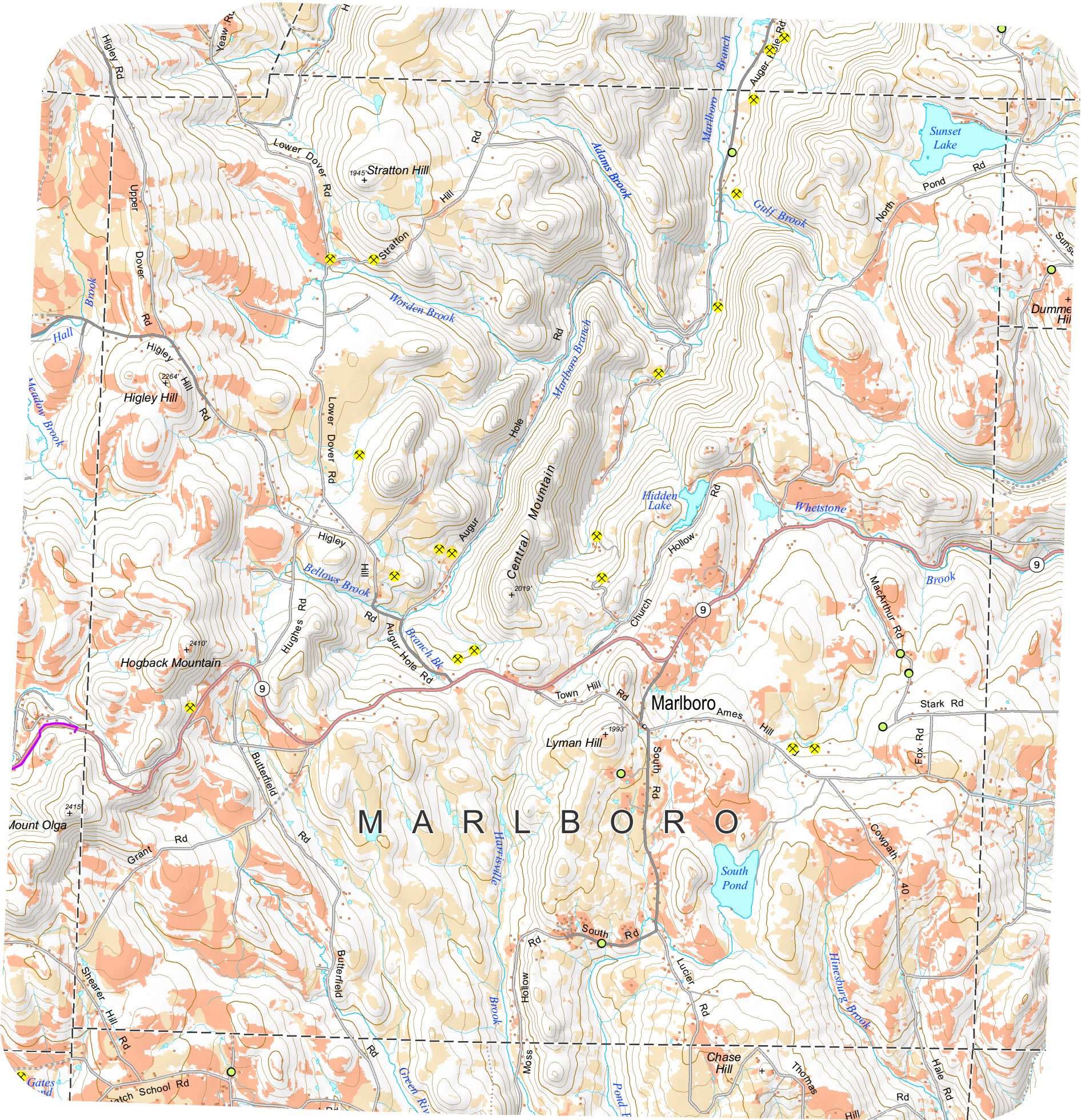


Map 4: Cultural Resources, Community Facilities, & Transportation
Town of Marlboro, Vt.
2022 Town Plan



0.5 0 0.5 1 1.5 Miles
1:40,000

- Scenic area
- Town-designated historic site
- Community or educational facility
- Recreation site
- Cemetery
- State highway
- Class 2 town highway - paved
- Class 2 town highway - unpaved
- Class 3 town highway - paved
- Class 3 town highway - unpaved
- Class 4 town highway, passable
- Class 4 town highway, impassable
- Private road/drive
- "MOOver" bus route (Deerfield Valley Transit Assoc.)
- Stream
- Pond or lake



Map 5: Solar Energy Potential Town of Marlboro, Vt. 2022 Town Plan

Prime Solar Energy Resource
generally adequate solar resources and no identified constraints
(i.e., no "known" and no "possible" constraints)

Secondary Solar Energy Resource
generally adequate solar resources and no "known" constraints,
but at least one "possible" constraint

"known" and "possible" constraints are identified
by the Vt. Public Service Department in their
Act 174 Energy Planning Standards

Existing solar installations:

- 1 - 19 kW (generally smaller-scale on-site: residence, farm, school, or business)
- 20 - 70 kW
- 140 - 150 kW (generally larger-scale commercial/utility solar farms)
- 360 - 2000 kW

Existing solar installations from the Vermont Energy Atlas, developed from Certificates of Public Good; they may correspond to the address of the certificate holder and not the actual location of the installation.

Gravel pits, active and inactive

Substations

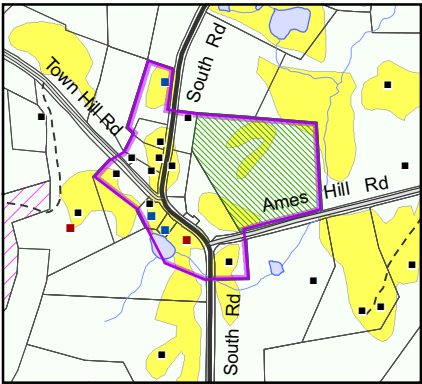
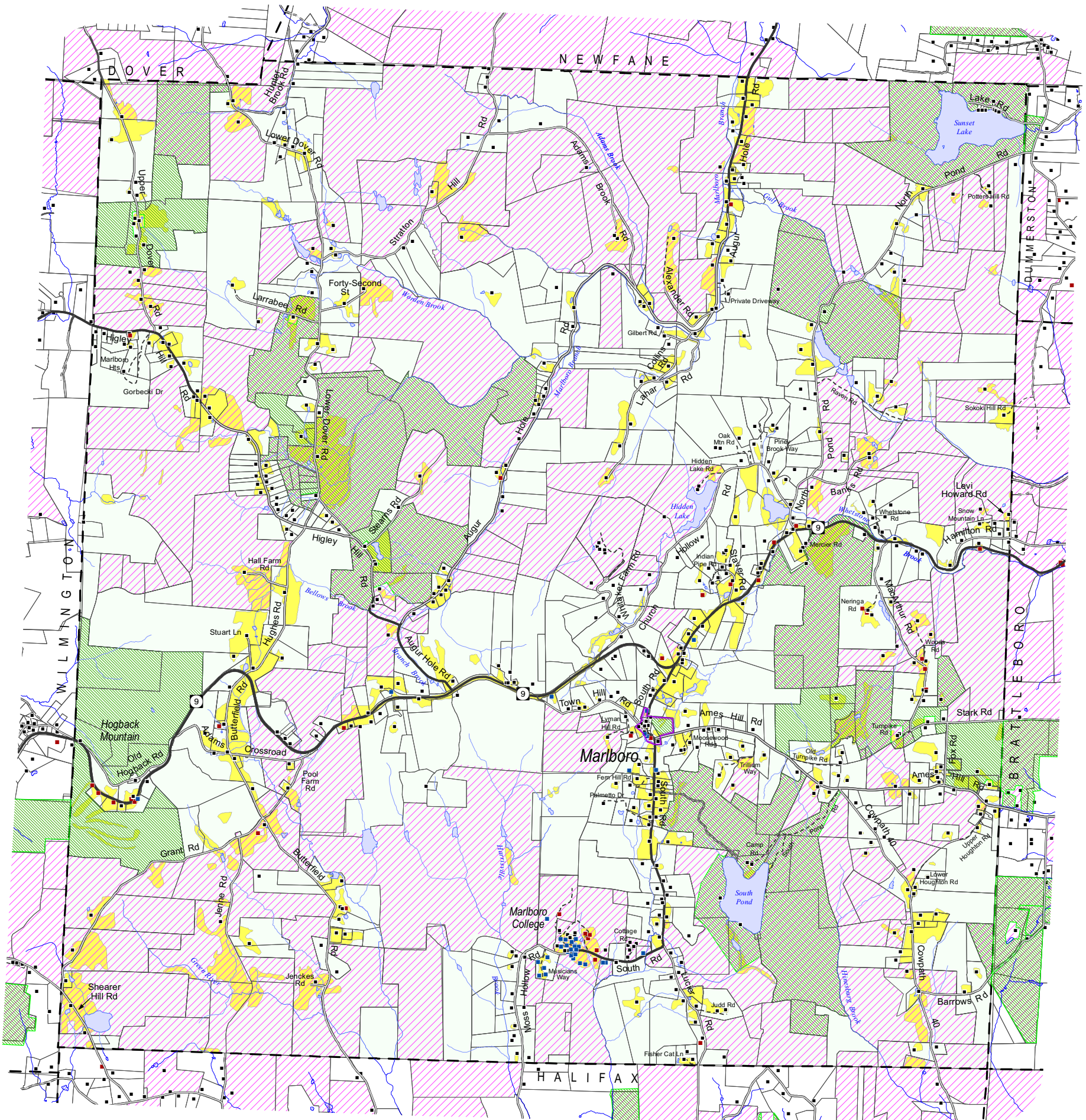
3 Phase Power Lines

Transmission Lines

Note: prime vs. secondary solar energy resource is NOT based on solar intensity.

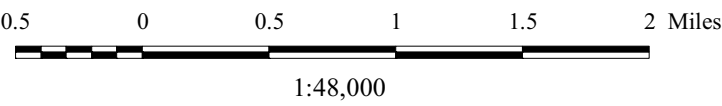
data as of June 2017

0 0.5 1 2 Miles



Marlboro Designated Village Center

Map 6: Existing Land Use Town of Marlboro, Vt. 2022 Town Plan



- Commercial structure
- Public/Institutional Structure
- Residential Structure
- Forested Land
- Open Land
- Public or Conserved Parcel
- Parcel enrolled in Use Value Appraisal (2019)
- Conserved parcel in Use Value Appraisal
- Village Center designation
- Parcel line
- Stream
- Pond or lake

Sources:

- Structure locations were captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 9-1-1 program. Locations have been edited by Cartographic Technologies, Inc. and WRC in 2006 using digital orthophotos.
- Forested and open lands were digitized from 2000 1:5000 Vermont orthophotos and 2003 National Aerial Imagery Program (NAIP) photos by WRC GIS staff, updated in 2021 using 2016 NAIP photos.
- Parcel lines are from GIS data developed by Cartographic Technologies, Inc. (CTI), Brattleboro, Vt., and are current to 2020.
- Public and conserved lands data were obtained from WRC mapping, the Town of Marlboro, the Vermont Land Trust, and the Vermont Conservation Lands Database developed by UVM Spatial Analysis Laboratory, updated to 2020.

