MONKTON TOWN PLAN
2024-2032

MONKTON, VERMONT

Date 9/5/2023

PLANNING COMMISSION HEARING:	10/17/2023
ADOPTED BY PLANNING COMMISSION:	10/17/2023
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ADOPTED BY SELECTBOARD:	
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ACKNOWLEDGEMENTS

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2013 Complete Streets Study
2016 Geologic and Hydrologic Study
2016 Planning and Zoning survey
2016 Viewshed Study
2016 Energy Report
2018 Pizza and Planning Open House

A special thanks to John (Buzz) Kuhns, whose wonderful photos illustrate the plan.

In celebration of our Town and Community,

The Monkton Planning Commission:
Peter Close
Wendy Sue Harper
Lee Mahony
John Brace Sr.
Gayle Grim
Marilyn Cargill
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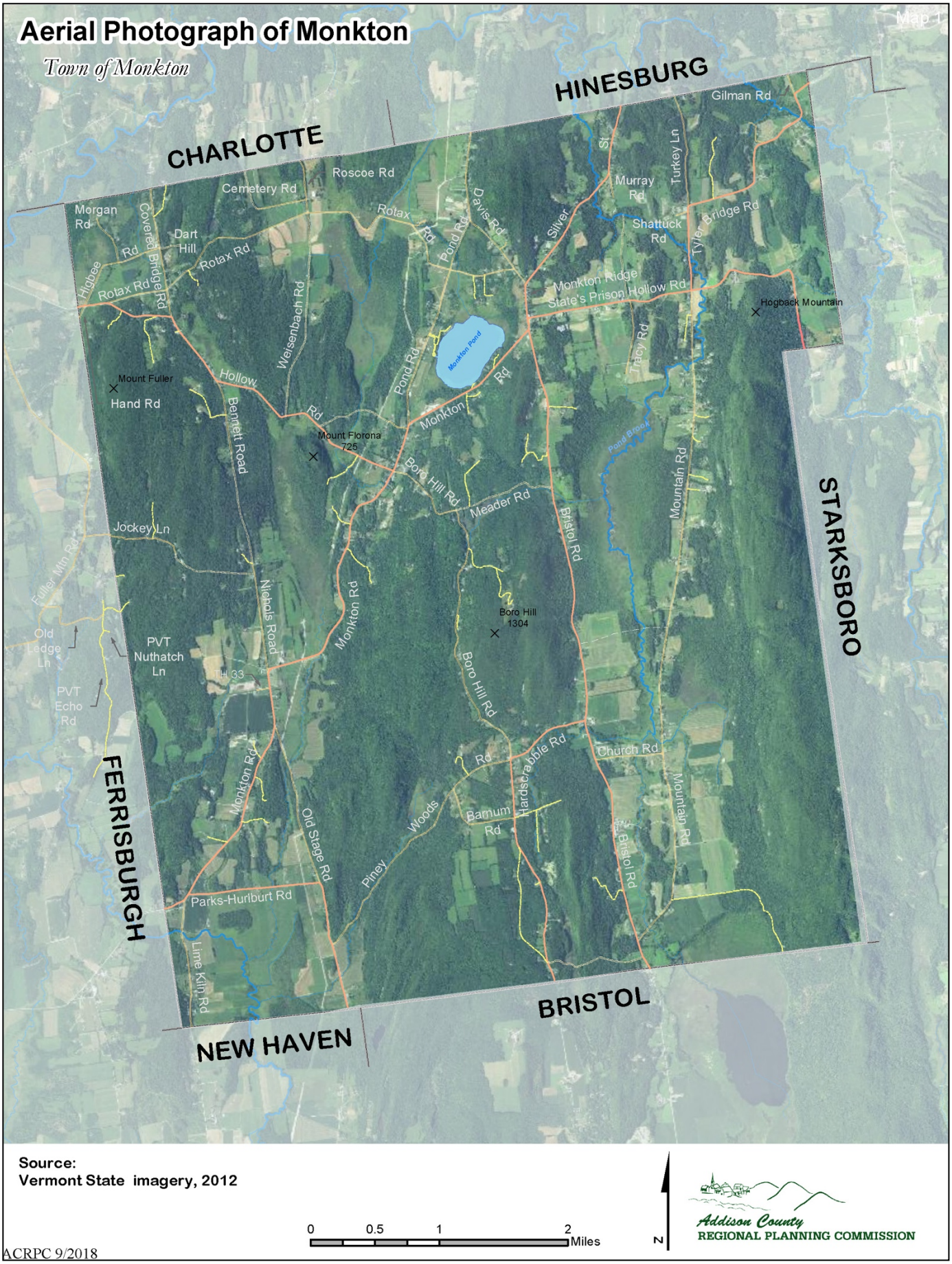
The 2018 Monkton Planning Commission at the 2018 Pizza and Planning Open House. Photo credit: Claire Tebbs

Cover image: The Monkton Flag, designed by Monkton resident, Linda Reynolds.



Map 1 Aerial Ortho

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MAPS

PURPOSE

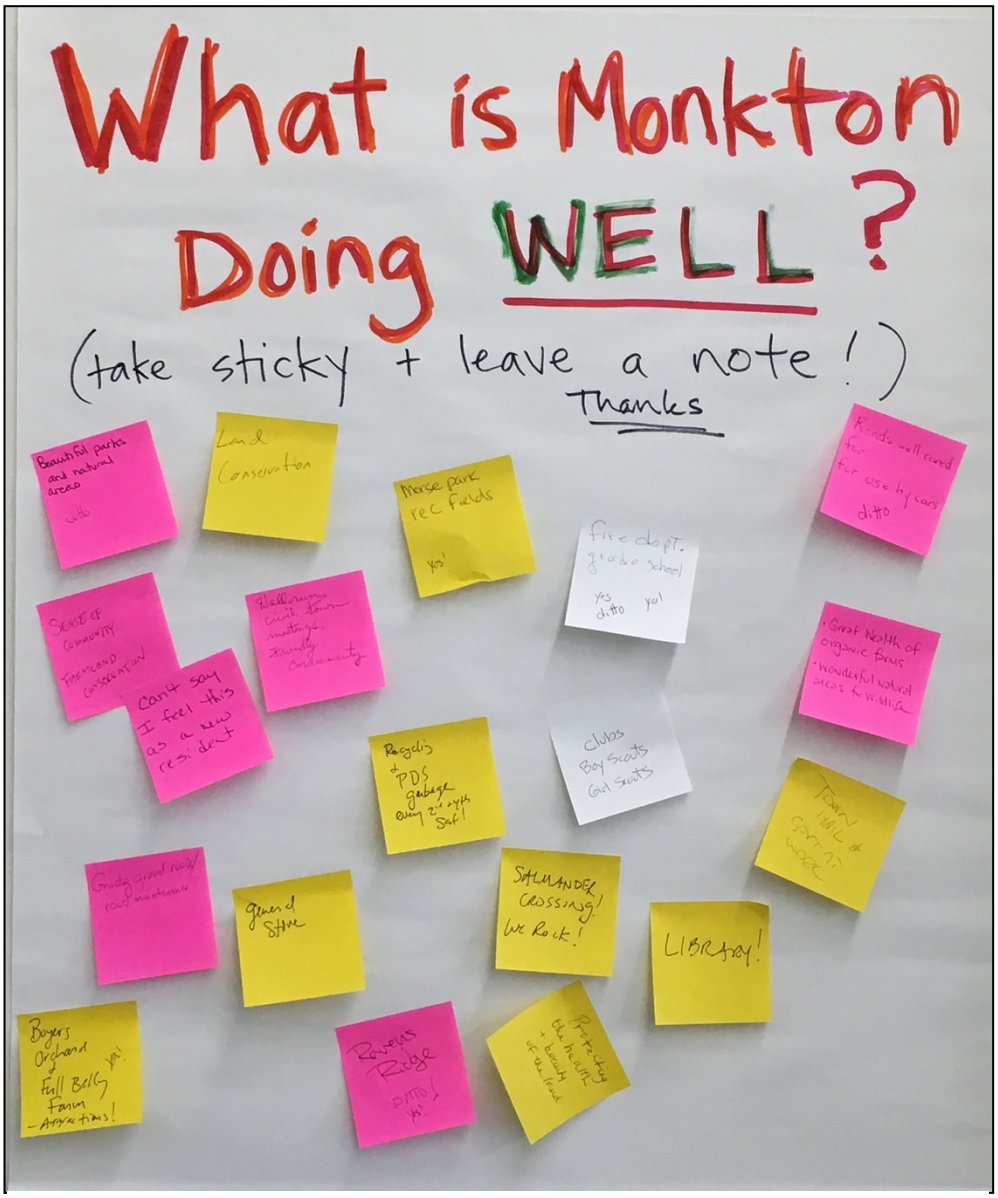
The purpose of this Plan is to set forth the community's land use and planning goals for the next eight years and to establish a framework for accomplishing these goals. The goals, polices and recommended actions are based on opportunities and challenges associated with Monkton and the values expressed by Monkton residents. Policies in the Plan are considered in Act 250 and Section 248 hearings. The Town Plan directs Monkton's regulatory policies set forth in the town zoning and subdivision bylaws, town ordinances, and in the day-to-day operation of the Town Planning Commission and the Development Review Board. The elements addressed in the plan adhere to those required in the State Planning and Development Act (Title 24 V.S.A., Chapter 117).

Raising of the Monkton Flag. Photo credit: Buzz Kuhns

A Town Plan is not a static document to be revised every eight years and set aside; it is instead the reference for all planning and zoning decisions. As the town works to interpret existing regulations and develop new ones, they will refer to the Plan to see how their actions further these goals. A Town Plan also exists to inform the regional and state government, neighboring towns and regions, and private companies and groups what Monkton requires of them. All private or governmental activity affecting Monkton should take note of the Town Plan and, where appropriate, be reviewed in light of the Plan's goals. Likewise, it is the responsibility of the town as it writes its Plan to take note of the obligations

placed upon us by our neighboring towns. For this reason, the Town of Monkton has attempted wherever possible to look to its abutting towns for guidance and information regarding their goals. We have also attempted, wherever possible, to acknowledge these goals, such as where conservation zones abut adjoining communities, and to address these goals and draft policy accordingly.

The Town Plan serves a role in State regulatory proceedings. Act 250 requires development projects to conform to the Town Plan. Other State proceedings for utility and road projects, under section 248, consider goals of the Town Plan and impacts to issues addressed in the Town Plan.



A post-it comment board at the 2018 Pizza and Planning Open House. Photo credit: Claire Tebbs

INTRODUCTION

Until early in the 1970's, Monkton was a rural community largely unchanged from the early days of the century. Farming, primarily dairy farming, was the major economic and social force in the town and was responsible for the land-use pattern seen today -- two village regions with some commercial development surrounded by a mixture of open farmland, working woodlands, and dispersed commercial activities.

Beginning in the 1970's, Monkton began to feel the influence of Chittenden County's urban growth as a regional employment center. More families with jobs in surrounding towns began to move into Monkton, seeking a rural living environment even though their job, shopping and leisure activities were oriented toward urban areas to the north. Throughout the decade of the 1970's, land-use impacts of this change were slight. Farming continued as a strong industry and continued to dominate the land-use patterns. Homes for these new ex-urbanites were built on land split off from farms, generally on large-acreage tracts dispersed throughout the town.

In the early 1980's, changes in the Vermont and national economy began to be felt in Monkton. First, the national farm economy declined to the point where most dairy farmers were operating below the break-even point. Many farmers in Monkton, as well as across Vermont, left farming. In 1973, Monkton had 37 active dairy farms; in 1990 that number stood at 15, by 1997 there were six, and by 2013 the number had decreased to three (the number of dairy farms in business today). As the decade of the 1990's progressed, despite government efforts at price control, milk prices remained generally below the cost of production.

Despite continued contraction of the dairy industry, farms continue to be a major economic activity in the town of Monkton. The town now hosts a more diverse agricultural base including fruit and vegetable farms, orchards, nursery operations, livestock and artisan cheese makers. Consolidation in the dairy industry has taken place as well as contraction, which has led to large fields farmed by landowners who live in adjacent towns.

At the same time the agricultural industry that shaped Monkton was on the decline, the demand for residential land increased. Throughout the 1980s, Burlington enjoyed a period of unprecedented economic growth. People from across the United States came to the area not only for jobs, but also to enjoy a rural lifestyle. The suburban and ex-urban growth confined to Chittenden County began to move further away from Burlington and into Addison County as both the demand and price for land in Chittenden County rose.

Today, as can be seen in the Economic Development chapter, most Monkton residents work outside of town. Many farmers, faced with declining incomes from their agricultural operations and increasing land values and property taxes, find selling some or all of their land for residential development an attractive and often necessary alternative. The dominant land-use pattern is changing from farmland to low-density, single-family homes. Woodland, especially on hillsides with picturesque views, has also been sold for residential use. Monkton Pond, once a rural vacation area, is now being converted to year-round housing. Roads, the town hall, library, school and other public facilities are feeling the

pressure of increased demand by residents and by ever increasing non-resident commuter traffic.

As the Town faces new development pressures many new questions remain unanswered. Key among them is how will Monkton maintain the critical balance between ecological functions and water resource quality and development while sustaining the working landscape?

Monkton is committed to protecting and revitalizing the working landscape that defines Monkton, while managing on growth and activities which would encourage a vibrant town center. This Plan establishes the following *guiding principles* in accordance with the community's goals as set forth in the document.

Monkton Pond Photo credit: Buzz Kuhns

GUIDING PRINCIPLES

The following are the guiding principles of the Monkton Town Plan, which lay the groundwork for the goals and recommendations found in each section. All town policies and regulations should resonate with these guiding principles, and further the goals of this plan.

- Encourage a diverse social and economic population and the ability for families to move into, grow, and stay in Monkton.
- Retain and steward Monkton's unique historic, natural and scenic characteristics.
- Ensure the preservation of the working landscape for future generations.
- Maintain the proper function of our ecological resources in order to protect air and water quality, soil health and wildlife habitat.
- Direct growth to reflect historic settlement patterns of denser village regions and hamlets, surrounded by agricultural fields, forests and other natural features.
- Promote a viable, diverse and creative local economy fitting with Monkton's rural character.
- Foster places and programs where residents can feel a part of a cohesive community.
- Support opportunities for high quality education and educational opportunities for Monkton residents of all ages.
- Ensure a safe, well-maintained transportation network that considers the needs of a diversity of users, including pedestrians and cyclists.
- Strengthen the opportunities for the Town and residents to conserve energy and use renewable energy sources.
- Promote recycling, efficient trash disposal and composting.

TOWN HISTORY

Monkton was chartered by Governor Wentworth of New Hampshire in 1762 and was organized as a town in 1786. The history of the town closely follows that of neighboring towns in Addison County. Settlement of the town was sporadic before the Revolutionary War, and many of the early settlers left their homes during the course of the war, seeking safety elsewhere. The overall settlement of the town began after the war.

While many of the early settlers were farmers, there was also early exploitation of mineral deposits found in the town. Monkton's iron provided metal to the American fleet built at Vergennes during the War of 1812. Yellow ochre was also found, but the most abundant mineral was high-grade kaolin, used primarily in ceramics.

With the gradual rise and predominance of agriculture, greater settlement and development of farms took place. During the 19th century the sheep industry led, and in 1840, there were approximately 6200 head of sheep in town, as compared to only 1200 cattle.

By the middle of the 19th century, Monkton was established as a self-sufficient, agrarian community. In 1880, for example Monkton had (6) manufacturers, (8) blacksmiths and wheelwrights, (3) physicians, (12) carpenters (architects), (3) dressmakers, (10) teachers, (3) butchers as well as farmers, ministers, cattle dealers, and farm machinery dealers.

In the latter part of the 19th century, however, Monkton's population began to decline. The lure of free land and the promise of better fortunes in the west attracted many, especially as the sheep industry in Vermont began to decline. Whole families from Monkton moved westward across the northern tip of New York State and into the Ohio Valley and beyond. Many of the old-name families in Monkton trace ancestors to many western population centers.

The population decline continued steadily throughout the first half of the 20th century, reaching its lowest point in over 150 years during the 1950s. As indicated by census data, however, there has been a steady increase in Monkton's population from the late 1960's. This increase has followed the increases in Chittenden and Addison Counties and has been facilitated by the modernization of the road system during this period.

Monkton has changed substantially as a result of the population increases. It is no longer a self-sufficient community, as it was during the 19th century. Although the town has retained its agrarian character, the majority of residents are now commuters who are dependent upon other communities for employment as well as most goods and services. Since 1985, development in Monkton has been almost exclusively residential, with a steady increase in telecommuting and home-based small businesses. The residential development that has occurred has been predominately single-family homes scattered randomly throughout the town.

POPULATION

GOALS

1. Monkton will be multi-generational with an active youth and senior population.
2. Monkton's population will be diverse.

POLICIES

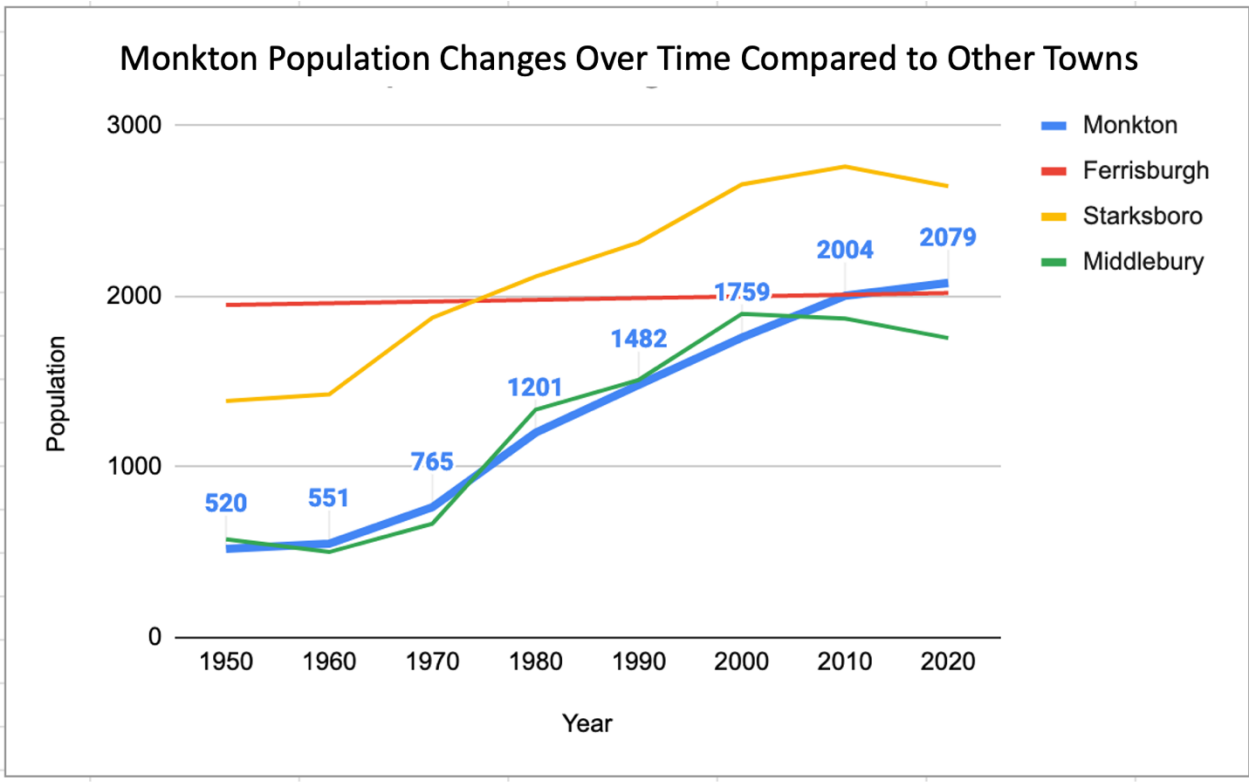
1. Encourage a diversity of housing types, including affordable options for young families and seniors.
2. Support a high-quality school system and infrastructure (see Education section).
3. Encourage opportunities for local business in keeping with our Economic Development Plan.
4. Provide opportunities for local recreation and civic engagement.
5. Support cohesive Village regions development that increases the safety of pedestrians and cyclists.
6. Preserve and cultivate agricultural land and the local economy (also see Agriculture in Natural Resources and the Economic Development section).

RECOMMENDED ACTIONS

1. Survey the needs of the senior population in Monkton to identify their needs and concerns.
2. Seek opportunities for local economic development (see Economic Development section).
3. Research grant funding for recreation, pedestrian and/or cycling infrastructure planning and implementation.
4. Conduct a study to better understand Monkton's growth rate and population demographics as it relates to housing needs, labor force, commuting patterns and land use patterns.

POPULATION GROWTH

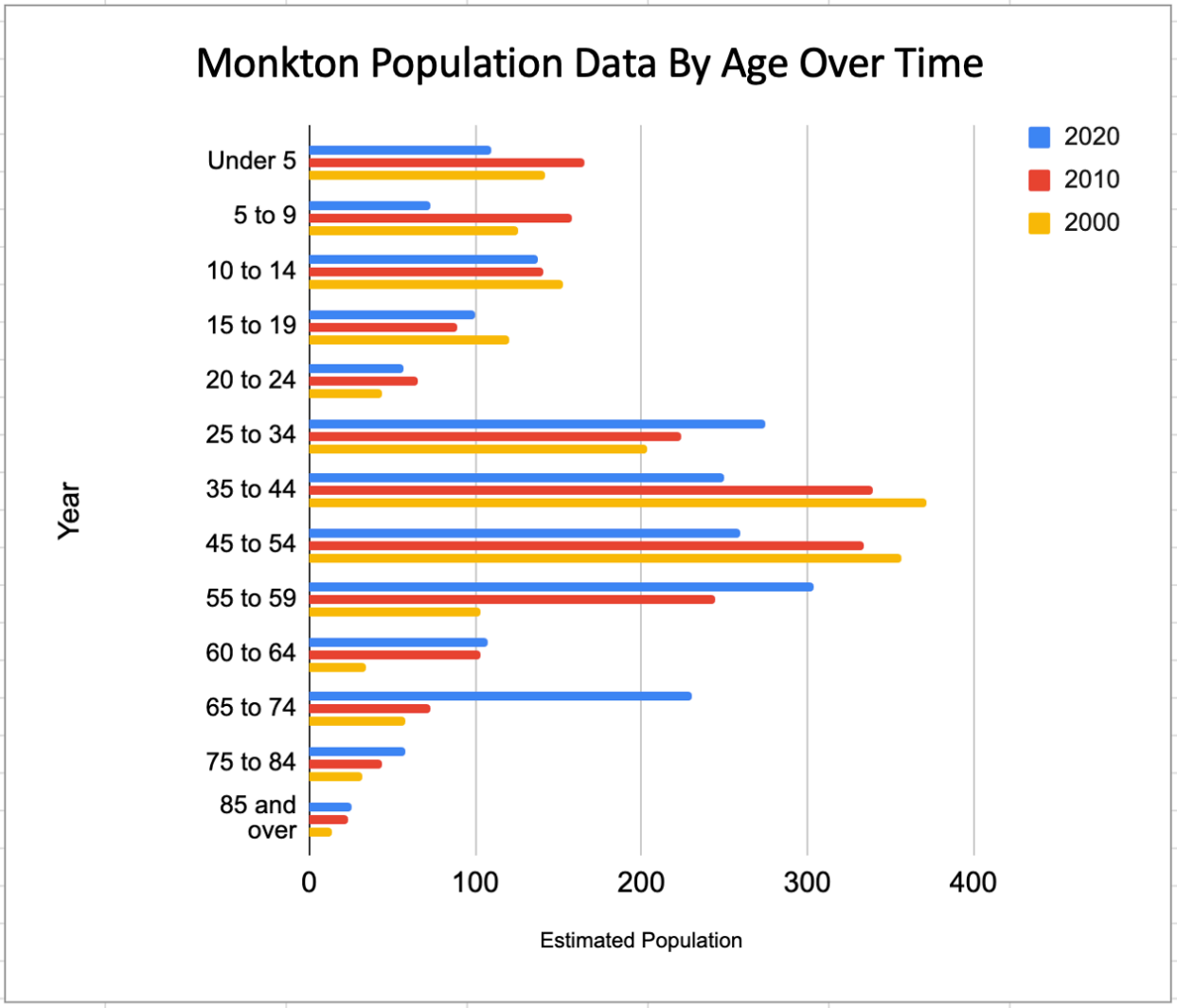
Monkton continued to see an increase in population according to the latest US Census data, although the increase in the last 10 years, 2010 to 2020, is smaller than any 10-year increase since 1950 to 1960. It is also worth noting that while the 3.7% increase in population between 2010 and 2020 was modest, our neighbors in Ferrisburgh and Starksboro, actually saw a decrease in population during that same time period according to the US Census data. Much of Monkton's growth can be attributed to its proximity to employment centers in Chittenden County and surrounding towns. Since the 1960's growth rates in Monkton have correlated with growth rates in Chittenden County.



Source: https://data.census.gov/table?g=0600000US5000145550&tid=DECENNIALPL2020.P1

AGE OF POPULATION

In 2020, the median age of Monkton residents was 47.6, up from 41 in 2010 and from 37 in 2000. As can be seen in the graph, the population of 55 and older dramatically increased from 2010 to 2020. In the next 5-20 years trends indicate there will be more of a demand for facilities and services for a growing senior population. Services needed include specialized housing, health care, social opportunities, and public transportation.



Source: https://data.census.gov/table?q=population&g=0600000US5000145550&y=2020&tid=ACSDP5Y2020.DP05

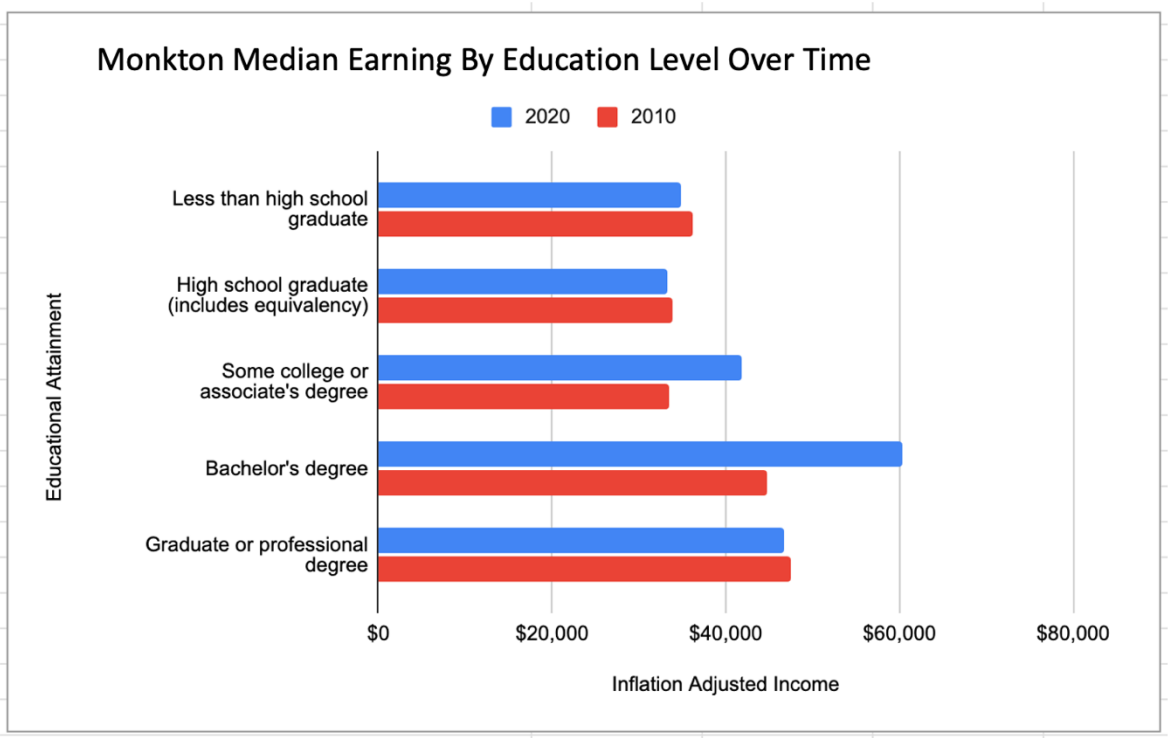
All other age groups have gotten smaller over the past 10 years, except the population of residents aged 25-34, which has increased. In order to continue to attract young families to Monkton, it is important that properties in Monkton are affordable to first time home buyers most likely in this age bracket.

The rapid growth in the number of school age children seen in the 80's and 90's has slowed as baby boomers have exited childbearing years and the trend towards fewer children per family has continued. Monkton, like much of Vermont, has become less affordable for young families and there is currently a dearth of childcare options. *See also housing needs by age group data in the Housing Section.*

EDUCATION AND INCOME

Almost 95 percent (94.9%) of Monkton's population, 25 and older, obtained a high school diploma. This is very similar to Addison County (94.3%) and the State of Vermont (93.9%). Monkton's population has

attained a level of higher education that is slightly above Addison County averages. Forty-eight-point five percent of Monkton residents have a bachelor's degree or higher compared to 43.2 percent of Addison County. Monkton median earnings declined slightly from 2010 to 2020 for high school graduates and increased between $8,390 and $15,653 for those with at least some college. The exception to this was Monkton residents with graduate or professional degrees where earnings declined slightly.



Source: ACS Data Table

HOUSING

GOALS

1. Offer a diversity of safe, affordable, housing options for a diversity of residents.
2. Increase housing opportunities in walking or cycling proximity to amenities and services.
3. Develop housing in a way which preserves the natural, cultural and scenic features of Monkton.
4. Minimize undue infrastructure cost and maintenance for the municipality.
5. Increase energy efficiency and energy conservation in Monkton homes.

POLICIES

1. Encourage residential development in the village regions.
2. Encourage shared utilities and driveways for any new developments.
3. Encourage on-site storm water management following green infrastructure models of management.
4. Support the preservation and adaptive re-use of our historic buildings.
5. Encourage the use of Planned Unit Developments (PUD's).
6. Encourage better building practices and maintenance to prevent loss or degradation of existing housing.
7. Encourage development which minimizes impact to environmentally significant areas.
8. Encourage energy efficiency and energy conservation in new homes and home maintenance and upgrades.

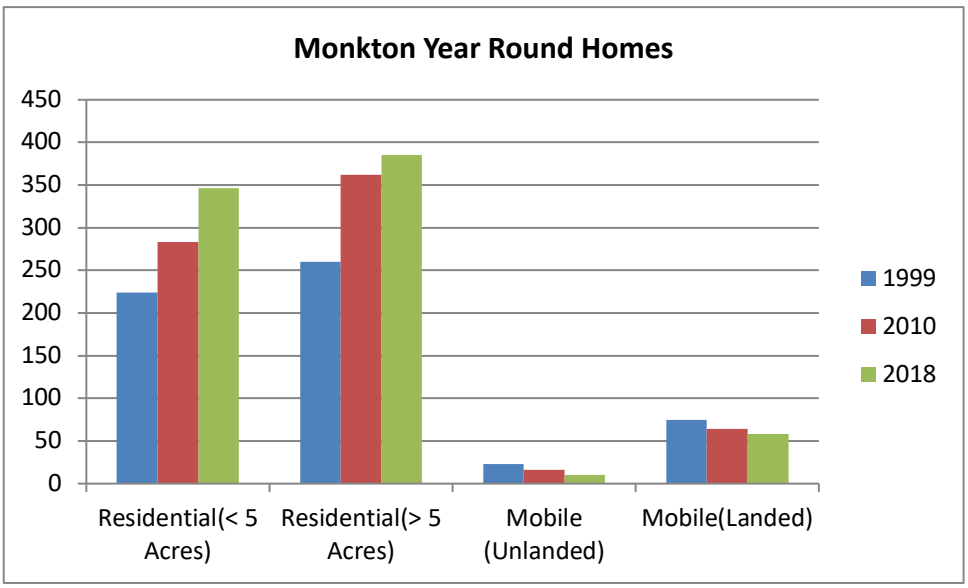
RECOMMENDED ACTIONS

1. Incentivize the development of affordable homes.
2. Offer educational seminars/workshops for homeowners regarding grants and programs supporting energy efficiency/weatherizing, and land-use best practices related to residential development and the protection of natural resources.
3. Identify substandard sewage disposal systems.
4. Support fire department efforts for chimney and wood-burning safety.
5. Review Monkton's PUD and other housing-related regulations for needed updates in order to achieve these goals.

HOUSING STOCK

New housing units should adapt to meet the needs of the changing demographic of families moving to Monkton and Monkton's aging population, both in need of smaller, efficient homes. Despite Monkton's effort to adapt zoning to meet the need for more diverse housing options for young families, singles and seniors who may be looking for smaller, more affordable units and/or living units with shared common in-door and/or outdoor space, we are seeing housing costs in Monkton increase. According to Multiple Listing Service (MLS) statistics, in 2019 there were 18 sales of homes at an average price of $271,000. In 2020, there were 28 sales at an average price of $337,000; in 2021 24 sales resulted in an average sale price of $433,000 and in 2022 it increased to an average of $454,000 for the 22 home sales that occurred. These statistics reflect the increased desirability for property in less densely developed areas, and the increased proportion of the population working remotely in part due to the concerns of the Corona Virus.

Monkton Year-Round Homes				
Home Type	1999	2010	2018	2023
Residential (< 5 Acres)	224	283	346	386
Residential (> 5 Acres)	260	362	385	405
Mobile (Unlanded)	23	16	10	12



Mobile (Landed)	75	64	58	55

Monkton Seasonal Homes				
Homes \Year	1999	2010	2018	2023
Seasonal (< 5 Acres)	32	24	26	22

Seasonal (> 5 Acres)	5	6	4	2

Commercial Parcels				
Year	1999	2010	2018	2023
	18	24	7	7

Residency of Homeowners (Based on Homestead Declaration)				
	2018		2023	
Monkton Resident	674	70.6%	682	71.1%
Non-Resident	281	29.4%	277	28.9%

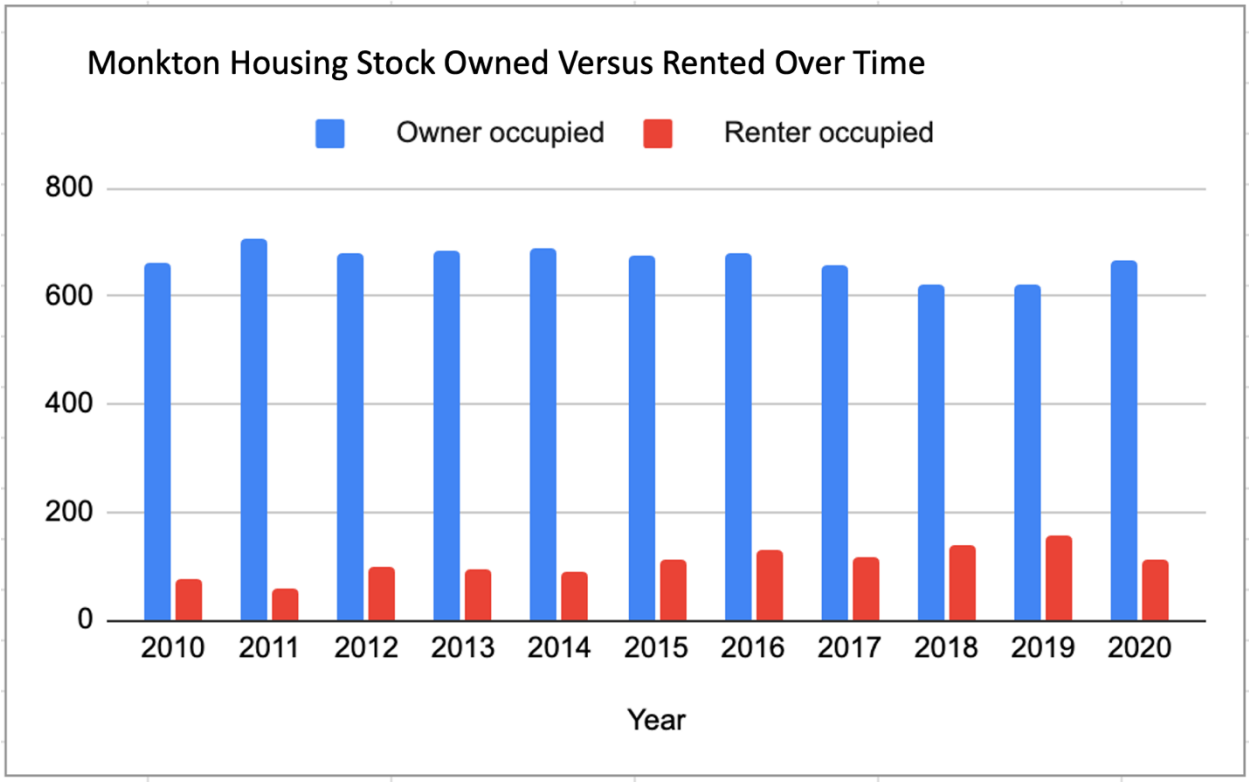
Property Usage		
	2018	2023
Rental Use	9	18
Covenant Restricted	12	12
Multi-Unit	10	
Accessory Dwellings	20	
Vacant	2	

Data courtesy of the Monkton Town Listers.

While housing in Monkton continues to grow steadily the type of housing needs to be recognized for both needs and uses.

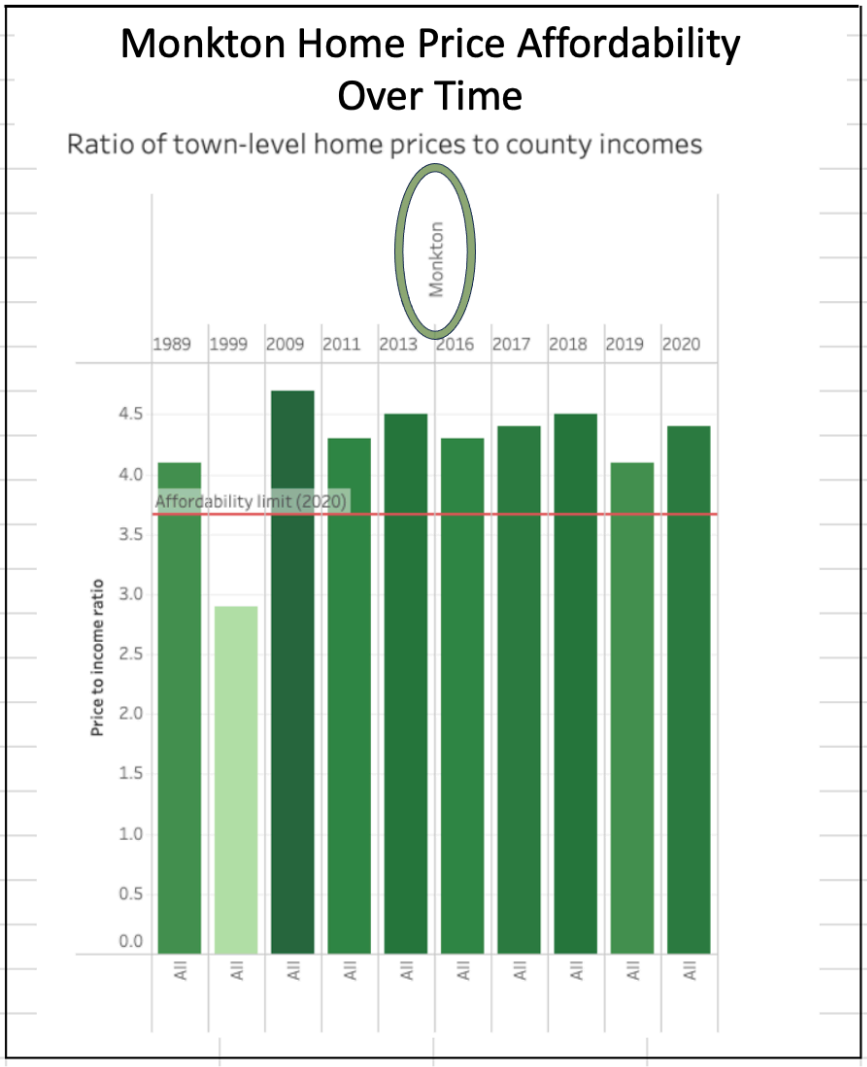
AFFORDABLE HOUSING

Most of Monkton's homes are currently single family/owner occupied units. Zoning changes in 2012 allowed housing units larger than two family structures. Rental property in town has increased from 76 in the 2010 census data to 114 in the 2020 Census data.



Source: https://data.census.gov/table?q=B25003&g=060XX00US5000145550&tid=ACSDT5Y2016.B25003

Historically, Monkton has attracted families earning a wide spectrum of incomes. However, since the mid-nineties, housing prices in Monkton have steadily increased to above both Addison County and Vermont median prices. In 2010, the median selling price for a single-family home in Monkton was $247,000 in 2018 it had risen to $261,000, in 2020 it had risen to $310,000. Currently, the number of existing homes in Monkton that qualify for Vermont Housing Authority (VHFA)'s reduced interest rate financing, by virtue of meeting the affordable home test, is severely limited. In light of this, creating avenues for the development of affordable housing in Monkton is the first and foremost priority. Monkton's affordable housing options should address the needs of people who are elderly and disabled and attract and maintain young families in the area. Monkton planning goals support ways to diversify Monkton's housing stock, including multi-family structures, cluster housing for single family housing units or rentals, "tiny houses", or farm worker housing.



Sources: https://data.census.gov/table?q=Median+income&g=060XX00US5000145550&tid=ACSST5Y2010.S1901 and VTHousingData.org

HEATING AND WEATHERIZATION

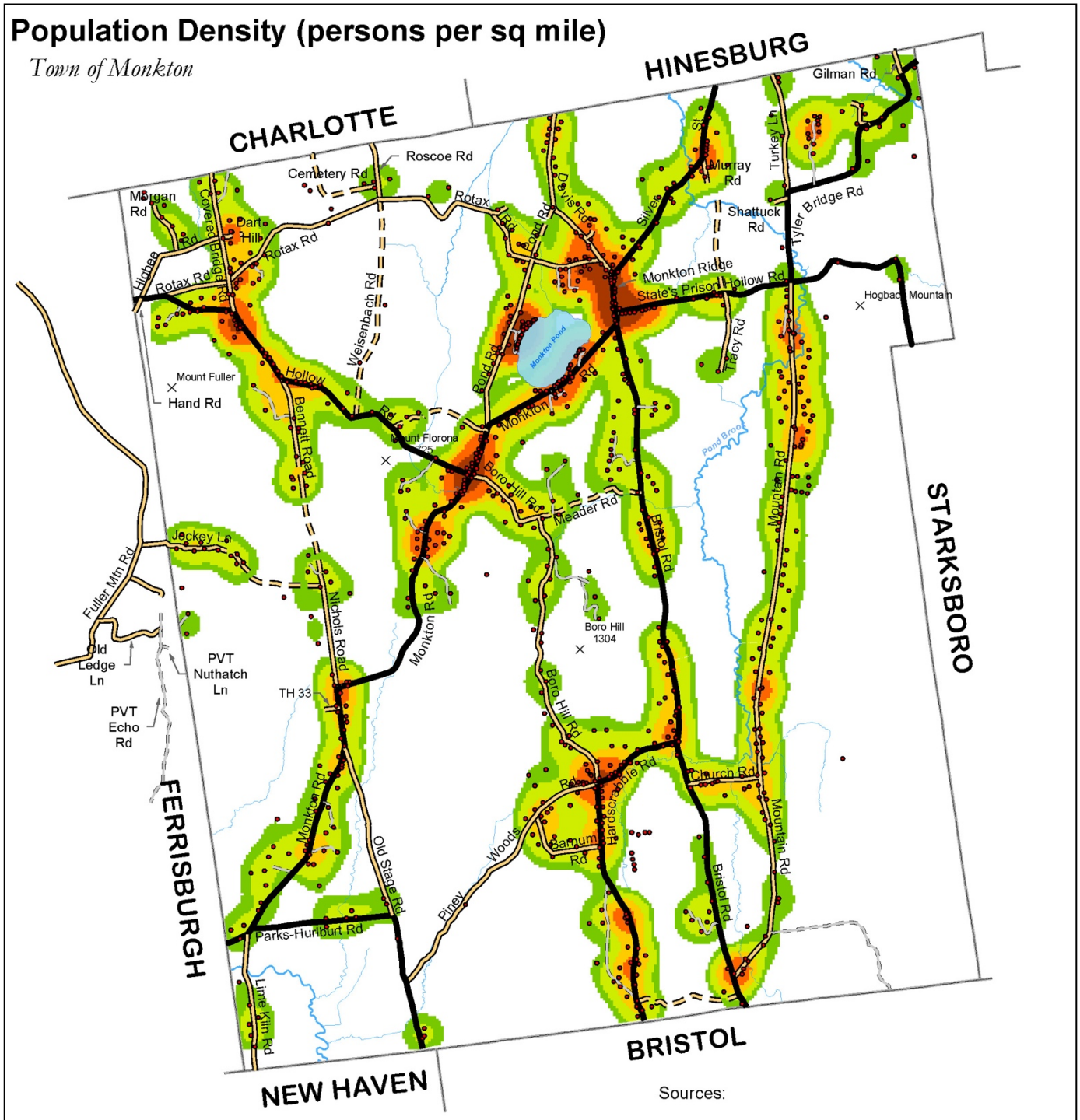
For many, affordable living is determined by maintenance and heating costs of the home, this is especially true in Vermont's northern climate (please see the Energy section for how Monkton residents heat their homes). In the interest of encouraging energy efficiency, and also increasing affordability of Monkton homes, educational material on minimizing the costs of weatherization and on alternative energy choices should be made available at the Monkton town office. The Monkton wood bank, through HOPE, continues successfully, offering local wood to those most in need. There is growing community support for this program which is wholly dependent on wood donations from residents.

For more information on ways to implement affordable housing options, go to the following websites:
http://www.orton.org/resources/heart_soul_implementation_guides
http://www.vtaffordablehousing.org/
http://www.vhfa.org/partners/initiatives/vhfa-publications
https://www.planning.org/planning/2016/feb/tinyhouses.htm

HOUSING AND THE WORKING LANDSCAPE

As Monkton grows and develops the Town must ensure that housing adjoining agricultural areas, whether they be working farms or managed forests, be sited in an unobtrusive manner and be limited in number. The town encourages the incorporation of right-to-farm covenants in deeds. Another way in which to preserve our open space, agricultural lands, and forests is to create flexible land use codes that allow for placement of new homes in a manner that does not unnecessarily infringe on the continuity of natural features and prime agricultural soils.
While conservation subdivisions work to protect the rural landscape, it is advantageous to promote growth in existing residential areas before developing the more rural areas of a town. Encouraging development in/near historically dense areas, where public amenities and services are available, better protects our land base while serving the needs of residents.

Monkton Residents think about housing options in Monkton at the 2018 Pizza and Planning Open House
Photo Credit: Claire Tebbs



Map 2 Population Density

EDUCATION AND CHILDCARE

GOALS

1. Support high quality education for all elementary aged and high school students residing here.
2. Support Monkton Central School as a vital community service.
3. Provide access to educational services and opportunities for all Monkton residents.
4. Support safe, affordable, high-quality childcare in Monkton for Monkton residents.
5. Offer a diversity of safe, affordable, housing options for a diversity of residents including families with school aged children.

POLICIES

1. Participate in long-term planning for the Monkton Central School.
2. Encourage summer use of existing educational facilities.
3. Support long-range plans to improve our village regions that provides services such as a new library facility and public transportation routes to surrounding towns.
4. Permit childcare facilities as a home occupation in residential zones.

RECOMMENDED ACTIONS

1. Facilitate a relationship between school administrators and town officials to ensure a shared vision for Monkton Central School.
2. Discuss with school administrators the summer use of existing educational facilities.
3. Provide information on on-going regional educational opportunities at the Town Office and Library.
4. Provide adequate high-speed internet to support online learning opportunities for post-secondary education, home schooled students, and elementary, middle and high school students.
5. Encourage childcare facilities as a home occupation.
6. Incentivize the development of moderate and affordable housing.

MONKTON CENTRAL SCHOOL

Monkton Central School was built in 1960 and currently serves approximately 145 students. Monkton Central School provides public education for grades kindergarten through the sixth grade. In the fall of 2018, the staff and faculty consisted of a principal, a secretary, 27 staff comprised of teachers, professional staff, and support staff including regular program assistants, special education assistants, custodians and food service personnel. The capacity of the school is 225 students.

Prior to 2018, the school board for the elementary school consisted of a chairperson and four directors. Members elected by Australian ballot on Town Meeting Day, had terms of service that varied from one to three years. Today Monkton is represented on the Mount Abraham Unified School District (MAUSD) School Board by two elected members. They are part of a 13-member board representing the 5 towns of Monkton, Starksboro, Bristol, Lincoln, and New Haven.

The school, located between Monkton Ridge and Monkton Boro, was expanded in 1986. In 1997 there were major renovations to expand the number of classrooms from 10 to 12. It is a one-story building encompassing approximate 15,000 square feet. The gymnasium continues to double as a cafeteria and classroom. It includes a kitchen and administrative office; and serves as a public meeting space for public meetings and other town events. In the most recent renovations, the heating system was upgraded to two oil-fired furnaces, which provide forced hot water heating. Water for the school is pumped from a drilled well. A mound septic system adjacent to the school building handles sewage.

In 1993, the State of Vermont granted the school a variance to permit the installation of a new septic system. In granting this variance, the state set a cap of 200 students and staff in the school. This upper limit has been exceeded, with a student population of 216 at the end of the 1994/95 school year. The town and the state implemented a plan that allowed for continued use of the present school by allowing an off-site septic system. In 1997 the off-site septic system was completed on the Morse Park property. With this new septic addition, the school has adequate sewage disposal.

Monkton Central School provides local bus transportation. Four buses are used to transport all students to the elementary school, two of them are used to transport the middle and high school students to Mount Abraham Union High School in Bristol. Though this practice economically utilizes four buses to transport students to two locations 13 miles apart, it results in long school days and bus rides of up to one hour for some students.

MOUNT ABRAHAM UNIFIED SCHOOL DISTRICT (MAUSD)

Monkton Central School is part of the Mount Abraham Unified School District (MAUSD). The supervisory union headquarters located in Bristol represents five towns: Bristol, Lincoln, Monkton, New Haven and Starksboro, each with its own elementary school (kindergarten to 6th grade). Mount Abraham Union High School (MAUHS) in Bristol provides middle school (grades 7 -8) and high school (grades 9-12) for the five district towns.

Within the school district, each individual town elects representatives to the MAUSD School Board based on the population of the town but not less than two. The same 13-member board oversees the high school, middle school and grade school. An administrative group made up of the principals of the schools, the Superintendent, and the business office develop a budget based on the MAUSD Board policy and direction set by the Board. The budget includes all costs for operation of all six school districts and the Supervisory Union, including central office expenses and consolidated functions and services.

The MAUSD Board reviews and adopts the budget, to present to the voters. The budget is ultimately funded by a combination of local property taxes and state aid. A single tax rate is set for all 5 towns based on the amount of money needed to support the budget approved by voters. Basically, once all VT towns have approved their budgets the state sets a yield which indicates how much money needs to be generated from a tax rate of $1 per $100 of assessed value based on the grand list for the state. That yield is then applied to the amount of money required to fund the budget which is used to set a single education tax rate for all five towns. Each town then has their own Common Level of Appraisal (CLA) which is applied to the single education tax rate to produce the actual education tax rate in that

town. Each property taxpayer in the five towns then pays taxes on their property at that established rate.

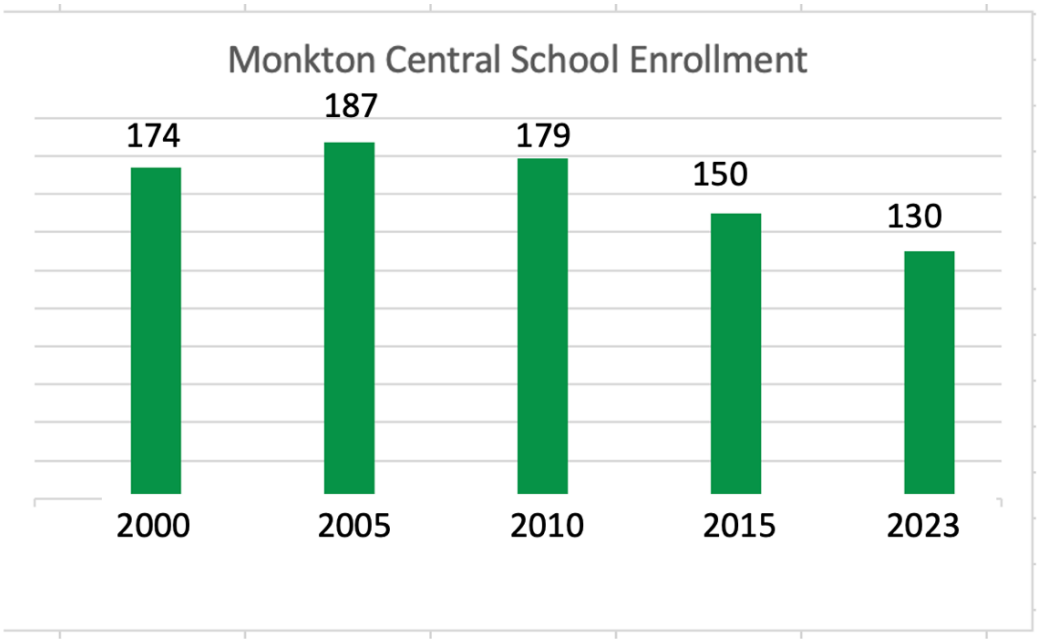
OTHER EDUCATIONAL SERVICES

Technical and vocational educational opportunities are available to Monkton students at the Patricia Hannaford Career Center in Middlebury. Brick and mortar post-secondary adult education is available from a number of colleges within 25 miles of Monkton, including the University of Vermont, St. Michaels College, the Community College of Vermont, Middlebury College, and Champlain College. Students at Mount Abraham High School can also take advantage of State funded dual enrollment courses and Early College. Students of all ages can also take advantage of the many online courses and programs offered both within and outside of Vermont. The Willowell Foundation, based in Monkton, is an educational nonprofit center offering environmental, agricultural and art-related programs for children while serving as a resource for area students, teachers and community members in programs that integrate the sciences, arts and humanities into place-based and outdoors education.

TOWN GROWTH AND SCHOOL ENROLLMENT

This Plan expects development and population growth at rates and in locations that fall within the capacity limits of Town services, with particular interest in education. A considerable amount of town taxes are committed to education and as such, attention needs to be given to how land use decisions, regulations and population trends impact school enrollment, and in turn effect costs and benefits to Monkton residents.

This Plan recognizes the importance of the Central School and the adjacent Morse Park, as a vibrant civic center. Not only does it provide a hub of activity for many families in Monkton, the school and park are physically situated in the center of Monkton. Any new pedestrian and cycling infrastructure should incorporate the needs of those travelling to and from the school on a daily basis, including safe walking routes for children.



Source: Monkton Town Reports and Monkton Central School

CHILDCARE AND EARLY EDUCATION SERVICES

The Town of Monkton recognizes the need for more affordable and locally available childcare services. These services may range from informal unregistered or unlicensed day care facilities serving 6 or less children to state registered/licensed daycare facilities serving 6 or more children, as well as early education preschools with a more formalized curriculum. The Town encourages all childcare providers to receive State certification. Currently Monkton residents are served by home day care operations and licensed daycare centers in surrounding towns. Larger licensed daycare and preschool centers exist in Middlebury and Hinesburg. Monkton's pre-school aged children are encouraged to attend pre-school. MAUSD pays for up to 10 hours per week of preschool at any licensed pre-school including MAUSD's Early Essential Education program located in Bristol. Monkton Central School offers an afterschool program for K-6th grade.

The Mary Johnson Children's Center in Middlebury administers a childcare referral program for Addison County; *Addison County Childcare Services*: 388-4304 or e-mail referral@mjccvt.org.

Monkton Central School. Photo Credit Buzz Kuhns

UTILITIES and FACILITIES

Also see the Enhanced Energy Plan, Appendix A of this plan regarding energy development policies and siting standards within Monkton.

GOALS

1. Provide updated efficient technologies, telecommunications services, and infrastructure without undue environmental and/or economic impact to our residents.
2. Protect our environmental and cultural assets when planning for the future.
3. Follow policies in the Enhanced Energy plan when considering any new energy project.
4. Provide the needed services to create a safe, healthy community in which to live, work and play.

POLICIES

1. Encourage hearings on proposed utility projects in order to catalog the concerns and sentiments of the neighboring landowners and other residents towards the construction of such projects.
2. Participate to the fullest extent possible in hearings before the Vermont Public Utility Commission on projects located in Monkton or neighboring towns.
3. Encourage conservation and renewable energy sources with localized distribution as an alternative to wide scale transmission and distribution projects.
4. Support small and home-based businesses by encouraging the most current telecommunication infrastructure.
5. Support public access to public land.
6. Support the work of the Monkton Recreation Committee.

RECOMMENDED ACTIONS

1. Survey the needs of telecommuters and other business owners in Monkton.
2. Work with town and regional agencies and boards to ensure public access to public lands.
3. Encourage the telecommunication providers to expand high speed service.

Monkton Fire Station. Photo Credit Buzz Kuhns

TELECOMMUNICATIONS

Good communication (cell service and high-speed internet) have become vital for business and social interaction. Monkton, like many towns in Vermont, suffers from spotty cell phone service and limited high-speed internet availability. Cell service is currently available from six carriers and cell reception varies between each ranging from no service though adequate service to good service depending on the location. Good service is characterized as 5 to 10 megabits per second (mbps) voice, text, and email with web browsing, however streaming may or may not be possible. Internet service is available from a number of cable and satellite companies. High speed internet via fiber optic cables is starting to be introduced by Green Mountain Access (Waitsfield & Champlain Valley Telecom).

Monkton encourages providers to continue to improve their services and cell coverage by making used of existing communication tower located on Boro Hill, existing structures, and the use of microcells. Should any additional sites be sought or modifications to the existing tower, they shall not have an undue adverse effect on the aesthetics, scenic beauty, historic sites, and/or water quality, the natural environment or public health and safety. The 2016 *Monkton Viewshed Study* should be taken into consideration for any proposed communication facilities.

UTILITY SERVICES

The following utilities presently serve the Town of Monkton:

Utility	Description
Electric	Green Mountain Power
Telephone	Champlain Valley Telecom, Consolidated Communication
Cable TV	Comcast
Satellite	Direct TV/Dish
Cellular Telephone	Local service available through regional providers.
Internet Access	Local access available through regional providers, including DSL, cable and satellite.

SOLID WASTE MANAGEMENT

Monkton is a member of Addison County Solid Waste Management District. The Town provides a recycling facility at the Town Garage twice a month for mandatory household recycling. The District collects hazardous wastes generated by households, metal waste and plastic bags at the Middlebury Transfer Station. Hazardous wastes include items such as paints, cleansers, poisons, contaminated fuel, and antifreeze. Residents can also take advantage of commercial curbside pickup. All businesses in town generating hazardous wastes make individual arrangements for their disposal.

TOWN PROPERTIES

The Town has the following facilities:

- Town Hall
- Town Garage
- Monkton Fire Station
- Monkton Central School
- Monkton Recreation Field
- Morse Park

TOWN ADMINISTRATION

The Town Clerk, Assistant Town Clerk, Treasurer and Assistant Treasurer provide Town administrative services. A five member Select Board elected by Australian ballot governs the Town. The Planning Commission is also elected by Australian ballot as is the school treasurer, the delinquent tax collector, town and school moderators, the constable, listers, auditors, justices of the peace, and school board members. The Select Board appoints members of the Development Review Board and hires a zoning administrator. The Town is also served by numerous volunteer committees.

TOWN OPERATING BUDGET

The Town budget has two sections, the school budget and the town operating budget. The town operating budget including administration, road improvement and maintenance has increased over time at a normal rate of inflation. This cost trend is likely to continue, as well as follow the changes in the cost of energy. Maintenance and improvements to the highway system is vital to maintaining safe roads and maintaining property values for the citizens of Monkton. Goals within this plan seeks to improve the efficiency of the highway system via redirecting traffic to state highways and optimizing the road system as suggested in the Transportation section of this plan.

TOWN HALL

The Town Hall was originally built in 1859. In 1978, the Monkton Town Hall was listed in the National Register of Historic Places by the National Park Service of the U.S. Department of the Interior (Record Number 373933, Item Number 78000225). The town continues to explore the feasibility of building a new Town Hall facility on a Town-owned property just north of its current location, with plans to house a new library space.

RUSSELL MEMORIAL LIBRARY

The Russell Memorial Library, named in honor of Albert P. Russell, (one of the first and most significant benefactors of the library) is located on Monkton Ridge directly across from the Town Hall. Hours can be found on the Russell Memorial website or at the library.

The Library's staff is comprised of two librarians and the assistance of volunteers. The primary function of the library is to serve children and adult popular reading. The facility, which contains approximately 3,000 volumes and periodicals also offers a collection of books on tape and CD. The Library also offers a number of children's programs including story hours and internet access.

There are a small number of reference documents including town reports from over a hundred years ago and the Russell collection of old Vermont history books. The Russell Memorial Library participates in the Vermont Interlibrary Loan Program and is open to all county residents without charge.

The building and land for the library were provided by a trust established by Dr. George Russell, in honor of his father, Albert Russell. A board of trustees, elected by the town, oversees the operations of the library.

POST OFFICE

Monkton's post office is currently housed in the Monkton Fire Station. It does not provide rural route services. These are provided by Bristol, New Haven, Charlotte, Hinesburg and North Ferrisburgh USPS operations. Due to this, there is a diversity of postal codes used by Monkton residents, depending on which rural route their physical address has been designated within. Only those residents who have a post office box at the Monkton post office have a Monkton mailing address.

East Monkton Cemetery Photo credit: Buzz Kuhns

CEMETERIES

There are currently three in-use cemeteries in Monkton. Monkton Ridge Cemetery sits next to the Town Hall and dates back to 1804. The Monkton Borough Cemetery, on Pond Road dates back to 1816 and the Morgan Cemetery, on Church Street in East Monkton dates back to 1812. There is also the Hurlburt cemetery and the Carter cemetery.

The cemeteries are maintained by the Town. According to historic records there are six other cemeteries in Monkton, the earliest of which dates to 1793.

HEALTH AND SAFETY

Monkton has a privately-run volunteer fire department and is part of a mutual aid network providing and receiving auxiliary support as required by surrounding towns. The fire department is situated in a town-owned building but is a private operation. The building is also used for town meetings and is the designated FEMA Shelter for the town.

The Fire Department has one boat and five trucks, including a brush truck, equipment truck, one tanker, a mini-pumper and a mainline pumper. The Fire Department is supported by private donations and an allocation voted by the town at town meeting. Monkton First Response, Bristol Rescue and Vergennes

Area Rescue Association provide emergency medical services.

Regional health care service providers serve the Town of Monkton. University of Vermont (UVM) Health Network Porter Medical Center in Middlebury and UVM Medical Center in Burlington serve as major medical providers.

The Town of Monkton has no police department. Law enforcement is provided by the Vermont State Police and contracted as needed through the Addison County Sheriff's Department.

Presently no extended care facilities are located within the Town of Monkton. Various county and regional organizations provide in-house and community services. The Town recognizes the importance of these services and provides support through its annual budget. Future growth within the town, and particularly among older members of the community, will lead to the need for the promotion of such facilities within the town.

Among the many organizations providing additional community services identified in the town's annual report are:

Addison County Community Action Group
Addison County Hospice
Addison County Home Health Care Agency
Community Health Services
Elderly Services
Have A Heart Food Shelf
Champlain Office of Economic Opportunity (CVOEO)
Women Safe
Age Well

Additional regional services, such as Addison County Community Action Group, Social Services, and Courthouses etc. are located in Middlebury.

RECREATION

The town of Monkton has two public park areas, and a number of popular walking, cycling and hiking loops. Privately owned open land, suitable for Nordic skiing, equestrian and camping facilities are also abundant. The 'Recreation Field', on Hollow Road is 6.2 acres and contains multi-use facilities including parking, a playground, athletic fields, open areas and a covered pavilion.

Morse Park is located between Monkton Ridge and Monkton Boro and borders both Monkton and Pond Roads. It is adjacent to the Monkton Central School and the State of Vermont Fish and Game Access Area on Monkton Pond. This parcel was acquired by the Town in 1996, and consists of 37.1 acres of open fields, wetlands and woods. The park contains several playing fields, a parking area, pavilion and a walking trail that is over a mile long. The recreation committee has more plans in the future for this site and is committed to making sure the area is available for the people of Monkton to enjoy. The State of Vermont maintains an access area on Monkton Pond. The area is comprised of 1.8 acres and is located on Access Road and has facilities for boat and canoe access to the pond. Raven Ridge, a privately-owned conservation property administered by The Nature Conservancy and accessed from Rotax Road, is also a popular place for hiking.

Special consideration should be given to wildlife habitat areas and areas of significant biodiversity. Fishing and hunting in these areas should be managed for the continual protection of these lands and for the recreational value that these open spaces provide to the community. The identification of such places is critical to their protection. Please see the Natural Resource section for more information.

Monkton Recreational Facilities Photo credit: Buzz Kuhns

The Monkton Central School has outdoor and indoor recreation facilities used by the community. Playgrounds, playing fields, as well as a multipurpose room are available.

Monkton has an active recreation committee which plans recreational activities and maintains current recreational facilities. The committee and this plan support the up-keep and creation of new outdoor recreational facilities, such as multi-use trails, hiking and biking paths when opportunities arise, including the use of class 4 roads no longer used for motor vehicles. The neighboring towns of Bristol and Hinesburg have active recreation committees and programs open to Monkton residents.

CULTURAL RESOURCES

Early cultural activities revolved around the various church groups in Monkton. Earliest were the Baptists and Congregationalists, followed shortly by the Methodists and later by the Friends Society, all organized in the late 1790's or shortly after 1800. Over the years, these groups built and sold to one another various church buildings in Monkton Boro and Monkton Ridge. The church built in 1879 by The Society of Friends on Monkton Ridge is still currently in use by the Methodists. It replaces a

meetinghouse built by the Quakers in 1798. In 1866, the Methodists built the church still standing in East Monkton. At that time, it was part of a thriving settlement of many homes and shops that are now gone.

In addition to these Church organizations, Monkton was host to Modern Woodsmen of America whose chapter was founded around 1900 but was inactive by 1960. The Florona Grange, founded in the late 1800's, was an active part of Monkton's community fabric and was located in the Baptist Church in Monkton Boro. The grange building has been sold into private ownership. This federal style church was built in 1811 and modified with changes to its steeple in 1854. It shares with the 1806 Congregational Church in Middlebury the distinction of being the two oldest churches in Addison County to retain their nearly original appearances[1].

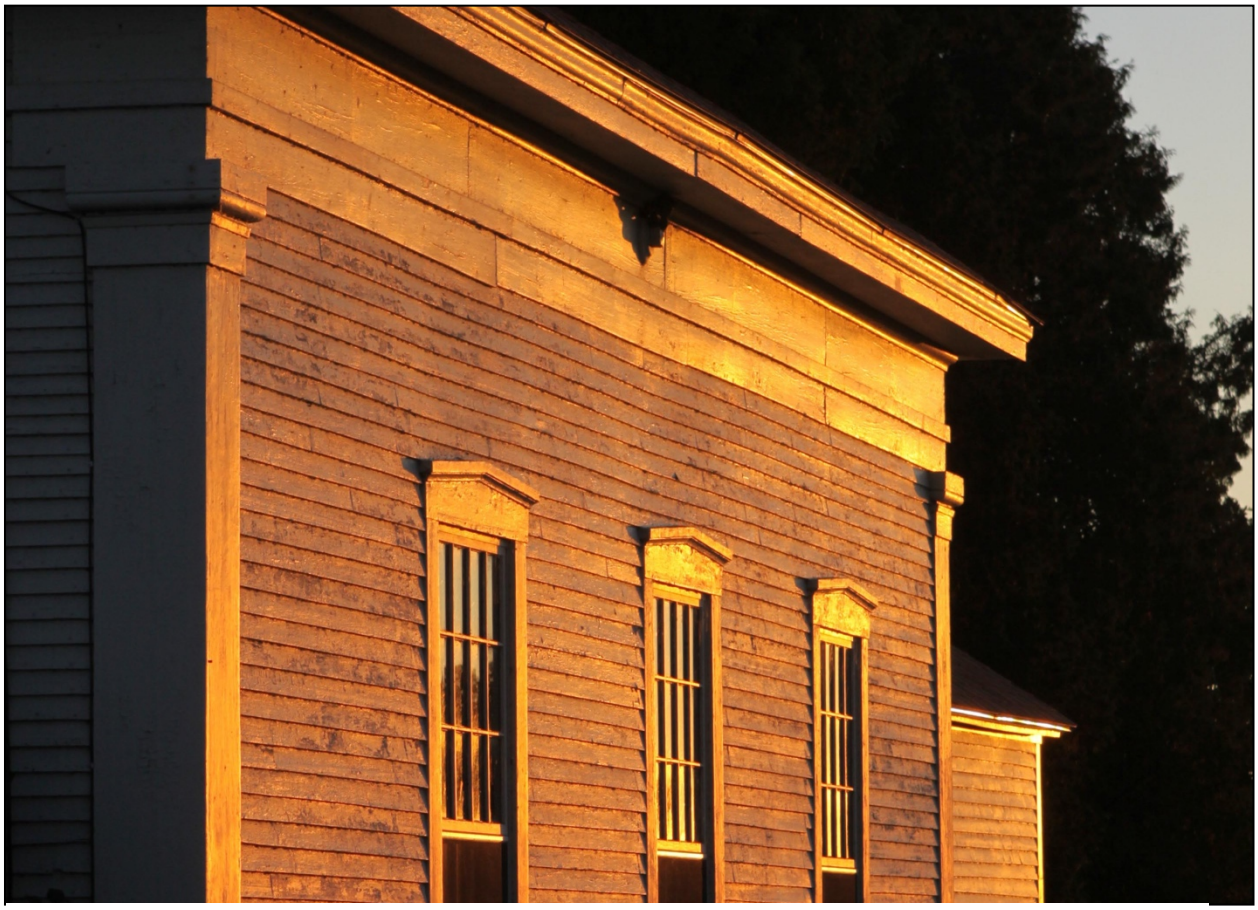
MONKTON MUSEUM and HISTORIC SOCIETY

The Monkton Museum and Historical Society (MM&HS) was first incorporated in 1976, the year of the nation's bicentennial. In 1994, the Society became inactive. MM&HS was reorganized in 2004. The Society is a non-profit, tax-exempt organization incorporated under the laws of the State of Vermont. The purpose of the Society is to collect and preserve historical Monkton artifacts, to serve as a resource of reliable information for those interested in Monkton's history, and to organize educational opportunities for the community at large and area students of all ages. The Society is working to create an inventory and database of historical artifacts in its possession as well as a directory and database on Monkton cemeteries and individual gravestone information to facilitate genealogical research. Monthly meetings provide an opportunity to discuss topics related to Monkton history and to host guest presentations on various historical topics. A long-term goal of the Society is the preservation and restoration of the Monkton Boro schoolhouse.

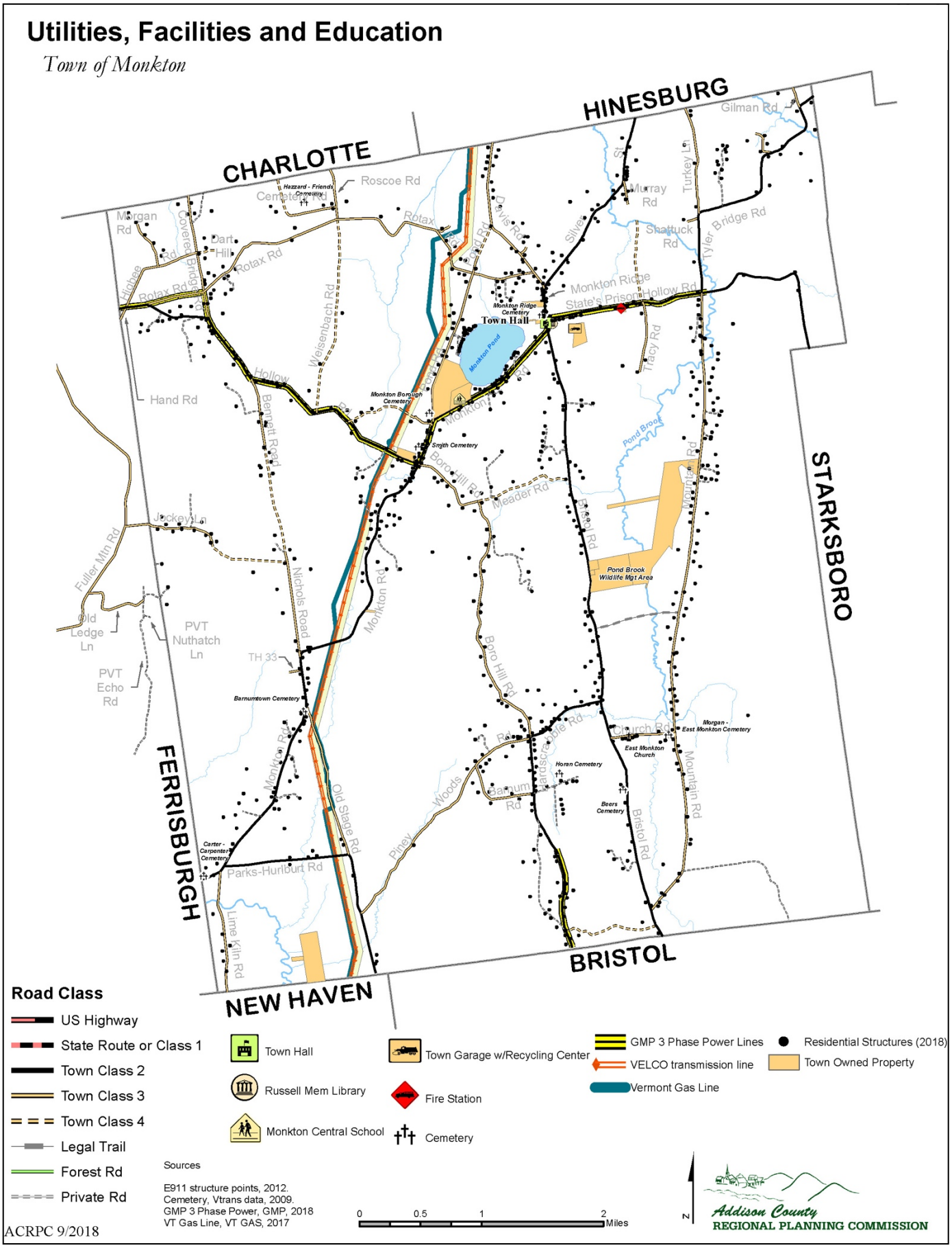
The efforts of these early residents have left a heritage that today accounts for several beautiful and architecturally significant structures. A publication of the Vermont Division for Historic Preservation, *The Historic Architecture of Addison County* devotes a section to Monkton's early architecture. The Region has defined several other regional and supra-regional cultural resources, such as the Addison County Field Days, dairy co-ops, local newspapers, radio stations, and offices of public works. Through the increased and continued support of these institutions, the town can aid in the creation of a stronger community.

Cultural resources reflect the dedication and involvement of both past and present residents within a community. Monkton encourages the preservation and cultivation of its cultural resources in order to encourage a vibrant, unique and engaged community.

1 Vermont Division for Historic Preservation - The Historic Architecture of Addison County



Sun setting on the Monkton Town Hall. Photo credit: Buzz Kuhns



Map 3 Utilities/Facilities

TRANSPORTATION

GOALS

1. Provide a safe, accessible, multi-modal transportation network that meets the needs of all stakeholders and reduces reliance on personal automobiles.
2. Encourage the preservation of existing unpaved gravel roads in their present state. These roads are a part of the rural character and heritage of the town.
3. Preserve the scenic character of Monkton's roads and landscape features.
4. Decrease and slow traffic in the Village regions Planning Area.
5. Reduce the number of automobile crashes in the Town of Monkton.
6. Improve walking and cycling infrastructure throughout town, especially connections between Monkton Boro and Monkton Ridge.
7. Minimize impacts from stormwater runoff.

POLICIES

1. Maintain or improve the current conditions on all roads in Town to meet community demand.
2. Direct commuting and truck traffic to state highways.
3. Consult residents along any road being considered for paving or tree removal before proceeding.
4. Ensure road maintenance and design/retrofitting meets Act 64 criteria for impacts to water quality Municipal Road General Permit.
5. Consult Monkton's Complete Streets document for traffic calming techniques prior to road maintenance and improvement.
6. Development proposals must determine and present impacts and opportunities to Monkton's transportation network and its users.
7. Consider repaving projects to be opportunities to incorporate infrastructure for pedestrians and cyclists.
8. Direct development of amenities and services to locations in the Village regions Planning Area.
9. Consult the Vermont Department of Environmental Conservation (DEC) to meet best management practices for stormwater and run-off.
10. Support the use of Green Stormwater Infrastructure (GSI) techniques on both public and private roads and driveways.
11. Support *Safe Routes to School* or similar initiatives.

RECOMMENDED ACTIONS

1. Promote energy conservation, public transportation, and ride sharing programs such as promoted by *GoVermont*, including car, vanpooling and *ACTR's Dial-A-Ride* opportunities.
2. Continue to work with Addison County Transit Resources (ACTR) to discuss a future bus stop in Monkton.
3. Work to implement the recommendations of Monkton's Complete Streets document, specifically reworking of the intersection of State's Prison Hollow Road and States Prison Hollow Road.
4. Nominate a Monkton representative to sit on the Walk-Bike Council of Addison County.

5. Review Municipal Road General Permit with road foreman and Select Board.
6. Add signage – Shared Road – on those roads frequented by walkers and cyclists.
7. Encourage carpooling and switching to electric and hybrid vehicles.

EXISTING CONDITIONS

Being a rural community, Monkton residents are almost entirely dependent on the automobile. The majority of Monkton residents commute north, south or west for work, amenities and services. Most services, such as groceries, hardware, medical, and dental are located more than ten miles away. Monkton does have a general store with a gas pumps.

In 2016, a *Park and Ride* was constructed near the Monkton Central School. It is used, but not to capacity. According to Addison County Transit Resources (ACTR), Monkton has over 200 residents who are physically disabled, relying on others to transport them to amenities and services. Some of these residents use ACTR's Dial-a-ride service, otherwise access to public transportation is only directly available in the neighboring towns of Starksboro, Hinesburg and Bristol. There are currently no sidewalks or on-street cycling allocations in Monkton.

Detailed road and traffic data for Monkton can be found at the Vermont Agency of Transportation: http://vtrans.vermont.gov/vtransparency

Monkton Ridge from above. Photo credit: Buzz Kuhns

PRIORITY CONCERNS

REGIONAL COMMUTING IMPACTS

Monkton Road and Silver Street in the 'Ridge' area and the intersections of Bristol Road and Monkton Road, Monkton Road and State Prison Hollow Road, and Silver Street and Davis Road continue to be discussed at the local and regional level for safety concerns. Regionally, Bristol Road, Monkton Road and Silver Street are used daily by thousands commuting north and south. This has a dramatic impact on Monkton as these roads pass directly through Monkton's historic village area providing little room for safe pedestrian movement where it is most needed and desired.

The 2013 Complete Street Feasibility Study, which can be found on the Monkton Town website, provided alternative street and intersection concepts for the Ridge area. This study considered numerous street design techniques and intersection reconfiguring to slow village traffic, allow for safer use by pedestrians and cyclists, and bring a sense of place to this civic area.

What the 2018 open house surveys told us:

88% of participants agreed they would like to see safer pedestrian connections in the Monkton Ridge area.
84% supported regional efforts for safer walk-bike connections between towns.
77% agreed they would like to see more off-road connection in Monkton for waking and cycling.
69% agreed they would like to see walk-bike connections between the Boro and Monkton Ridge.
75% of participants agreed on the importance of tree-lined gravel roads to ensure the rural character of Monkton.

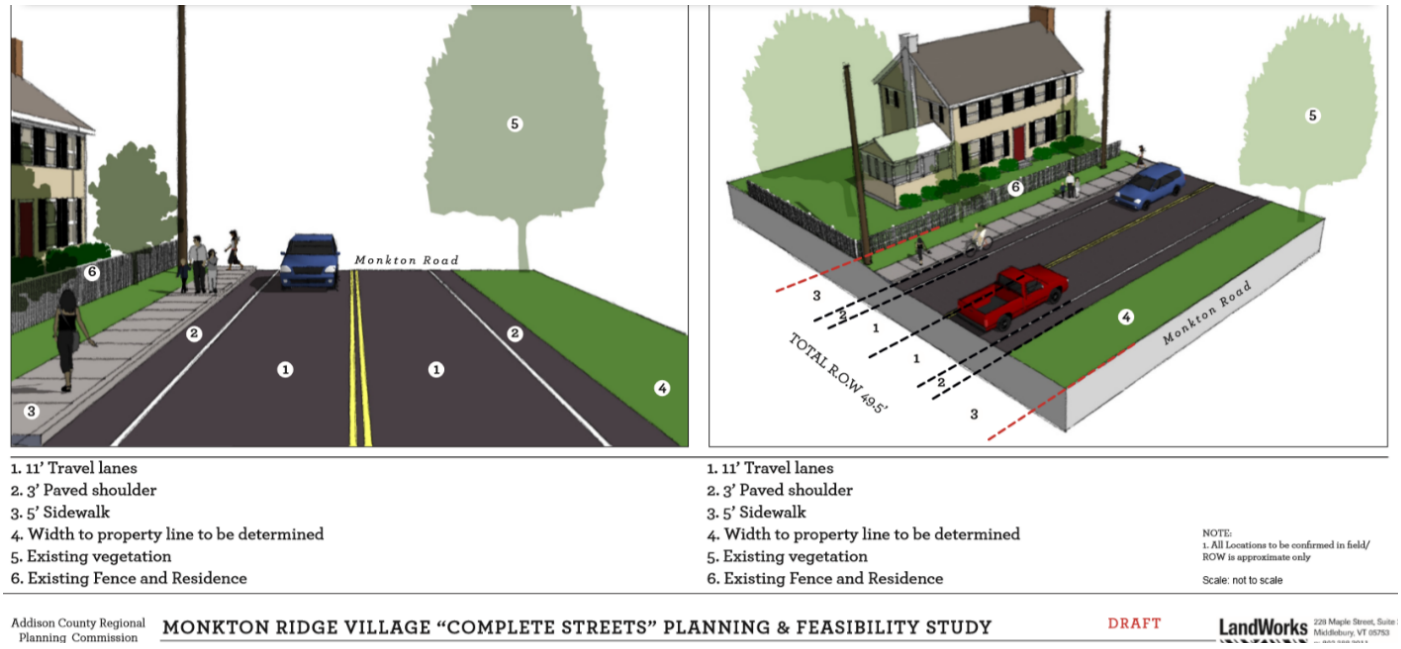
PUBLIC TRANSPORTATION

There is genuine interest from Monkton residents for improved access to public transportation. Currently ACTR provides regional route connections in neighboring Bristol and Starksboro. Hinesburg provides connection to Burlington. Residents would like to see a Monkton bus stop, but ACTR is unable to provide this service at this time.

SCENIC AND RECREATIONAL VALUE

The Town of Monkton's unique rural character is in part due to its scenic landscape and unpaved gravel roads. The 33 miles of unpaved gravel roads reflect the town's agricultural heritage. Today these unpaved rural roads, often tree lined with historical stone walls and old foundations, are recognized by many residents as a fundamental asset that should be preserved. Unpaved rural roads have a natural traffic calming effect that permits shared use for horseback riding, bicycling, and walking that contribute to the quality of life sought by rural residents. The beauty of the landscape with its gravel roads is recognized as a natural resource that visitors seek, which stimulates the economy. Some unpaved gravel roads are still used for moving agricultural equipment.

The Town of Monkton encourages the preservation of existing scenic unpaved gravel roads in their present state with the exception of enhancements for essential safety upgrades; these roads are a part of the rural character, cultural and historical heritage of the town. Transportation systems are encouraged that respect and protect local environmental, cultural, and historical resources.



Graphics from Monkton Complete Street Study showing alternative street designs for safer streets.

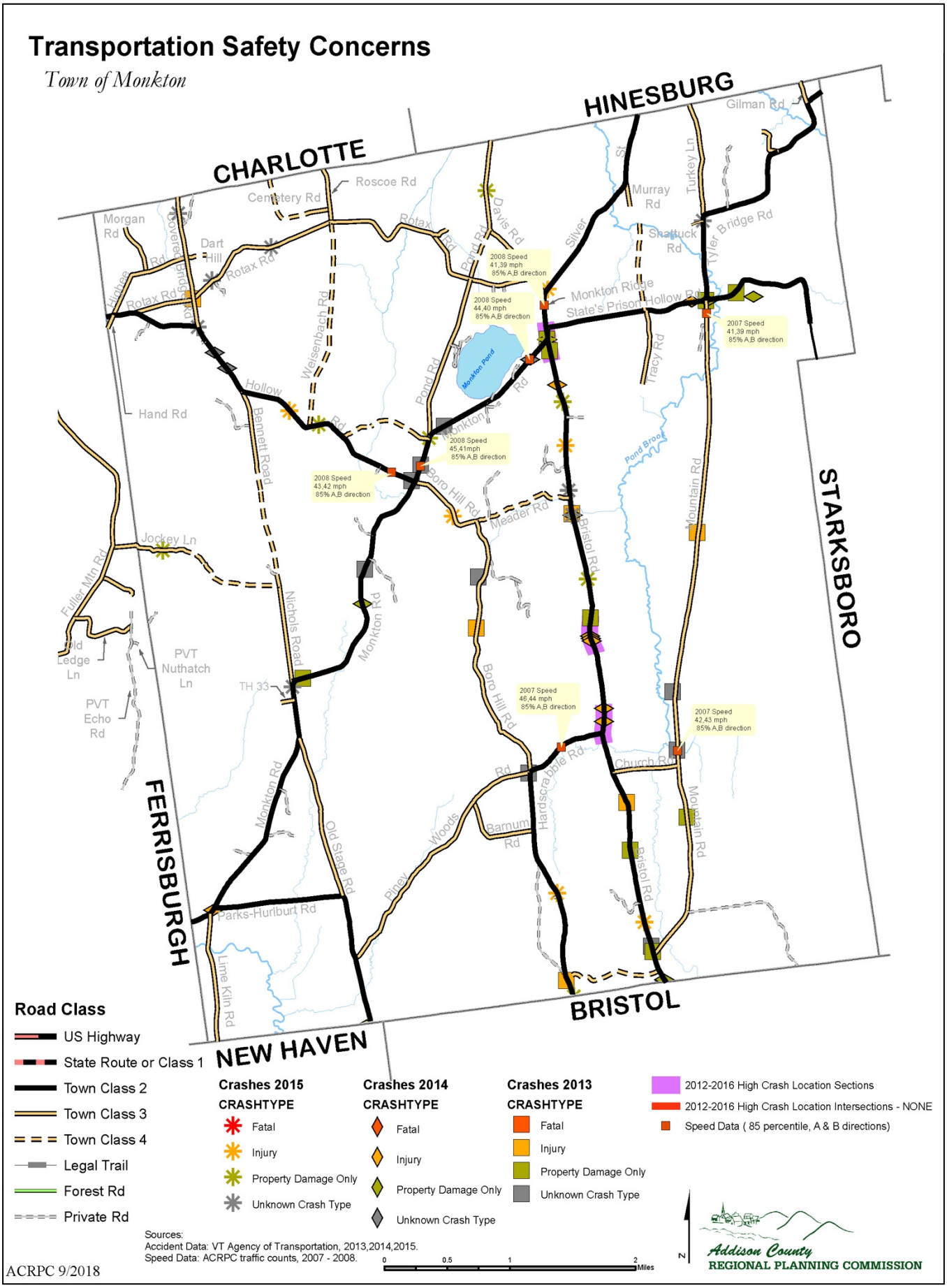
STORMWATER MANAGEMENT

Essential to flood resiliency tactics, Monkton must maintain, design and retrofit roads to minimize wash out and flooding from stormwater. As roads are impermeable, run-off from roads accelerates soil erosion and impacts the volume and speed of toxic run-off into ponds, creeks and rivers. Vermont's Municipal Roads General Permit is the most recent State effort to stabilize road drainage systems. The permit is required by Act 64, the Vermont Clean Water Act, and the Lake Champlain Phase I, Total Maximum Daily Load (TMDL).

VISION FOR THE FUTURE

Monkton residents show interest in moving toward a multi-modal transportation model, as outlined in the 2018 Addison County Regional Transportation Plan. This includes interest in public transit access within the Village Planning Area, and access to safe walking and cycling infrastructure, especially to and from the Ridge to the Boro (and Monkton Central School).

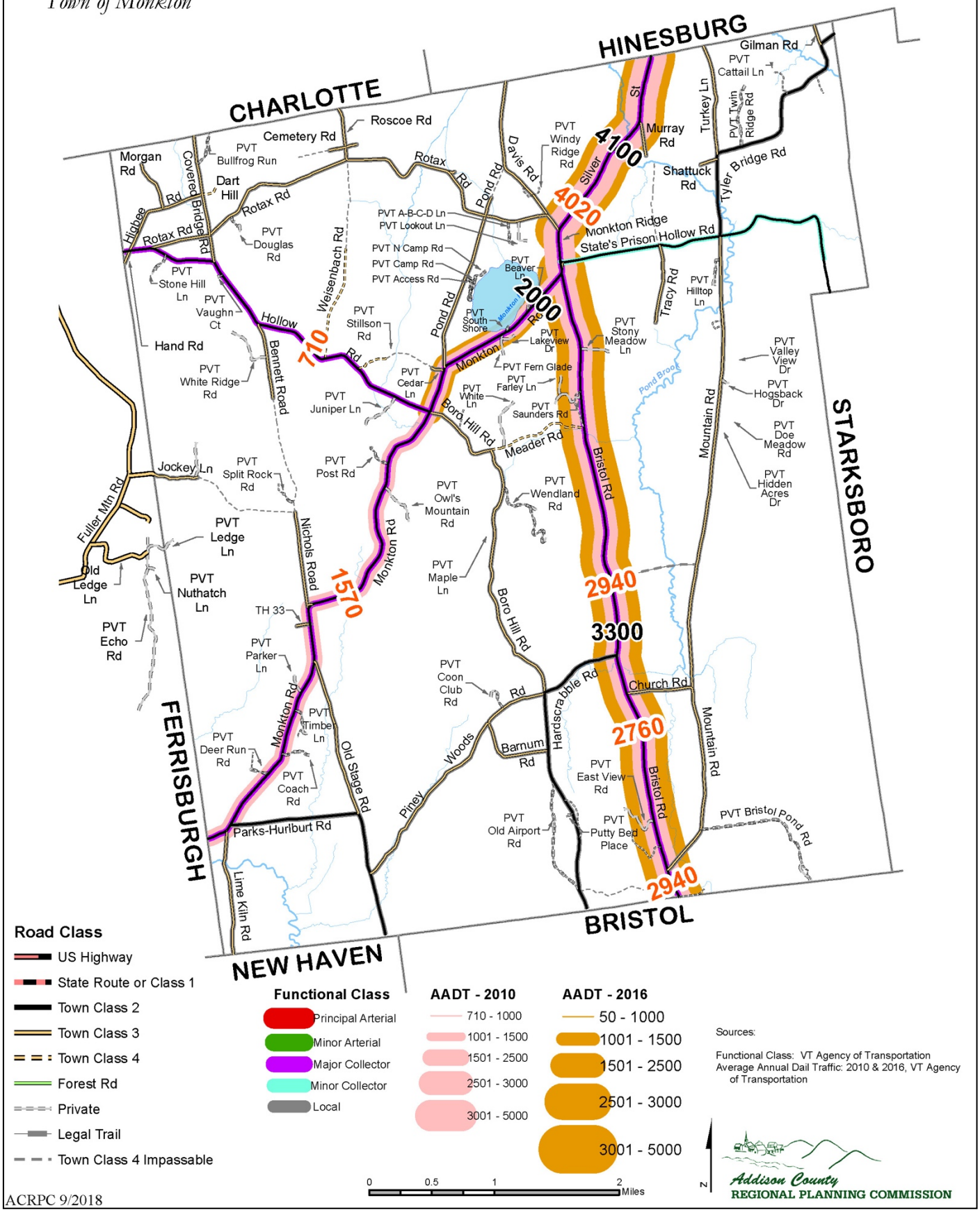
Besides needing essential transportation routes, Monkton residents value slower, rural roads for both scenic and recreational purposes. As studies and discussion have shown, views from the public rights-of-way are significant elements in the familiarity and character of Monkton that are held dear by residents.



Map 4 Crash Sites

Road Names and Transportation Volume

Town of Monkton



Map 5 Road Names and Volume

ECONOMIC DEVELOPMENT

GOALS

1. Sustain Monkton-based employment, businesses and entrepreneurs in-keeping with the unique, rural character of Monkton and the values of Monkton residents.
2. Support opportunities for Monkton residents to access employment and educational opportunities.
3. Engage and support a robust regional economy.

POLICIES

1. Support the Use Value Appraisal program (Current Use; enrollment, retention, etc.).
2. Prioritize agricultural-related endeavors.
3. Encourage development of local food based commercial businesses.
4. Encourage and support local forestry businesses in-keeping with the Natural Resource section.
5. Support public and private development of recreational trails, sidewalks and safe bike routes for both recreation and enjoyment by residents.
6. Ensure telecommunications infrastructure and regulations are in place for telecommuting and home-based businesses.
7. Support affordable living for a diverse population in Monkton.
8. Support local communication infrastructure, both on-line and social events, for networking and collaboration between residents.
9. Prioritize the economic and civic vibrancy of Monkton's village regions.

RECOMMENDED ACTIONS

1. Request that town officials create a capital budget for future town facility additions and/or improvements.
2. Engage business owners within the town to learn about the problems imposed by local regulations and what could be done to create a climate that welcomes the development of new business.
3. Provide residents with programs for cutting housing costs associated with heating and maintenance.
4. Encourage agricultural businesses, including investigating the feasibility of a Monkton Farmers Market.
5. Work with ACTR to improve transportation options and ride-sharing opportunities to employment centers such as Burlington and Middlebury.
6. Discuss opportunities for local networking, skills and resource exchange opportunities.

WORK FORCE AND INCOME TRENDS

According to the 2020 US census, out of its approximate 2,079 population, Monkton has 1622 residents over the age of 16 that were in the labor force. The working population in Monkton includes jobs in the education services industry (25.3 percent), professional scientific management or administrative (17.8 percent) and manufacturing (12.4 percent). Other leading industries of employment for Monkton residents include retail trade and construction. The comparison of the 2010 U.S. Census and 2020 estimates, show a decline for those residents working in Agriculture and Forestry from 4 to 3.7 percent.

In 2021, Monkton's median household income was $112,500, the highest in the County, and compared to a State median adjusted income of $72,431. The neighboring towns median adjusted household income include: Starksboro $77,188, Bristol $62,840, New Haven $65,833, Ferrisburgh, $45,859 and in Chittenden County, Hinesburg $54,844. The proximity to higher paying jobs in surrounding areas may influence these outcomes.

According to 2020 U.S Census data, the majority of two-parent families in Monkton are such that both parents are working outside of the home. Out of 87 families with children under the age of 6, 78 have both parents in the work force (approximately 90 percent). Out of 227 families with children between the ages of 6 and 17, 167 families include both parents in the work force (approximately 74 percent).

In Monkton, 1187 workers commute to work with 850 workers driving alone and 118 workers carpooling. 91 workers in Monkton have no health insurance coverage. Monkton's poverty rate is 3.7 percent with 7 percent of children under the age of 18 living in poverty and 4 percent of seniors 65 years and older living in poverty.

Sources:
https://data.census.gov/profile/Monkton_town,_Addison_County,_Vermont?g=060XX00US5000145550
https://censusreporter.org/profiles/06000US5000145550-monkton-town-addison-county-vt/

PLACE OF WORK

Once a farming community, Monkton is now largely a satellite community to Chittenden, Addison and Rutland County. According to the 2020 Census Bureau, 53.8 percent of working residents commute to other counties and 46.5 percent work in Addison County. Approximately, ninety-nine percent work within Vermont. The percent of the working population both live and work in Monkton has increased to 16.1. The latter may or may not include all those working from home with multiple jobs.

Places of employment in Monkton include the Monkton Central School, Monkton Town Offices, Monkton Library, Post Office, and Town Garage. Types of home-based businesses include commercial agricultural operations, professional services, e-commuters such as college instructors and professors, construction companies and woodworking studios to name a few.

COST OF HOUSING

The cost of living in Monkton continues to increase. The cost of home ownership and housing rentals, heating and maintaining a home, food costs, costs of commuting to work and driving to goods and services are common factors in determining the affordability of living. Having a diversity of housing options, access to public transportation, steady income, and being able to afford heating and maintaining homes are topics addressed throughout this plan.

See the Housing, Energy and Transportation sections for more information.

ECONOMIC STRENGTHS AND WEAKNESSES

PROXIMITY
Being a half hour drive, on scenic roads, to Burlington, Middlebury, Hinesburg and/or Vergennes, makes Monkton an attractive place for working families. Proximity to employment hubs does put a strain on Monkton's infrastructure and has accelerated the rate in which Monkton transitioned from an agricultural economy to a bedroom community.

Without a strong base of farmers or others working within town, volunteer operations such as local fire and rescue groups decline, and agricultural land is bought for home construction. Commuters going both north and south travel directly through town, making roads busy and less safe for walking and cycling.

NATURAL AND AGRICULTURAL ASSETS
With clear and distinguishable land use districts, Monkton can provide a rural agricultural buffer to Chittenden County and produce dependable local food sources, clean water, wildlife habitat as well as tourism and recreation opportunities.

According to the *2018 Champlain Valley, Local Farm and Food Guide*, there are over 200 diversified food producers in the Addison Region. Nine Monkton farms are listed in this guide offering berries, vegetables, eggs, beef, poultry, cheese, and mushrooms. Establishments include wholesale, retail and pick-your-own. There are also three dairy farms operating in Monkton. *See Agriculture Section in Natural Resources for more information on farms and working lands.*

LOCAL BUSINESSES
Like much of Vermont, Monkton has a diversity of small businesses including contractors, auto repair service technicians, farmers, consultants and other creative entrepreneurs. Small businesses strengthen Monkton as a place to live and work and decrease dependency on commuting out of town to a reliable income. Telecommunication access, such as high-speed internet and cell phone reception must be available to all residents in order to offer increased opportunity to work and study from home/and or from public buildings.

VILLAGE REGIONS
Monkton's Town Plan emphasizes the need to bolster the existing civic center, Monkton Central School, Monkton Pond and the historic village areas of the Boro and Monkton Ridge. These areas are home to cultural and civic amenities and services and provide the backbone of central gathering places - essential

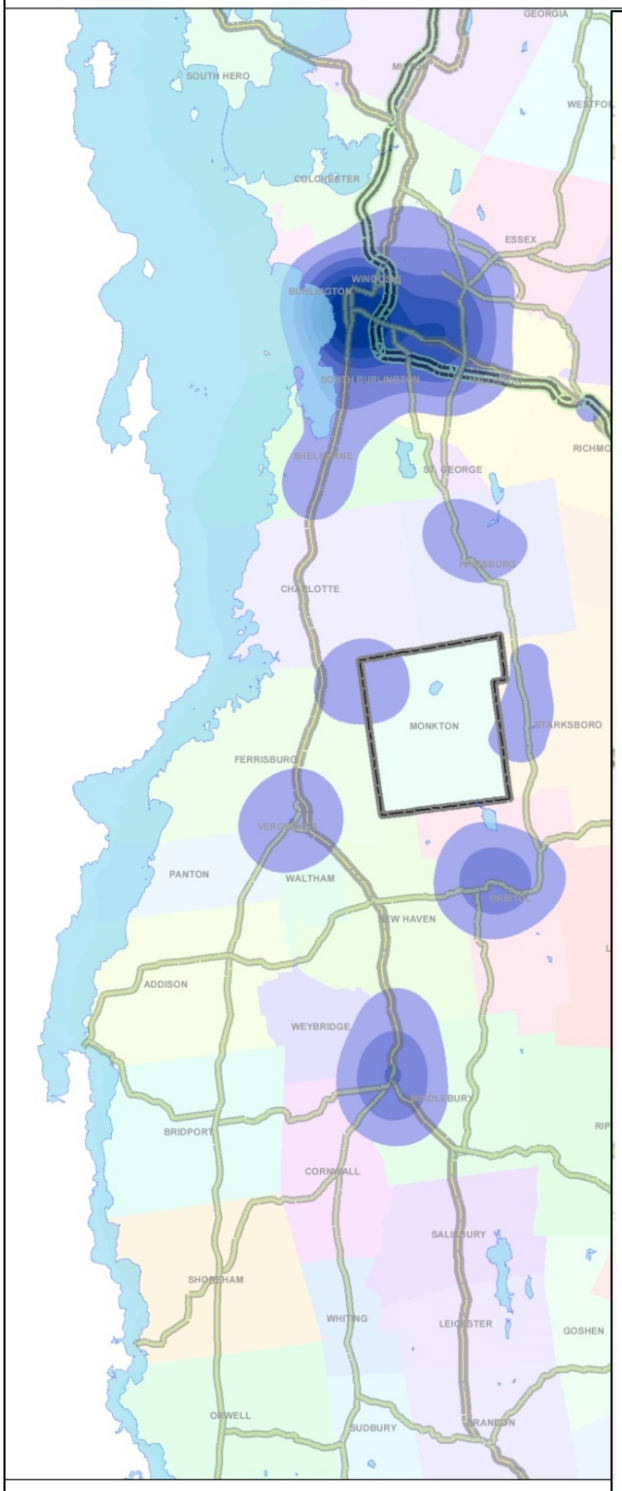
to maintaining a unique sense of place. Evolving these spaces into successful places to walk, bike, gather the community, and provide local networking and business opportunities will bolster Monkton's local economy. A 2016 town-wide survey demonstrated the desire for a central meeting place to compliment the village regions.

TOURISM

According to a study done for the Vermont Department of Tourism and Marketing in 2013, visitor spending in Vermont supported an estimated 30,000 jobs for Vermonters (approximately 8 percent of all Vermont jobs). The agricultural, forestry, outdoor recreation and art sectors can attract tourists as a way to increase business in town. Vermont branded arts and food sell well directly from local farm-stands and studios and also on-line to those dedicated to supporting Vermont's local economy. Recreational attractions in Monkton include walking, hiking, cross country skiing/snow shoeing and cycling. Raven Ridge Natural Area, owned by the Nature Conservancy, has trails for walking and bird watching (see the Facilities section for more on recreation in Monkton). Monkton can take advantage of being centrally located between larger commuter and visitor destinations.

For the full report on Vermont Tourism Economics go to the following link:
http://accd.vermont.gov/tourism/research/economic-impact
For Monkton's 2017 Labor and Workforce Profile go to:
http://www.vtlmi.info/profile2017.pdf

Town of Monkton *Commute Shed - where people work who live in Monkton (904 jobs) (only employment covered by insurance)*



Total All Jobs 2010

	Count	Share
Total All Jobs	904	100.0%
Jobs by Worker Age		
Age 29 or younger	175	19.4%
Age 30 to 54	539	59.6%
Age 55 or older	190	21.0%
Jobs by Earnings		
$1,250 per month or less	198	21.9%
$1,251 to $3,333 per month	298	33.0%
More than $3,333 per month	408	45.1%
Jobs by NAICS Industry Sector		
Agriculture, Forestry, Fishing and Hunting	17	1.9%
Mining, Quarrying, and Oil and Gas Extraction	0	0.0%
Utilities	2	0.2%
Construction	67	7.4%
Manufacturing	104	11.5%
Wholesale Trade	21	2.3%
Retail Trade	113	12.5%
Transportation and Warehousing	22	2.4%
Information	21	2.3%
Finance and Insurance	27	3.0%
Real Estate and Rental and Leasing	10	1.1%
Professional, Scientific, and Technical Services	55	6.1%
Management of Companies and Enterprises	2	0.2%
Administration & Support, Waste Management and Remediation	30	3.3%
Educational Services	153	16.9%
Health Care and Social Assistance	123	13.6%
Arts, Entertainment, and Recreation	12	1.3%
Accommodation and Food Services	68	7.5%
Other Services (excluding Public Administration)	18	2.0%
Public Administration	39	4.3%
Jobs by Worker Race		
White Alone	886	98.0%
Black or African American Alone	5	0.6%
American Indian or Alaska Native Alone	4	0.4%
Asian Alone	3	0.3%
Native Hawaiian or Other Pacific Islander Alone	0	0.0%
Two or More Race Groups	6	0.7%
Jobs by Worker Educational Attainment		
Less than high school	40	4.4%
High school or equivalent, no college	231	25.6%
Some college or Associate degree	227	25.1%
Bachelor's degree or advanced degree	231	25.6%
Educational attainment not available (workers aged 29 or younger)	175	19.4%
Jobs by Worker Sex		
Male	467	51.7%
Female	437	48.3%

Sources:
US Census Bureau
Longitudinal Employer-Household Dynamics (LEHD, 2010)

Work Locations per Sq Mile
- Less than 1
- 1 - 3
- 3 - 5
- 5 - 7
- 7 - 9
- 9 - 11
- Over 11

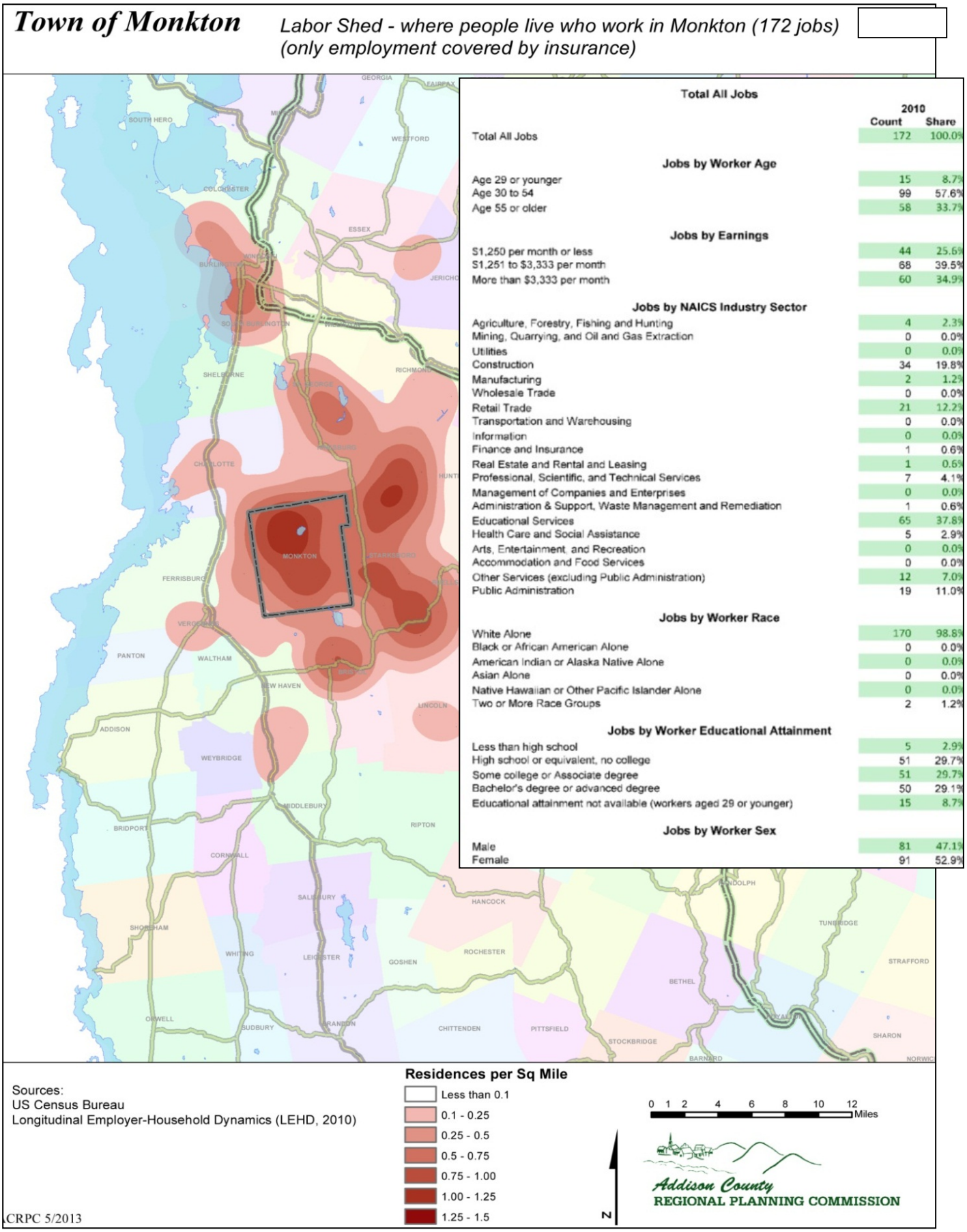
0 1 2 4 6 8 10 12 Miles

N

Addison County
REGIONAL PLANNING COMMISSION

CRPC 5/2013

Map 6 Commute Shed



Map 7 Labor Shed

NATURAL RESOURCES

The Natural Resources section is the heart of the Monkton Town Plan because it underlies Monkton's economy and quality of life. To facilitate a better understanding of this section guiding principles are listed below. The goals, policies and recommendations described in each sub-section have their foundation in these guiding principles:

- To promote land use development, practices and techniques which protect Monkton's natural and scenic resources.
- To support public education, knowledge and involvement regarding the town's natural resources, and their maintenance and enjoyment.
- To encourage measures that protect, maintain or regain the health of the water, air, land, plants and wildlife and their habitats; these resource systems underpin Monkton's economy and quality of life through the ecological services and resilience they provide, use as the working lands, and scenic and recreational value.
- To foster the growth of Monkton's agricultural and forest economies to support the working landscape.
- To support, develop and maintain techniques to encourage natural and scenic resource conservation, including the work of Monkton's Agricultural and Natural Areas Committee, and the use of conservation easements, proper zoning, tax incentives and voluntary measures such as enrollment in the State's Use Value Appraisal Program.

SOILS AND MINERALS

GOALS

1. Identify and protect primary agricultural soils.
2. Identify and protect wetland soils.
3. Identify and develop sand and gravel resources for the town fitting with the natural resource and land use policies of this plan.

POLICIES

1. Development is restricted in Monkton's forestland and wetlands and prohibited in ridgelines and in those areas identified by the state as State Natural Heritage Sites and shown on the ***Important Resources and Habitat Map*** of this plan.
2. Housing developments must have adequate topsoil to absorb water, grow plants and prevent erosion.
3. Housing developments should manage stormwater on-site to limit soil erosion.
4. The conservation of natural areas and farmland in Monkton is encouraged.
5. Development in any overlay district is required to meet the associated standards of that district, as stated in the Land Use section of this Plan.

RECOMMENDED ACTIONS

1. Work with ACRPC and the Development Review Board (DRB) to develop electronic tools and maps

that identify primary agricultural soils and wetland soils to support deliberations.
2. Conduct a detailed study to identify sources of sand and gravel for maintaining gravel roads and for sanding winter roads.

SOIL AND MINERAL DISCUSSION

SOIL AND MINERAL TYPE

Monkton sits at the interface between soils formed in the Green Mountains to the east and those formed in the Champlain Valley to the west. The Town's soil resources include significant areas of silty and clayey valley soils that have primary agricultural classification, and forested ridgelines with shallow-to-bedrock soils and soils formed on deep sandy deposits, which are important for groundwater recharge. Wetland soils provide surface water renovation, minimize flood damage, and plant communities growing there provide food and habitat for wildlife. Monkton also has some deep well-drained soils suitable for septic systems and development.

Monkton's rural character is influenced by its forested ridgelines and working landscape. The forested foothills of the Green Mountains in Monkton have soil that is shallow to fractured bedrock. There are also sandy deposits in these areas and at lower elevations in Town. All are important groundwater recharge areas as it is in those areas that rainwater can percolate through over-lying materials into the bedrock for groundwater storage.

All soils that have an important farmland rating by the Natural Resource Conservation Service (NRCS) are categorized as either prime and/or state-wide and are called out in any Act 250 (Criteria 9B) hearing. Large tracts of primary agricultural soil are found in Monkton and synonymous with Monkton's rural character.

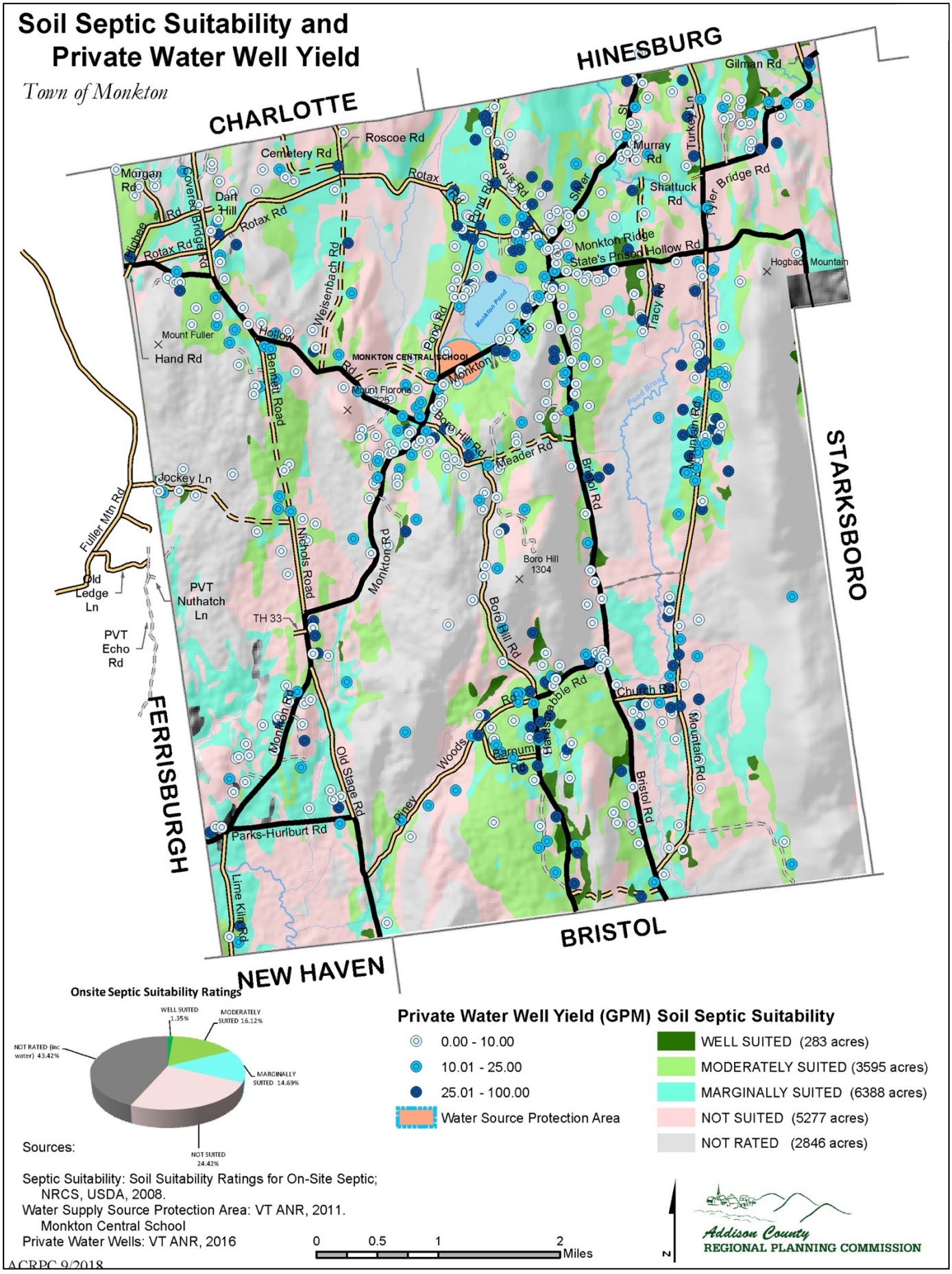
Monkton's mineral resources include the past production of crushed stone at the Wolford Red Marble Quarry, kaolin clay at the Vermont Kaolin Corporation, aluminum at Monkton Kaolin, iron, at the Monkton Ore Bed and Boston Iron Company Mine. These are all historical operations; no commercial mines exist in town.

SEPTIC SUITABILITY

Monkton has limited large tracts of soil suitable for conventional in-ground or mound septic systems. However, within unsuitable soil tracts are suitable soil inclusions that allow for septic systems and development. State regulations determine soil properties that make a soil acceptable for the treatment of septic system wastewater. Vermont's Environment Protection Rules that govern septic system placement are designed to prevent health hazards and pollution, and contamination of drinking water supplies to ensure adequate supplies of potable water.

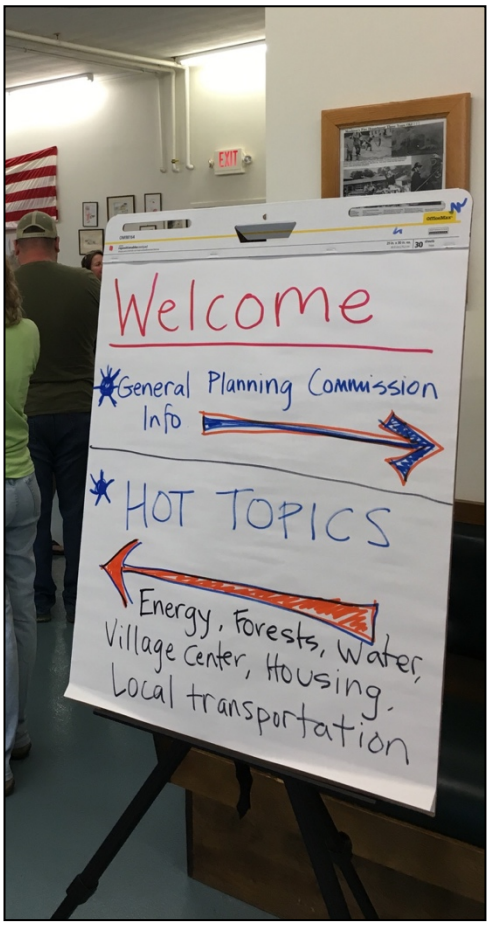
EXTRACTION

No commercial gravel or sand pits are permitted in town. The town would like to develop a minor gravel/sand pit to supply it with materials to maintain roads and provide sand in winter. A study will help Monkton identify a sand /gravel pit to minimize the impact on town residents.

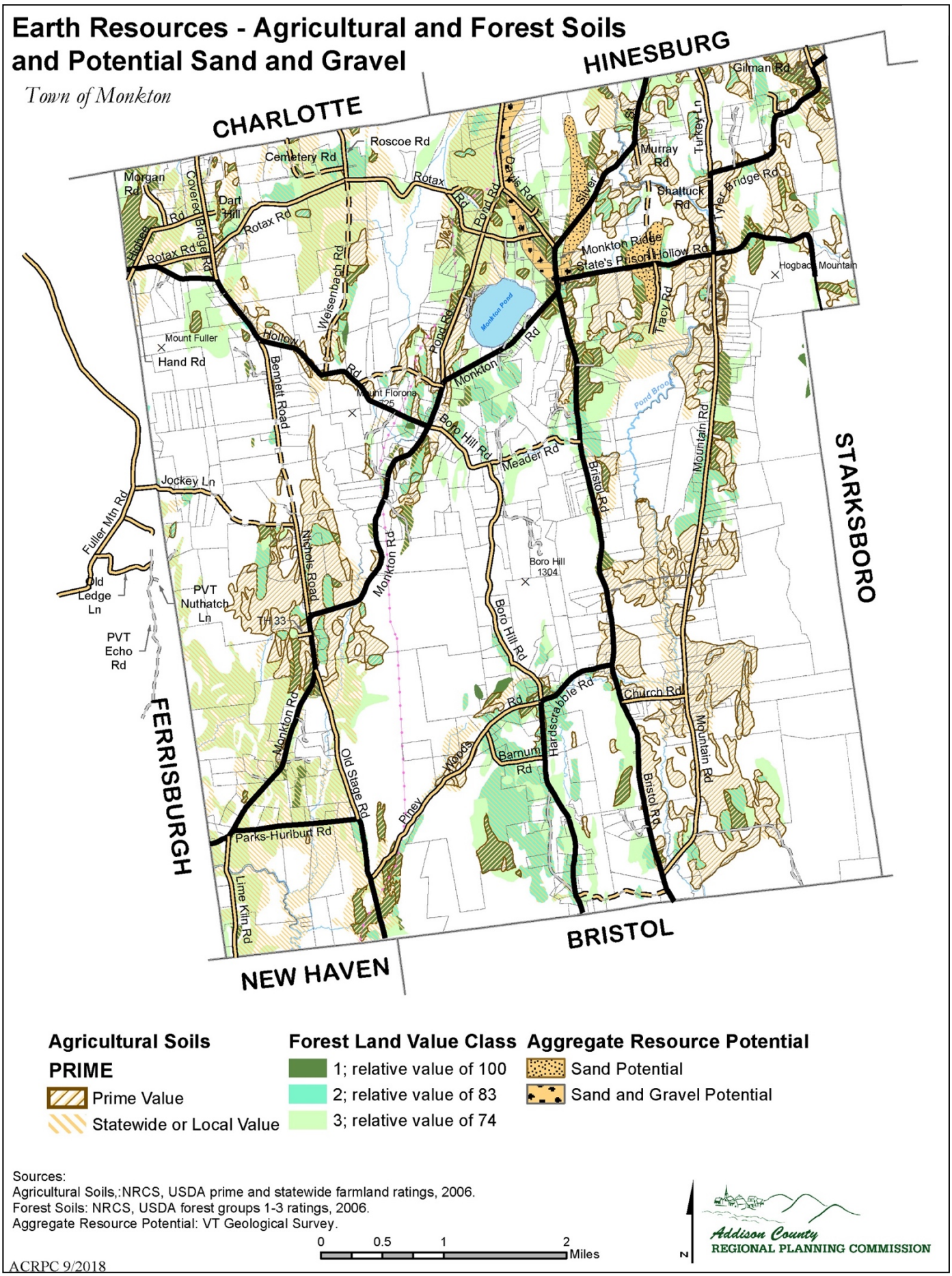


Map 8 Septic Suitability

Topsoil extraction is not allowed in Monkton unless it is incidental to constructions. Housing should have adequate topsoil on developed land to provide for the adsorption of water and adequate plant growth.



Welcome board at the 2018 Pizza and Planning Open House.
Photo credit: Claire Tebbs



Map 9 Earth Resources

FORESTS

GOALS

1. Protect core forests and habitat connectors.
2. Maintain an integral east-to-west forest corridor and connectivity to north south forest corridors for animal movement.
3. Provide essential habitat and foraging corridors to threatened and endangered species.
4. Support a successful local forestry economy which prioritizes stewardship and ecosystem health.
5. Steward our forests for social, economic and environmental gain.
6. Increase public knowledge and involvement in stewarding our forests.
7. Improve the quality of our forest ecosystems.
8. Ensure long-term protection of lands with conservation value.

POLICIES

1. Site plans and larger development plans must work in accordance with Vermont's Act 171 to minimize forest fragmentation.
2. Restrict development in Monkton's forestland and wetlands and prohibit in ridgelines (and in areas identified by the state as State Natural Heritage Sites and shown the I*mportant Resource Areas* map in this plan).
3. Encourage development that protects core forests and habitat connectors.
4. Require development in any overlay district meet the associated standards of that district, as stated in Monkton's Unified Zoning document.
5. Promote various methods of sustainable forest stewardship and ownership.
6. Support the conservation of land containing rare threatened and endangered species and/or unique natural communities.
7. Support development that promotes east-west corridors and connectivity to north south corridors for animal movement.
8. Encourage the sustainable use of forests for local energy and heat production.
9. Encourage local processing and marketing of a diversity of forestry products.
9. Encourage management of invasive species.
10. Neighbors must respect adjacent landowner's right to manage their forestlands.
11. Encourage the conservation of core forestlands.
12. Promote forest buffers along streams and rivers for a connected network of natural cover.

RECOMMENDED ACTIONS

1. Develop land use and zoning regulations to protect core forest and habitat connectors to prevent forest fragmentation and parcelization in accordance with Act 171 guidelines.
2. Conduct a natural resource inventory to identify essential forested habitat blocks and linkages, with emphasis on threatened and endangered species.
3. Create a town forest that can serve education and recreation needs of residents.
4. Research future funding and feasibility of a Monkton trail system for recreation and enhanced quality of life that also protects native, rare threatened and endangered species and maintains

ecosystem quality.

5. Encourage the compilation of a comprehensive wildlife and significant habitat inventory by the Monkton Conservation Committee and other interested citizens, placing emphasis on threatened/endangered/rare species and significant natural communities, such as Meader White Cedar Swamp, the Clay Plain forests of the Pond Brook valley and the Pond Brook Wetlands conservation area that protects rare species, a portion of an expansive emergent marsh, and a wildlife travel corridor, and Huizenga's swamp road crossings.

FOREST RESOURCE DISCUSSION

FOREST COVER AND HABITAT

Forestland has made a remarkable comeback from the 1800's when much of the state was clear cut and converted to other uses. With that comeback came the return of forestry as a major industry within Monkton and the State of Vermont. Wise use and management of forested lands can enhance its long-term economic and ecological value. In 2012, it was estimated that 6589 acres in Monkton, which is 28.3percent of the land, are in commercial forestry operations.

Forests provide many essential services to town's people. Ecological services forests provide include, soil and hillside stabilization, erosion and flood control, wildlife habitat, groundwater purification and recharge, surface water recharge, and air pollution remediation as they remove pollutants from the air and act as carbon storage. Economically they are a source of raw materials for hardwood veneer, lumber, pulpwood, fuel wood, chip wood and maple syrup. They provide for a scenic working landscape. Forests provide educational opportunities and offer recreational opportunities like hiking, horseback riding, cross country skiing, hunting and snowmobiling.

Although forests have made a comeback from the 1800's, the National Landcover Dataset shows losses of forest cover.

WILDLIFE

Monkton encourages the protection of significant wildlife habitat and the maintenance of the full array of native species, while considering community development, agricultural and forestry needs. Responding to a congressional mandate, the State of Vermont in conjunction with many partners has generated a Vermont list of *Species of Greatest Conservation Need* (SGCN) and has suggested strategies for their maintenance. Many species mentioned in this Town Plan are SGCN and, when appropriate, Monkton should act in concert with the State and conservation groups to conserve its wildlife heritage.

Upland deer wintering areas, bear, bobcat, bat, and (song) bird habitat are the most prominent concerns in this category, but a diversity of plants and animals are also part of an upland forest system. South facing coniferous wintering areas are a crucial element in defining the health of the deer population.

Deer wintering areas need to be available every year in the event that stressful winter conditions require their use for health and survival. Wintering areas not only affect the deer population, but also the quality of recreational activities such as hunting. It should be a priority to encourage private landowners to evaluate their land, recognize wintering areas, and protect them.

Black bear and bobcat are two species that require large territory for habitat and their seasonal and foraging movements. These species are sometimes referred to as “umbrella” species, indicating the belief that if sufficient habitat is maintained for them, many smaller species will also benefit. Maintaining large tracts of connected forest land can be accomplished through regulatory and non-regulatory means. Cluster development (PUDs), which use conservation development criteria, and use of the town conservation fund, available through the Agricultural and Natural Areas Committee, are tools to help protect large blocks of habitat and avoid fragmentation and perforation of significant habitat areas.

Monkton is a satellite area for bears. The eastern-most portion of Monkton, especially the Hogback Range area adjacent to Starksboro and the Western Green Mountains, serves as a travel corridor from the Green Mountains to early spring food sources located in the Pond Brook wetlands. Bears are now denning for the winter in Monkton. It is illegal in the State of Vermont to feed bears, and important not to feed them for their health and longevity.

Bobcat habitat and travel corridors exist throughout a large portion of the town, ranging from the Vergennes Watershed region extends into Bristol, on the high elevations of Boro Hill, Mt. Florona and Mt. Fuller, and north to the Charlotte and Hinesburg town lines. Higher elevation rocky outcrops are significant features of bobcat habitat. Bobcat travel corridors include numerous road crossings. These intersecting roads need to be maintained such that they minimize interference to wildlife corridors. Landowners are also encouraged to take wildlife habitat and travel corridors into consideration in their land management practices.

RARE, THREATENED, AND ENDANGERED (RTE) SPECIES

The town supports the protection of rare species, significant natural communities, important habitat areas, and other natural/fragile area, based on, but not limited to, state and regionally determined definitions. Additionally, conservation efforts such as maintaining wildlife corridors, connectivity and buffer zones as later described in the wildlife habitat section are also encouraged. Some Monkton landowners participate in the Landowner Incentive Program (LIP). This US Fish and Wildlife program provides federal grant funds to protect and restore habitats on private lands, to benefit Federally listed, proposed or candidate species or other species determined to be at-risk.

In Monkton, several of these species and areas are currently known and mapped. Three areas of rare/endangered plant species are known, as well as three areas of rare/threatened/endangered animal species. Additionally, a portion of the marsh/bog vegetation surrounding Bristol Pond, (Lake Winona) defined by the Region as an area of special value, extends into the southeast corner of Monkton. Clayplain forest communities, particularly in the Pond Brook wetlands, have state significance.

The Eastern Rat Snake, federally endangered Indiana Bat, the Wood Turtle, Upland Sandpiper and other grassland birds are either federally or state listed as endangered or threatened. All of the latter species are found in Monkton.

A population of the RTE harsh sunflower, *Helianthus strumosus*, was recently disturbed between Cedar Lane and Hollow Road when the Vermont Gas pipeline was put in the ground.

A planning map for wildlife habitat within the Town shows patterns of winter wildlife travel corridors for

wide ranging species (L CA, VT FWD 2004). Species in the study included bobcat, bear, moose, white-tailed deer, mink and otter. This is reflected in the *Important Resource Areas and Habitat* map within this chapter.

SIGNIFICANT NATURAL AREAS

Monkton has one forest community that has state significance: the clay plain forest communities, which can be found in the Pond Brook Valley. The clay plain forest has been fragmented in many places, but this forest is a unique community and hosts diverse species because of its high calcium clay soil. This community should be protected and conserved where possible.

INVASIVE SPECIES

Common invasive species found in Monkton include those found along roads or in fields: wild parsnip aka "poison parsnip," multiflora rose, and spotted knap weed; and those found on edges or in woods: shrub and vine honeysuckle, barberry, burning bush or winged euonymus, common and glossy buckthorn, and Norway maple. The Planning Commission encourages town residents to safely remove these plants from their private property and acknowledges the essential work of the roadcrew in mowing a wider swath on the roadside to help control the plants that grow there. It also appreciates town residents that work to remove them from town roadsides.

FOREST CONSERVATION

The large majority of eastern Addison County forests are well stocked, and therefore the continued proper management of these areas should prove economically, environmentally, and recreationally beneficial.

There are several measures that can be taken to encourage economic viability of forest operations together with the preservation of the valuable resource of good quality forestland. These include taxing forestland at a lower tax rate based on their actual use, the purchase of development rights or the outright purchase by the State or Town, and zoning and subdivision regulations that minimize the impact of development on forest land.

The state and various land trusts use easements to acquire or protect lands determined to have high ecological value as natural or fragile areas, as well as those with recreational use potential. Management plans are encouraged for areas of high public value. On the local level, habitats or areas that are important to the town should be identified and protected for future generations. Community planners at the Department of Fish and Wildlife can assist with habitat planning for Monkton wildlife.

The Agricultural and Natural Areas Committee (ANAC) in Monkton continues to work with the Vermont Land Trust to conserve agricultural and forest land through protective easements, including Raven Ridge Natural Area, Pond Brook Wildlife Management Area, Hogback Heaven, and Hogback Community Forest.

The Vermont Land Trust, with other partners, will buy development rights to forest lands, thus providing landowners with a monetary benefit while using conservation easements to preserve the land for agricultural uses.

Providing tax relief for forestland owners is a priority. The State's Use Value Appraisal Program (Current

Use) provides tax relief by taxing land based on its actual current use. The Use Value Appraisal Program is an example of how the State allows farms and forestlands to be taxed at use value rather than development value. The State Use Value Appraisal Program is important to forestry in Monkton.

The 115 acres Little Hogback Community Forests Inc. is Monkton's only community forest. Vermont Family Forest's innovative model of forest ownership conserves forestland and gives residents affordable access to firewood, timber and forest recreational opportunities and a return on their investment over time through community ownership. The Town should support innovative models of forest ownership and conservation.

As with agricultural resources, the use of best practices within forest lands, including Forest Management Plans, are strongly encouraged. Forest management plans support the economy by contributing to forest related industries in the Town and region, providing recreational activities, as well as the importance conservation and maintenance of habitat, ridgelines, riparian areas, shorelines, vernal pools, and seeps.

A town forest would provide educational opportunities for the school and recreational opportunities for residents. The town could manage timber on the land to offset a loss in property taxes. The town forest could be connected to a town wide trail system that would allow for recreational opportunities and improved quality of life.

FOREST INTEGRITY

Parcelization, the breaking of contiguous forestland blocks into smaller and smaller units, causes the loss of core forest blocks and habitat connectors through fragmentation; negatively impacts wildlife diversity, disrupts the movement, migration and behavior of wildlife, introduces exotic invasive species, and can degrade water quality. The State of Vermont passed Act 171, which amended Vermont Planning Statutes, to encourage and allow municipalities to address protection of forest blocks and habitat connectors, while also supporting the local forest products industry. Monkton is one of the last towns with significant forestland cover that provides an east west corridor for wildlife from the Green Mountains in the east toward Lake Champlain in the west with connectivity to north south corridors.

Benefits of Protecting Core Forest Blocks

- Clean Water Supply. Forests provide clean water for drinking, recreation, and habitat, contributing to the general water recharge that Monkton homesteads rely on for clean well water.
- Clean Air. Forests intercept many air pollutants and store them temporarily on leaves and ultimately on the forest floor and within soil.
- 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.
- 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 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.
- 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 reduce the loss of life and damage to property cause by serious flooding.
- Public Health. Forests improve human health and contribute to Vermont's unique and exceptional quality of life.
- Cultural Heritage. Vermonters value the working landscape and recreational heritage.
- Forest Products Economy. The harvest and manufacturing of forest products contributes to the annual economic output to Vermont's economy.

CORE FOREST BLOCKS

A forest block is a contiguous area of forest in any stage of succession and not currently developed for nonforest use. A forest block may include recreational trails, wetlands, or other natural features that do not themselves possess tree cover. Forrest Blocks are categorized into "Highest Priority Forest" blocks and "Important Forest" blocks. Forest fragmentation is the division or conversion of a forest block by land development other than by a recreational trail or use. Forest blocks are composed of core and edge areas. "Core forest" is described as forest that is more than 100 meters (328 feet) from the non-forest boundary. The "forest edge" is the ring around the core.

HABITAT CONNECTIVITY

A habitat connector is 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 and may use the phrase "wildlife corridor" in lieu of "habitat connector." They can be a forest block, riparian area, or a specific road crossing that wildlife repeatedly uses. Examples include small habitat blocks that serve as steppingstones 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.

FOREST BLOCKS IDENTIFIED IN MONKTON

Monkton hired an independent firm to conduct a natural resources inventory, which identified habitat connectivity and 37 forest blocks in Monkton using several weighted parameters, such as block and core habitat size, block shape and integrity, block forested cover and type, surface water, wetland and streams and connectivity. These have been categorized into the two classes of "Highest Priority Forest Blocks" and "Important Forest Blocks." See Map 16 and 17.

Highest Priority Forest Blocks
Highest priority forest blocks are the largest forest blocks, from all biophysical regions in the state, which provide the foundation for interior forest habitats and associated ecological functions. The highest priority areas are those that are critical for maintaining an ecologically functional landscape. As can be seen from the forest block map the major forest blocks tend to run north south.

The following have been identified as the highest priority forest blocks in Monkton:

Hogback Mountain Forest Block.
This 2925-acre forest block stretches north south along the eastern boarder of Monkton and bordered by Mountain Road. This forest block extends into Starksboro and continues into Bristol as the Bristol Cliffs Forest block. Its fringe altitude around 600 ft. rises to around 1000ft. at the northern end and continues rising to 1600ft.before declining to 1000 ft. crossing into Bristol. 700 acres of the forest block that extends into Starksboro is part of the Common Ground Center. A major portion of this forest block falls into the protected Ridgline Overlay District on the Monkton side and into the Forest and Conservation zoning district on the adjoining Starksboro side.

The northern end becomes fragmented into separate blocks bisected by Prison Hollow Rd. and Tyler Bridge Rd. The forest comprises mainly of Trees of Oaks, Maples, Beech and Ash with some Hemlock area. There are a number of streams and drainage that drain into Pond Brook and Lewis Creek.

(Note: Block numbers 34=2780A. 32=105A, 33=40A. Note the acreage has been adjusted for the portion of the forest block within Monkton).

Boro Hill Forest Block
This is 4315-acre north south forest block's northern end starts just south of Monkton Pond and continues south, it lies between the Monkton – Bristol Road and the Monkton – Vergennes Road and is bisected by Boro Hill Road and Piney Woods Road. It continues into Bristol and New Haven at the southern end where it mates up with the Bristol Waterworks forest block. This southern end is where the proposed Monkton Town Forest is located. Its fringe altitude is around 600ft. and peaks at around 1300 ft. at Boro hill and at 1200 ft. at the southern end at the Bristol Water Works.

Portions of this forest block specifically at the northern end are split into two high ground sections on either side of Boro hill Rd. The section at the Southern end bordering with the town of Bristol fall into the Monkton protected Ridgeline Overlay District. There are several streams and drainage areas that drain into Cedar Lake at the northern end and into the Pond Brook on the eastern side.

Trees in this block consist of Oaks, Maples, Beech and Ash with some Hemlock areas.
(Note: Block numbers 16=1812A, 22=1196 A, 17=1307A)

Fuller Mountain Forest block
This is 2345-acres north south forest block is bordered by Rotax Rd. at its northern end and on its eastern side by Bennett Rd., Nichols Rd. and Monkton Rd. It extends into Ferrisburgh on its western side bordered by Fuller Mountain Rd. Its fringe altitude is around 500 ft. and rises to 872 ft. at Fuller Mountain. The northern end of this forest block surrounding Fuller Mountain falls into the protected

Monkton Ridgeline Overlay District.

(Note: =Block numbers 2 =2345 acres)

The West to East Forest Blocks along Monkton's Northern Border
Several forest blocks extend from west to east along the Monkton northern town border. These are shared with both Charlotte and Hinesburg. The total portion of these blocks within the Monkton boarder totals some 1767 acres. They form an important chain of steppingstones for wildlife connectivity and follow along the Lewis Creek corridor.

They consist of several separate blocks lying north of Rotax Road and another group between Davis Road and Route 116. These are situated north of States Prison Hollow Road.

(Note: Block numbers 1=141A, 4=171A, 9=52A, 14=210A, 24=708A, 29=246A, 31=235A, 37=4A. Note these blocks have been adjusted for the % area that lies in Monkton).

Important Forest Blocks
These are also important resources, but there is more flexibility for conserving the ecological integrity of these areas. However, their protection remains critical for maintaining species habitat and ecological function many of these are smaller in size forest blocks but play an important role as steppingstones for various species as they move between habitats.

For example, the northern end of Monkton comprises of several smaller forest blocks that provide for this habitat connectivity in an east west corridor an important section buffer against the urbanization northwards towards Hinesburg and Charlotte.

Pond Brook
Pond Brook is a wetland area between Mountain Road and Bristol Road of some 1195 acres and consists of a Cedar Forest fed by tributaries from the surround higher ground to the East and West. The outlet from Bristol Pond (Pond Brook) flows north through this area and exits to the north into Hinesburg then Ferrisburgh as a tributary to Lewis Creek that then flows into Lake Champlain.

(Note: Block numbers 27=1124A, 28=71A)

Monkton Road to Old Stage Road
There are several forest blocks that provide the west to east steppingstone connectivity to the forest blocks in the southern end of town these are bounded on the west by the Monkton – Vergennes Road and Lime Kiln Road and Old Stage Road to the east. These forest blocks extend into Bristol and New Haven. They consist of some 220 acres.

(Note Block numbers 8=117A, 5=22A, 10=81A. Note these blocks have been adjusted for the % area that lies in Monkton).

HABITAT CONNECTIVITY
See map 17.

Wildlife Road Crossings

Various sources have contributed to this element including, the Natural resource Inventory the Monkton Conservation Committee, the Planning Commission, and town members documenting wildlife movements and populations within municipal boundaries, identifying important habitats, locating mammal and amphibian road-crossing and identifying where movement corridors intersect with town roads.

Monkton - Vergennes Road wildlife Crossing.

Two wide concrete culverts are successfully funneling the creatures under a section of Monkton-Vergennes Road that infamously separates swampy breeding pools from upland overwintering sites. This crossing provides safe passage for blue-spotted salamanders, wood frogs, spring peepers, yellow-spotted salamanders, Eastern newts and four-toed salamanders.

The culverts provide safe passage also for small mammals such as skunks, raccoon and foxes to cross Monkton-Vergennes Road.

Corridors North of Monkton Pond

Following the numerous east-to-west forest blocks along Monkton's northern border plus some smaller blocks there are several wildlife crossings and connectors to allow for east to west movement as well as following the Lewis Creek corridor that dips in and out of the Monkton boundary. The corridors also dip down to Monkton Pond and up into the forest blocks on the south side of the pond to Boro Hilll.

East West Corridor Boro Hill Forrest Block to Hogback Forest Block

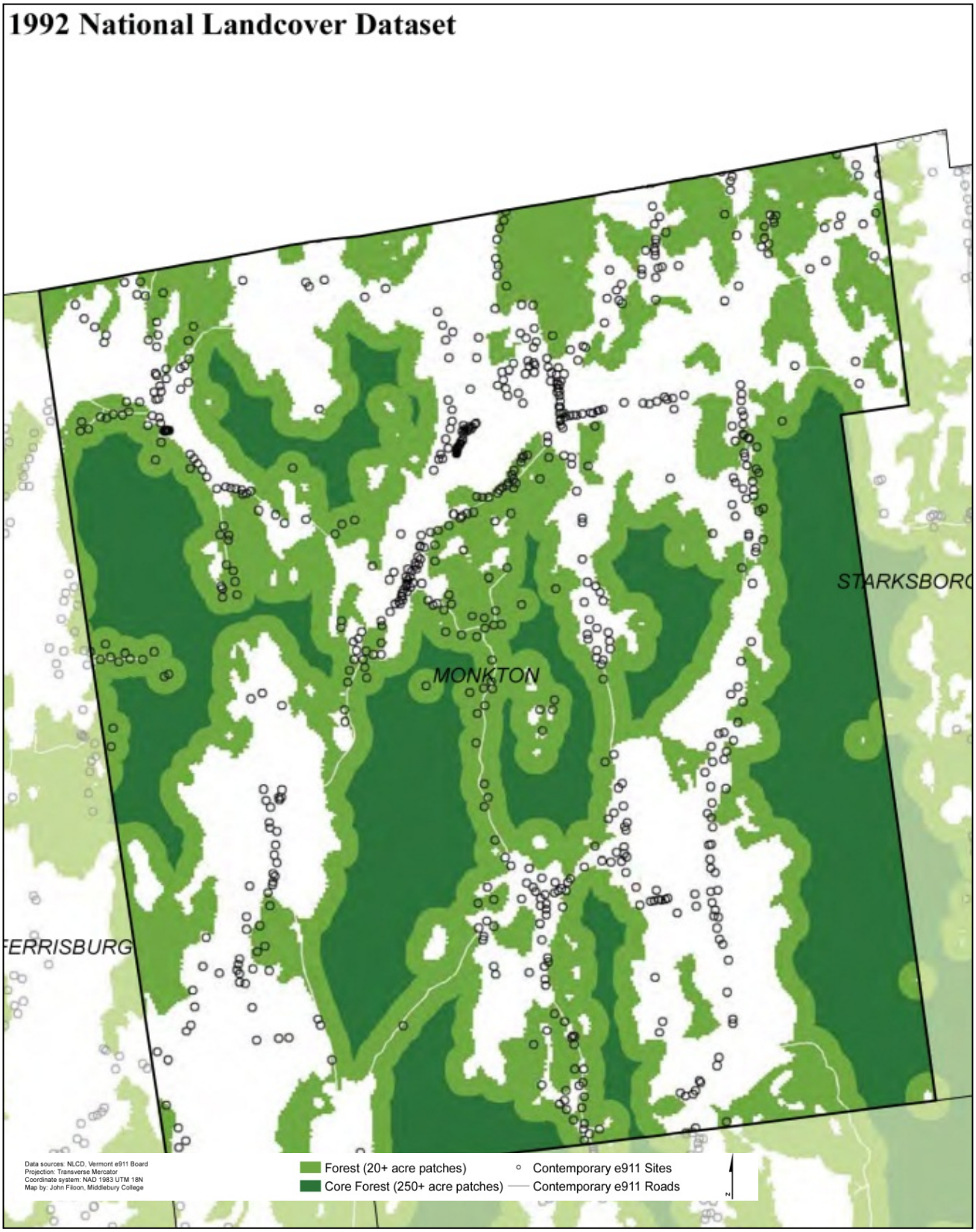
These occur at the northern end and are part of Monkton Pond and the Pond Brook area. The development along Mountain Road however appears to be limiting the number of crossing areas.

Connectivity within the Boro Hill Forest Block

Boro Hill road bisects this forest block and has several important crossing areas.

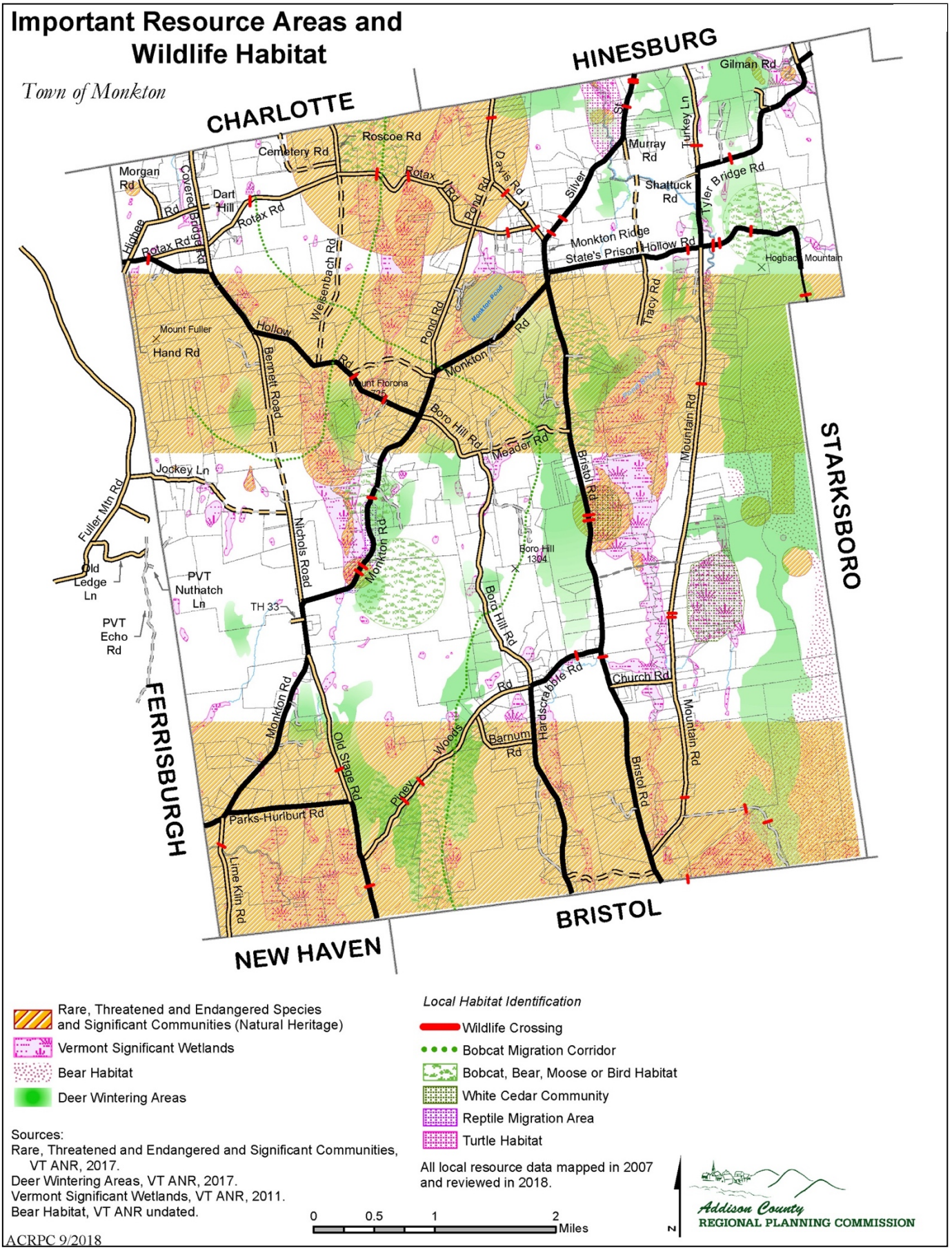
Connectivity within the Boro Hill Forest Block

Piney Woods Road bisects this forest block and is an important crossing route.

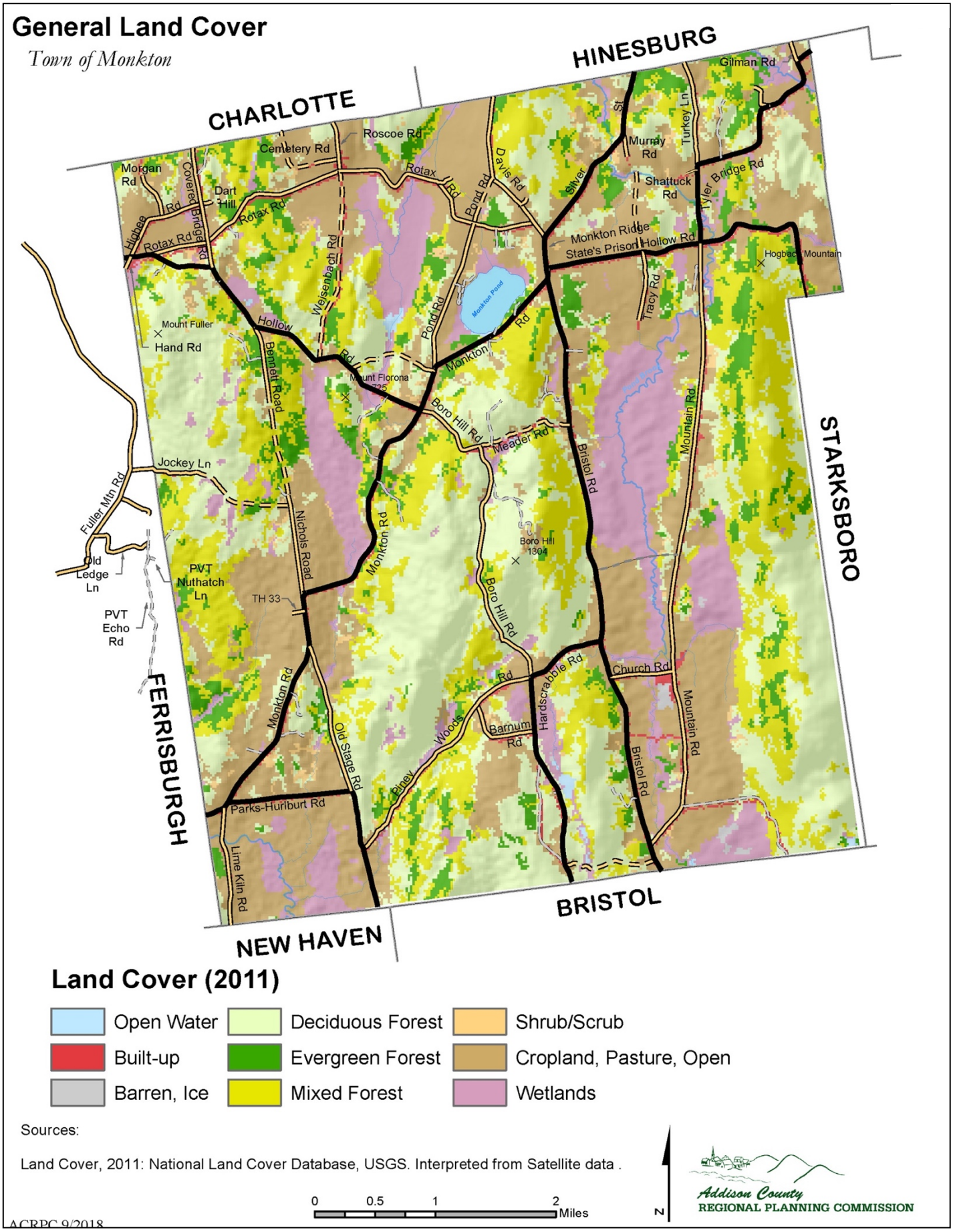


Map 10 Forest Cover 1992

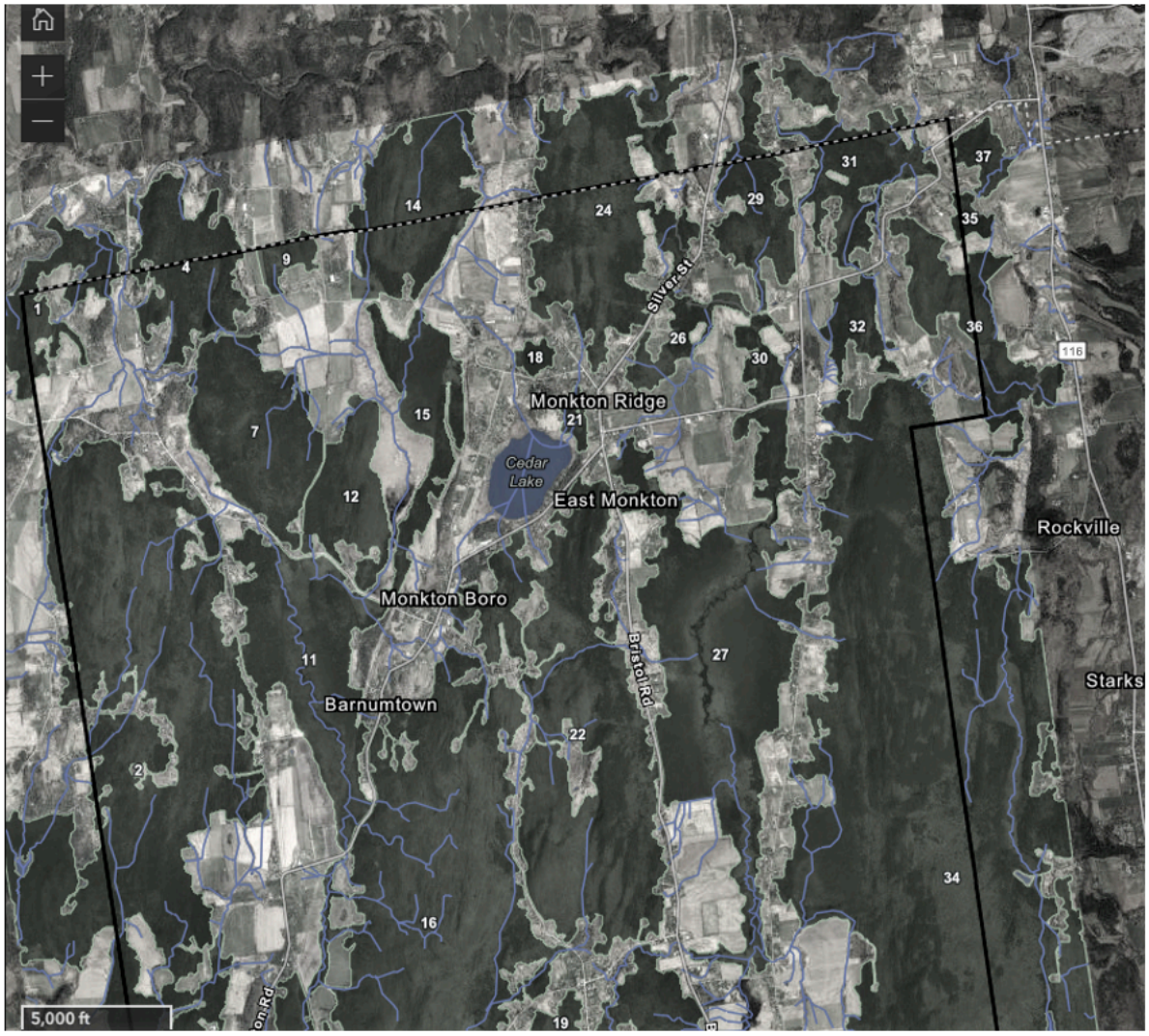
Map 11 Forest Cover 2006



Map 12 Important Resource Areas



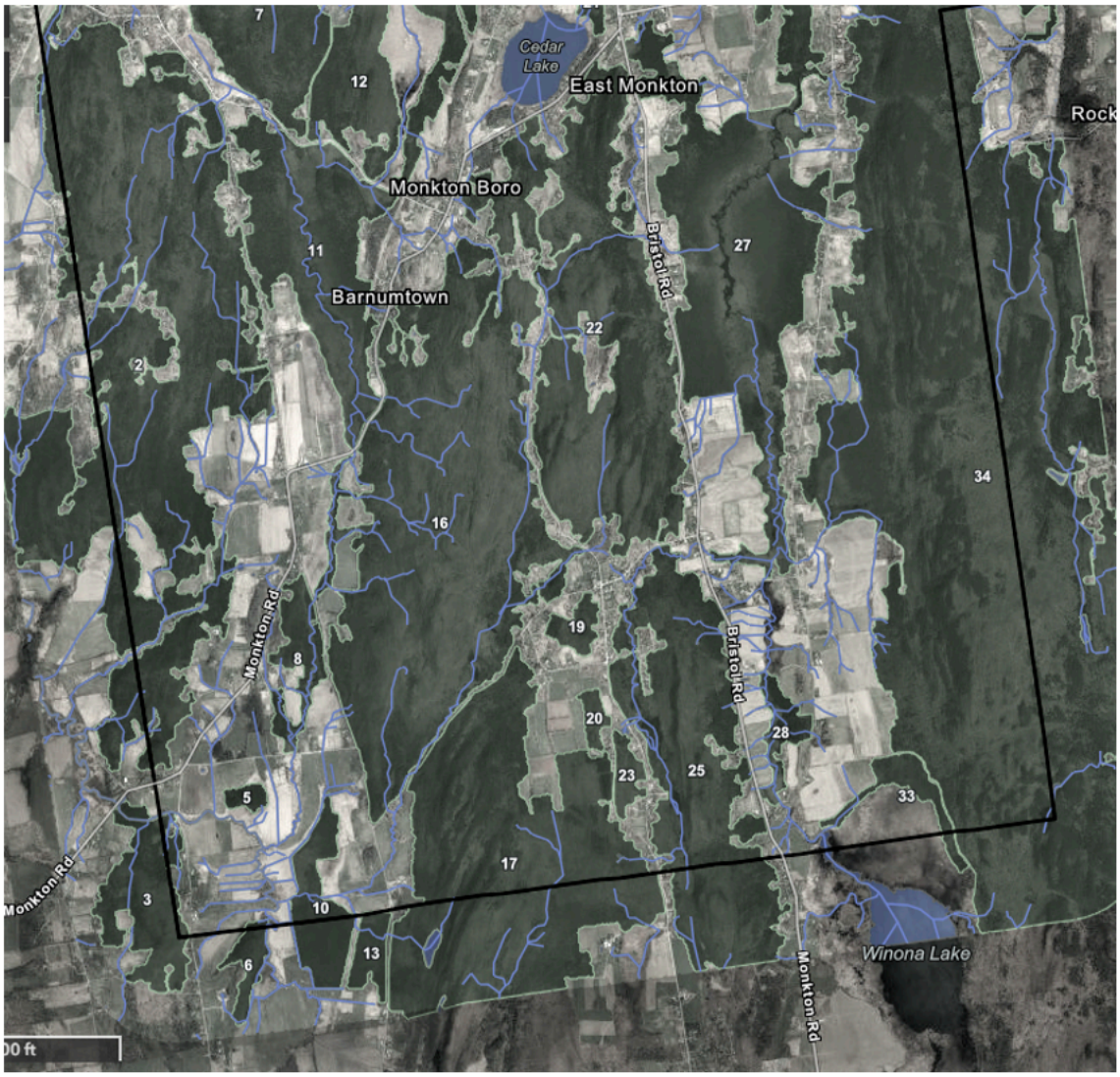
Map 13 Land Cover



MONKTON FOREST BLOCK IDENTIFICATION MAP
NORTHERN SECTION OF TOWN

There are 37 identified blocks.
Map and data provided by Arrowwood Environmental 2023.

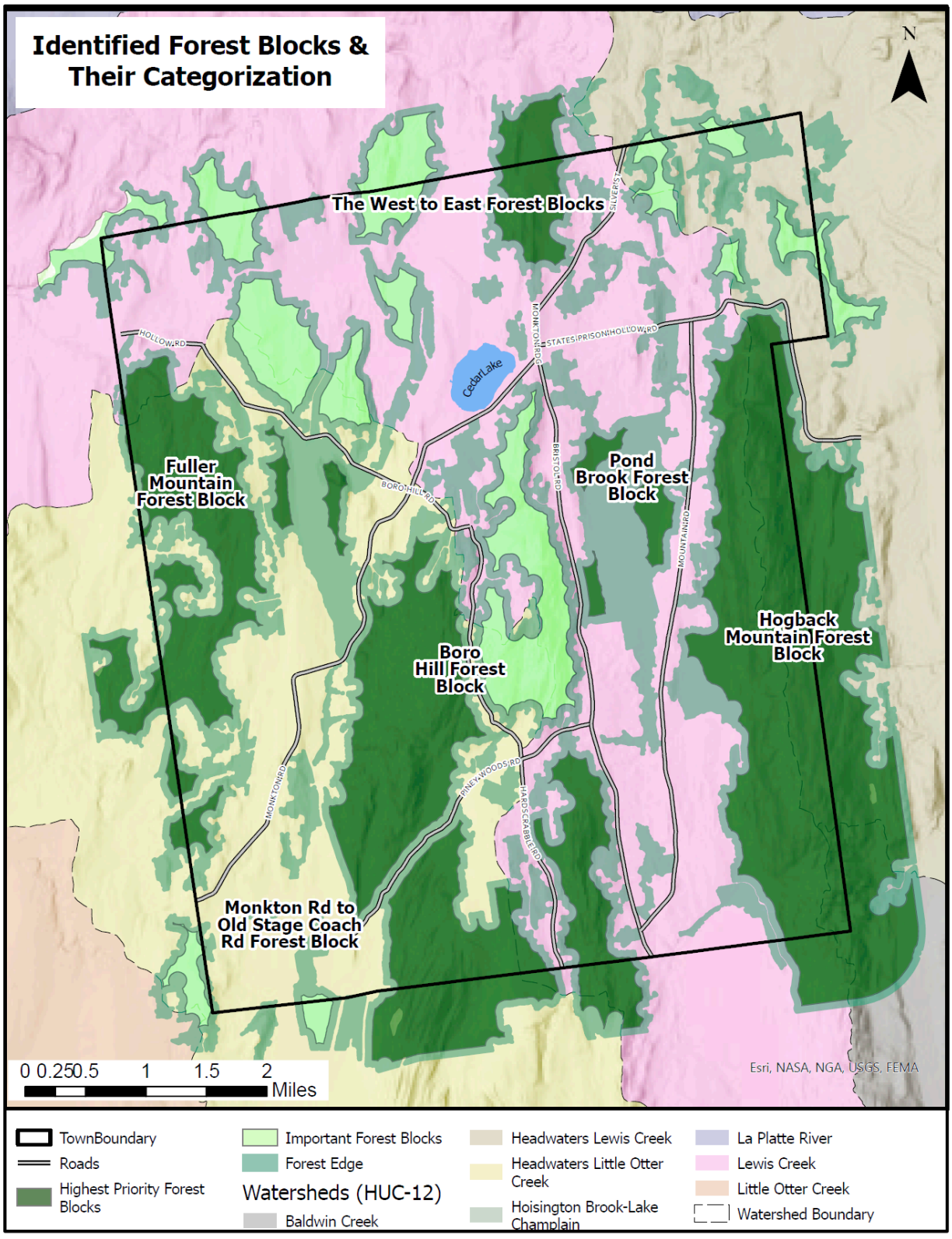
Map 14 Forest Blocks North ID Map



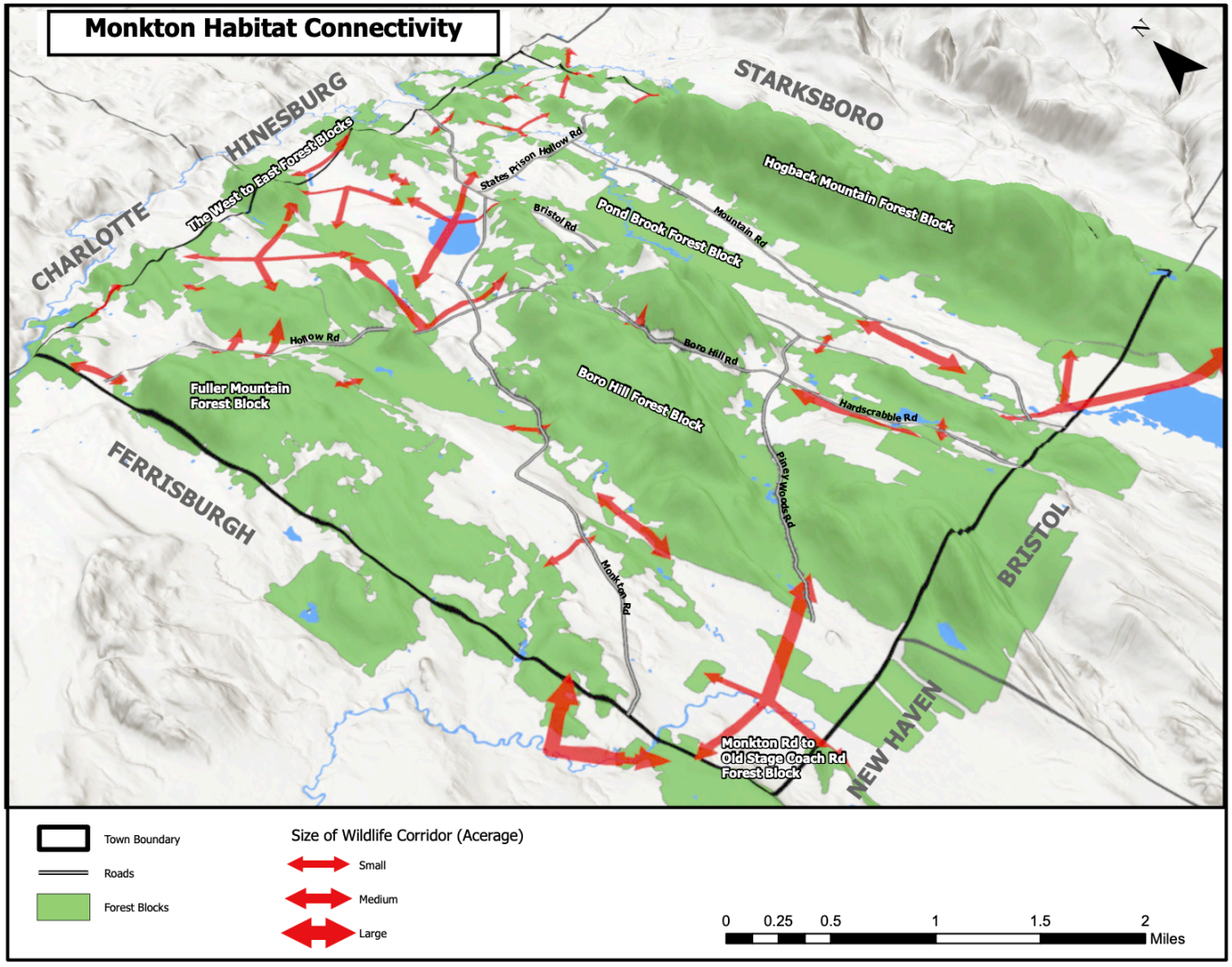
MONKTON FOREST BLOCK IDENTIFICATION MAP
SOUTHERN SECTION OF TOWN

There are 37 identified blocks.
Map and data provided by Arrowwood Environmental 2023.

Map 15 Forest Blocks South ID Map



Map 16 Forest Blocks Analysis



Map 17 Monkton Habitat Connectivity

AGRICULTURAL LAND

GOALS

1. Support a thriving agricultural economy.
2. Preserve contiguous working lands for future generations.
3. Manage agricultural lands in harmony with environmental integrity.

POLICIES

1. Primary farmland must be protected in any development process.
2. New development should cluster homes and buildings, protecting contiguous agricultural land from fragmentation (see land use chapter polices for associated policies).
3. Renewable energy projects should be sited in association with existing structures and rooftops.
4. Protect the farmer's right to farm (see energy chapter policies for associated policies).
5. Encourage the stewardship and protection of agricultural land through agricultural easements and land conservation.
6. Encourage Vermont's Agricultural Best Management Practices and Required Agricultural Practices to protect water and soil quality.
7. Support new farmer initiatives and diverse agricultural enterprises.
8. Foster the growth of agricultural support services, food processor and value-added production on local farms.
9. Support the use of local products in our schools.

RECOMMENDED ACTIONS

1. Work with groups and organizations fostering the growth of markets for agricultural products in Town and the region.
2. Encourage active participation in a five-town regional farmer's market.
3. Encourage participation in NRCS/USDA and State programs to promote soil conservation and water quality protection.

AGRICULTURE DISCUSSION

DAIRY FARMS

Dairy farms continue to use the bulk of the cropland in Monkton to raise corn and forages for their cows. Consolidation into large farms has meant fewer farms milking cows and shipping bulk, wholesale milk. In 2018 there were only three such farms in Monkton. Several large dairy farms located outside of Monkton own or lease large tracts of farmland in Monkton. Four Hills Farm in Bristol, and Allandra Farm in Vergennes are two examples of large farms with satellite operations in Monkton. State-wide, in 2018, there were 340 fewer dairy farms than there were in 2009, a loss of 32percent. At the same time, milk production increased from 2.46 billion pounds to 2.73 billion pounds and the price of milk has been in a slump forcing many farms to sell milk for below the cost of production.

Another pressure on dairy farms is to make the necessary improvements and changes in their operations to conform with the new rules on *Required Agricultural Practices*. These changes can be very expensive and have a devastating effect on a farm. Monkton supports providing farmers with the assistance and resources necessary to perform these required agricultural practices. Dairy farms are the backbone of Vermont, Addison County, and Monkton agriculture, producing over 70percent of the farm income in Vermont. Monkton supports efforts to reform the federal milk pricing system so dairy farmers get a fair price for their product. Dairy farmers support infrastructure such as equipment dealers, feed stores, veterinarians, and processors. Not only are these businesses important to the economy, they are critical to other farm sectors as well.

DIVERSIFIED FARMS

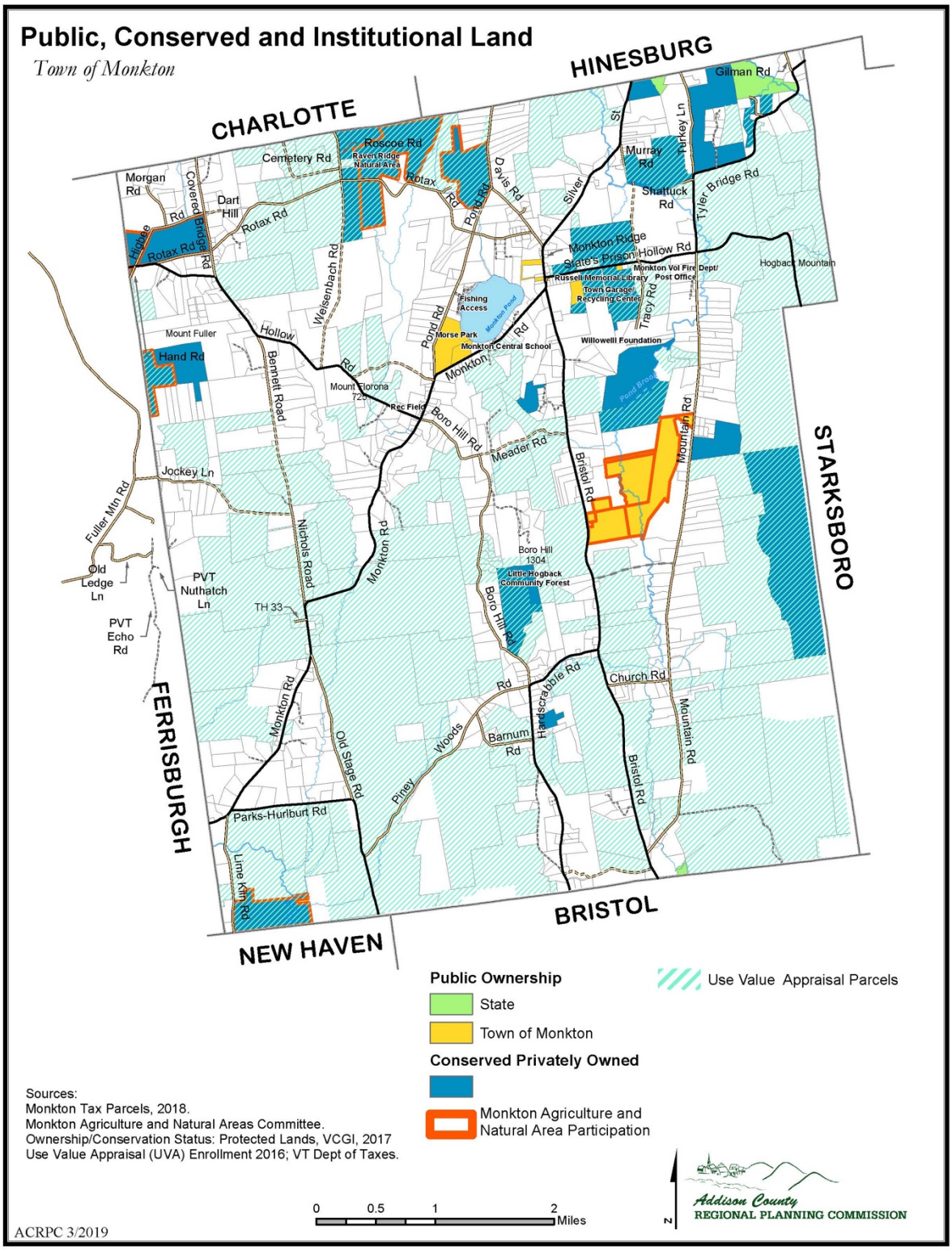
Monkton has seen an increase of other types of farms and some dairy farms have diversified into other

products. There are at least six commercial vegetable farms, three orchards, three nurseries, a specialty cheese farm, a malting shed, a honey farm, several beef operations, a polo pony farm with a wedding venue, a llama farm, an alpaca farm, two farms with indoor horse arenas, and a flock of sheep. Several farms raise hay to sell. Because the price of maple products has remained fairly steady and new technology has enabled more extensive tapping, there are numerous maple orchards in town. Maple is a large, successful industry dependent on the health of forests to provide the product and firewood to this industry.

CURRENT USE PROGRAM

The Use Value Appraisal Program or current use is a state tax relief program. There are 12,463.54 acres in the Use Value Appraisal Program; commercial farms have 7009.18 acres enrolled and A. Johnson Lumber LLC has 1789.23 acres of forest land in the program.

Forest landowners with a forest management plan (updated every 10 years) or agricultural land owners who annually certify their land is in agricultural use (may be leased to a person qualifying as a farmer) may apply to have their land taxed at use value. The use value is a statewide value set annually by the Current Use Appraisal Advisory Board to reflect the value of agricultural and forest land based on income from those uses. Agricultural buildings owned by a farmer or leased to a farmer with a three year or longer lease are exempt from the property tax. When land is entered in the program a lien is placed on the property to guarantee that the owner pays the penalty if the property or a portion of it is withdrawn from the program and developed. The Land Use Change Tax is set at ten percent of the fair market value of the land removed from the program. So, if a Monkton owner were to remove a 2-acre building site from the program, the value of an average 2-acre building site in Monkton is $60,000.00 and the penalty would be $6,000.00. The state pays the Town for tax reductions as a result of the current use program.



Map 18 Public, Conserved and Institutional Land

Monkton Celebrates. Photo credit: Buzz Kuhns

LAND CONSERVATION

The Agricultural and Natural Areas Fund has been used to assist in the conservation of 1167 acres in the past seven years. Partners have been the Vermont Housing and Conservation Board, the Vermont Land Trust, the Vermont Agency of Agriculture, the Nature Conservancy, the U.S. Fish and Wildlife Service, the Vermont Department of Fish and Wildlife, and the U.S. Agency of Agriculture. The Trust for Public Land has been discussed as a potential partner for purchasing a Monkton town forest. 813.8 acres of commercial agricultural land have a conservation easement, 11.6percent of Monkton commercial agricultural land (7009.18 acres).

The 2010 town-wide survey showed a high level of support for allocating town funds for the purchase of the development rights (TDR).[2] At Town Meeting, the Town votes 2 cents on the grand list for the purchase of development rights or direct purchase of land in order to protect open and agricultural lands. The Agricultural and Natural Areas Committee (ANAC) in Monkton is working with the Vermont Land Trust to conserve agricultural and forestland through protective easements.

[2] TDRs are a land management technique which provides a landowner with monetary compensations for their development rights in order to preserve that land as the outright purchase of agricultural, forest, and open lands in order to preserve and maintain the rural character of the Town, and to protect open land and view sheds.

Water Resources

GOALS

1. Ensure Monkton residences have access to safe, healthy potable water.
2. Become a flood resilient community as identified in 24 V.S.A. § 4302.
3. Identify, protect and manage the quality and quantity of groundwater, including groundwater recharge areas.
4. Identify, protect and manage the quality of our surface waters for recreational and ecological benefits.
5. Identify, protect and manage our wetlands, outflows, rivers and streams for flood resiliency and wildlife refuge.
6. Help landowners on Monkton and Bristol Pond understand and comply with the Shoreland Protection Act.

POLICIES

1. Monkton's regulatory and non-regulatory guidance should follow State guidelines and be developed to minimize the effects of development including run-off from impervious surfaces, storm water, road ditching, and erosion.
2. New and existing developments must follow Monkton's buffer regulations.
3. New and existing developments and residences must follow Monkton's sewage disposal ordinances.
4. New construction and development projects should incorporate Low Impact Development (LID) and Green Infrastructure Systems (GSI) techniques, including limiting construction on steep slopes (new or retrofitting) to minimize impacts to water quality.
5. Require the use of "best practice" water conservation measures in all new construction to minimize its impact on groundwater.
6. Restrict development in Monkton's forestland and wetlands and prohibited in ridgelines and in areas identified by the state as State Natural Heritage Sites and shown on the *Natural Resource Area* map this plan.
7. Require development in any overlay district meet the associated standards of that district, as stated in the Land Use section.
8. Maintain a current Local Emergency Operations Plans (LEOP), which must be updated each year after Town Meeting and before May 1. LEOP better prepare towns for emergencies. The LEOP must be updated by the Select Board.
9. Protect water quality by minimizing impacts from roads using best practices, resources, and grants from the Agency of Natural Resources and National Resource Conservation Services funding program and the Better Back Roads program.
10. Encourage the use of best management practices for any farms near wellhead areas.

RECOMMENDED ACTIONS

FLOOD RESILIENCY

1. The Select Board should consider adopting the 2013 Road and Bridge Standards as required for ERAF to qualify for 12.5percent funding from the State after a federally declared disaster.
2. Meet with ACRPC to discuss the implementation of bylaws to protect river corridors, in order to qualify for the 17.5percent rate of reimbursement from Emergency Relief and Assistance Fund (ERAF).
3. The Planning Commission must update bylaws using current recommended language to protect river corridors, and help manage streams and rivers toward naturally stable, least-erosive conditions.

SURFACE WATER

4. Develop stream/river corridor protection areas with appropriate buffers and setbacks to protect surface water quality.
5. Work with local groups like Addison County River Watch Collaborative, the Lewis Creek Association, the State and Federal government to develop a monitoring program for Monkton's surface water.
6. Support the Monkton Conservation Committee or other town committee seeking grant monies to identify and remove invasive species in wetlands, riparian habitat, and ponds.

GROUND WATER

7. Work with the Vermont Health Department to educate Monkton residents on the value of testing well water and create incentives where possible.
8. Study the feasibility of developing community well water systems in areas where groundwater has been polluted.
9. Use study data to determine areas in Monkton that are important for groundwater recharge and develop a groundwater protection overlay district.
10. Revise regulations to require the use of best water conservation practices in all new construction to minimize its impact on groundwater.

DRINKING WATER

11. Initiate education and outreach efforts to residents regarding the regular testing of residential drinking water following the guidelines set by the Vermont Department of Health.

WATER RESOURCES DISCUSSION

The quality of Monkton's ground and surface waters are essential to our daily lives, our economy and environment. The following water-related discussion highlights specific water sources and the impacts and opportunities relevant to managing and protecting our water resources in Monkton.

GROUND WATER

Groundwater resources provide water for personal, agricultural, commercial and industrial needs. Virtually all Monkton residents have private or community wells, using ground water for drinking and home use. Groundwater consists of surface water that has percolated through the soil to the water table. It can percolate through fractured bedrock and gravel deposits to recharge subterranean or deep groundwater aquifers. The type of soil and bedrock determines this process. Presently in Monkton

groundwater appears to be plentiful, but as growth continues more consumers will share water resources. The point at which the degree of development affects water quality and quantity is undetermined.

Generally, aquifers serve as geologic storage tanks for large volumes of water, which originated as surface water. These sources and their recharge areas must be protected, especially gravel deposits on hillsides, which must be reviewed as much for their water recharge and purification qualities as for their septic carrying capacity. As defined by the Region, no aquifers serving public water systems presently exist in Monkton. All drinking water sources are private or community wells.

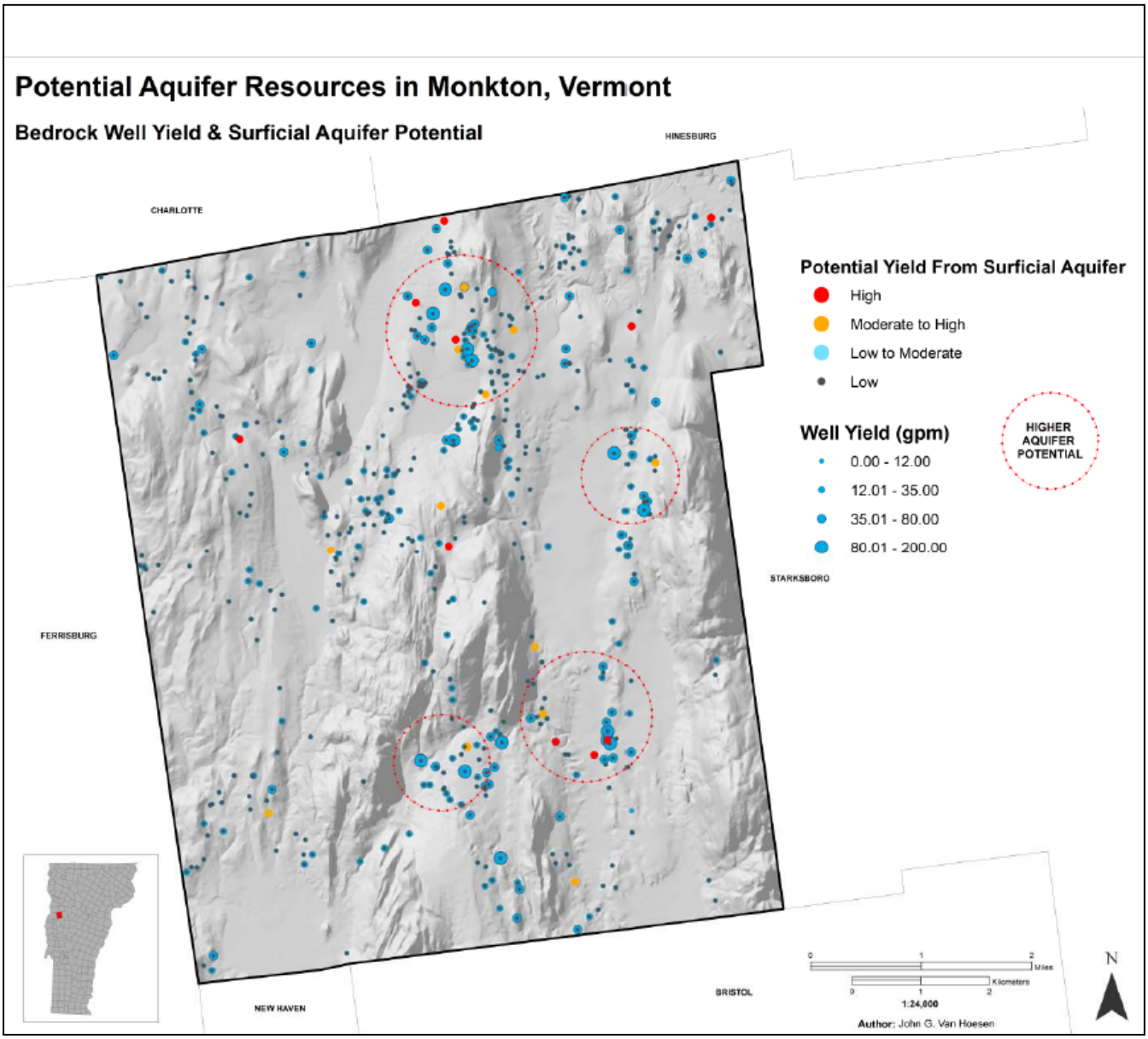
The quality of Monkton's groundwater is dependent upon bedrock geology, proper land use practices, and waste disposal. The Vermont Department of Health (VDH) recommends three tests to determine drinking water quality. The VDH recommends yearly testing for E. coli and coliform bacteria. Positive tests indicate that water may have been polluted by animal or human waste. The inorganic chemicals test and gross alpha test are recommended every five years by the VDH. The inorganic chemicals tested include nutrient pollutants such as nitrate, and naturally occurring pollutants such as arsenic, lead, and uranium. Known sources of contamination from human activities include storage tanks, municipal landfills, illegal dumps and dumping, septic tanks, road salting and runoff for leaching of materials from some home landscaping, and runoff, farmyards and manure pits and some other agricultural activities. Prevention of contamination by human activities is critical, as treatment of groundwater is extremely difficult. The State has a grant program for the removal of underground storage tanks (UST) with 1000-gallon capacity or less (e.g. home heating fuel tanks). The Agency of Agriculture has programs to help with managing the water quality of agriculture operations.

On Monkton Ridge leaking underground fuel storage tanks have impacted groundwater quality; these tanks have been removed, but ground water is still polluted. The State currently provides water to these homes, business and the Town Hall. In the future the town might consider the feasibility of providing drinking water to affected homes through a community water system. Grants are available for these activities.

Bedrock geology can affect the chemistry and quality of drinking water. The Champlain Valley contains several rock layers or strata that can negatively affect groundwater quality with naturally occurring pollutants. Some contain inorganic chemicals and/or radionuclides. Aerial reconnaissance and well testing for radionuclides of the northeast part of Monkton showed promise for uranium extraction in 1976; bedrock testing determined that not enough radioactivity occurred for profitable mining. Some bedrock strata in the Champlain Valley, like the Clarendon Springs formation, are known to contain radionuclides. Several others are suspected. Although the Clarendon Springs formation does not exist in Monkton; it occurs in Hinesburg, Charlotte, Ferrisburgh, New Haven and Bristol. Underground cracks of many miles in length allow water to move from one rock formation to another. Radionuclides can be removed from well water by different filtering systems. Children, the elderly and infirm people are especially vulnerable to these pollutants. Many of these pollutants are easily treated if you know your water contains them. The *gross alpha test* measures radioactivity from radionuclides in the water.

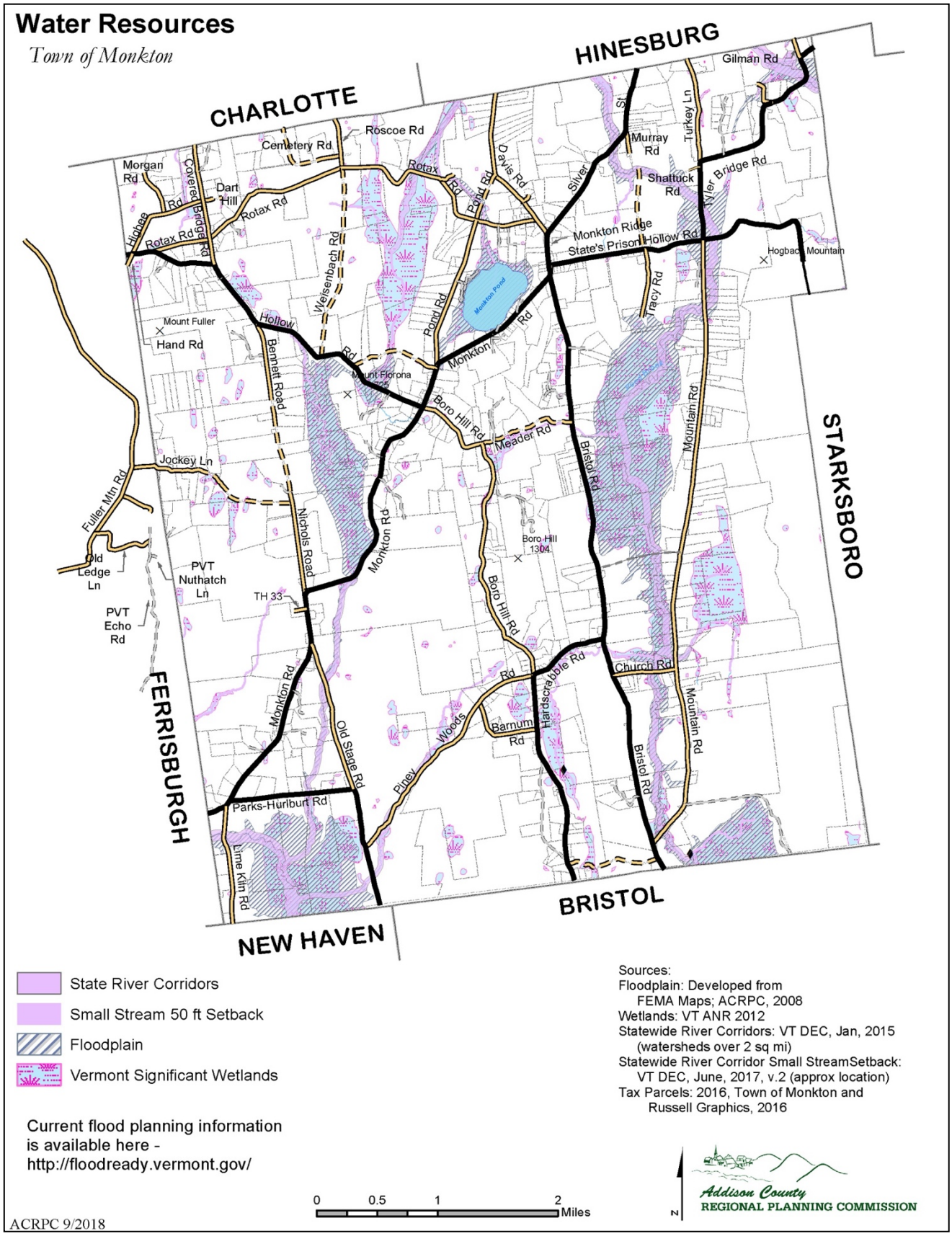
In 2016, a surficial geology and hydrogeology study was done for Monkton. The study was done by John Van Hoesan and published by the Vermont Geological Survey, Department of Environmental Conservation. The following map shows the Potential Aquifer Resources in Monkton. The entire study

can be found on Monkton's website.



Map 19 Potential Aquifer Resources

Source: John G. Van Hoesan, Vermont Geological Survey, Department of Environmental Conservation 2016



Map 20 Water Resources

Stormwater degrades a Monkton Road Photo credit: Buzz Kuhns

SURFACE WATER

BUFFERS FOR WATER QUALITY

The conditions of Monkton's shorelines and river corridors[3], as well as adjacent land use practices, affect the health of adjacent surface waters. Vegetated buffers adjacent to surface waters provide essential benefits including reduced soil loss, reduced stream bank and shore erosion, reduced sedimentation of aquatic habitat, filtration of sediment, nutrients and pollutants in runoff, provision of cover habitat for aquatic biota and other wildlife and shading of surface water to maintain cooler summer temperatures.

Proper design, placement, and maintenance of septic systems, erosion control, limitations of development, and prudent management of vegetated buffers along shorelines and stream banks can all help to protect surface water quality. The State of Vermont regulates the development of shoreland areas through requiring vegetated buffer strips and the implementation of other erosion controls.

BUFFERS FOR WILDLIFE HABITAT

Aquatic habitats (ponds, streams, wetlands) crucial for both wildlife and recreational use, suffer from loss of floodplain functions, encroachment, stream alterations, poor water flow, removal of in-stream woody material and shady stream-side vegetation, silt build-up and invasive species.

[3] Vermont's Agency of Natural Resources defines a river corridor as the area of land surrounding a river that provides for the meandering, floodplain, and the riparian functions necessary to restore and maintain the naturally stable or least erosive form of a river thereby minimizing erosion hazards over time. http://floodready.vermont.gov/

Providing natural land cover adjacent to water bodies is crucial to wildlife as they access water and food. The suggested width recommended by the Department of Fish and Wildlife is 300 feet of land cover from the edge of surface waters.

Monkton's salamander crossing wetland area. Photo credit: Ivor Hughes

Stream flow, hydrology and equilibrium channel shape conditions can be maintained through adherence to Department of Environmental Conservation guidance that suggests planning to accommodate aquatic species and riparian areas by protecting, at a minimum, the predicted fluvial erosion hazard area of a river corridor. Monkton streams have been field assessed by Lewis Creek Association and the Department of Environmental Conservation. Data results are held in a data management system and resulting river corridor plans prioritize stream corridor management options for towns, road managers and landowners (http://www.lewiscreek.org/lewis-creek-corridor-plan-2010). In general, small seasonal streams require 50 ft. setbacks while larger streams and floodplains require 50 to 100 feet to move through over time.

Wetlands support great numbers of plant and animal species, particularly marsh birds, waterfowl and amphibians. For this reason, these areas are of significance and should be protected with buffers between 50 and 100 feet.

WETLANDS

Wetlands are defined in the Vermont Wetland Rules as those areas of the state that are inundated by surface or ground water with a frequency sufficient to support significant vegetation or aquatic life that depend on saturated to seasonally saturated soil conditions for growth and reproductions. The federal wetland definition under Section 404 of the Clean Water Act similarly emphasizes hydrology, soil, and vegetation as the criteria for determining the presence of a wetland.

Wetlands include such areas as marshes, swamps, bogs, fens, and shallow water ponds. Wetlands are known to provide many important functions that maintain ecological integrity and values that provide human benefits including temporary storage of flood waters, surface and ground water quality protection by trapping sediment and adsorbing nutrients and metals, ground water recharge, wildlife and migratory bird habitat, fisheries habitat, threatened and endangered species habitat. They are open space that provides recreation, education and aesthetics cultural values.

The Vermont Wetland Rules, implemented by the Water Quality Division of the Department of Environmental Conservation, protect Class One and Class Two wetlands. The State rules describe certain activities that are allowed uses and may occur within these wetlands and identify other uses that are conditional uses and which may only be approved if it can be shown that the use will not adversely affect the function and values of the wetland.

The general locations of Class Two wetlands in Monkton are shown in the National Wetlands Inventory maps, copies of which are kept in the town offices. It should be noted that not all Class Two wetlands are mapped due to limitations of aerial photography, and smaller wetlands connected to Class Two wetlands may not be mapped.

Class Three wetlands are generally small wetlands and are not identified on the National Wetlands Inventory maps. Class Three wetlands are not initially protected under the Vermont Wetland Rules, although they may provide significant function and value and may be protected under Act 250.

There are currently no Class One wetlands in Monkton.

The USDA Wetland Reserve Program provides funds to protect and restore wetland values and functions. The ANR Ecosystem Restoration Program provides funds to protect wetlands adjacent to streams, especially if the wetland can help to attenuate water flow and reduce phosphorus flows to Lake Champlain.

The independent firm Monkton hired to conduct a natural resources inventory also mapped wetlands (see map 18). Monkton's network of lakes, ponds, rivers and streams, and their associated riparian zones, valley bottoms, and river corridors provide vital habitat for a rich assemblage of aquatic species, including fish, amphibians, reptiles, invertebrates (e.g., insects, mussels, snails, worms, freshwater sponges), and plants. Naturally vegetated riparian areas provide many functions, including stabilizing shorelines, storage of flood waters, filtration of sediments and nutrients, shading of adjacent surface waters to help moderate water temperatures, and direct contribution of organic matter to the surface water as food and habitat structure. Riparian areas are also very essential habitat for many species of wildlife, including mink, otter, beaver, kingfisher, spotted sandpiper, and wood turtle. The shorelines

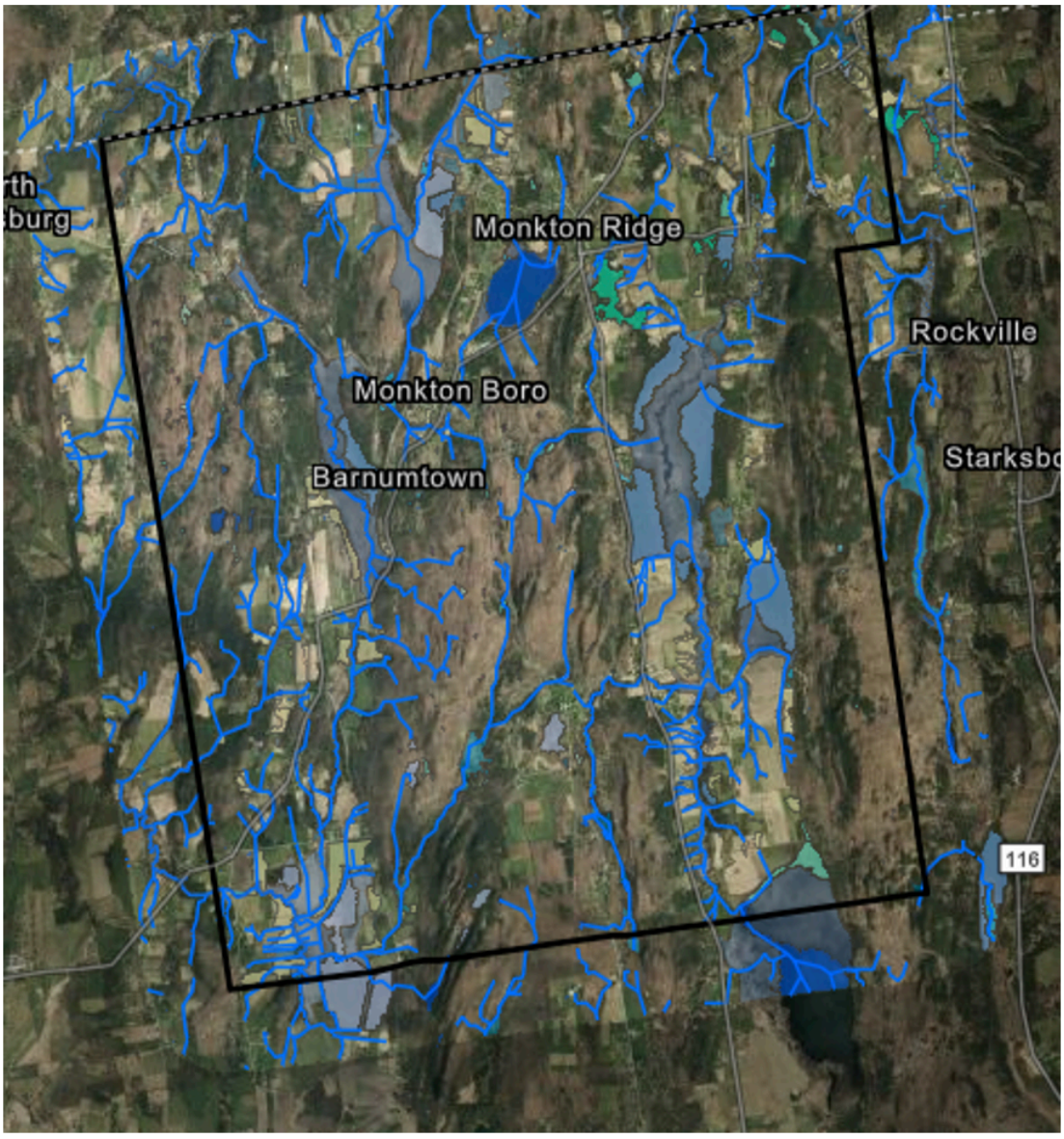
and riparian areas of rivers and lakes support floodplain forests, several other rare and uncommon natural communities, and many species of rare plants and animals. The linear network of riparian areas provides a crucial element of landscape connectivity. Many wildlife species use riparian corridors for travel to find suitable habitat to meet their life requisites, but certain species are almost entirely restricted to riparian areas, including mink, otter, beaver, and wood turtle.

The combination of Riparian Areas for Connectivity, and Connectivity Blocks, provide the best available paths across the landscape, especially in highly fragmented regions. Several wetlands, streams and rivers that have their headwaters in the Monkton area and eventually wend their way into Lake Champlain.

POND BROOK
Pond Brook is a large wetland area fed by tributaries from the surround higher ground to the East and West. The outlet from Bristol Pond (Pond Brook) flows north through this area and exits to the north into Hinesburg then Ferrisburgh as a tributary to Lewis Creek that It then flows into Lake Champlain. A further tributary to Lewis Creek flows out of the northern end of a large wetland to the east of Raven Ridge and north of Rotax Road. This wetland extends also to the south of Rotax Road

MT. FLORONA
A large wetland exists south of Hollow Road bounded on the west by Fuller Mountain and on the East by Mt. Florona and extends south to the Monkton - Vergennes Road.

LITTLE OTTER CREEK
Drainage at the southern end of Monkton drains into Little Otter Creek that flows into Ferrisburgh and eventually into Lake Champlain



Map 21 Wetlands and Natural Communities

INVASIVE SPECIES

Eurasian Water Milfoil, purple loosestrife, and Japanese Knotweed continue to pose a threat to the recreational use of streams ponds and lakes -- including Monkton Pond (Cedar Lake). The key to stopping this problem is early detection and treatment before large spreading occurs. Therefore, Town support for local efforts to slow or stop invasive spread is crucial, as state funds are generally very limited.

FLOOD RESILIENCE

Flood resilience is essential for a safe, thriving community. By preserving permeable ground, including upland forests and wetlands, and through thoughtful future growth and development, Monkton can be more resilient to increasingly frequent floods and hazardous weather scenarios.

Flood resilience starts with the absorption of water by the soil. Developed land should have adequate topsoil with appropriate levels of organic matter to provide for the adsorption of water and adequate plant growth. The organic matter in soil allows soil to act like a sponge holding 4 to 5 times the amount of water of clay. Plant cover is just as important to flood resiliency by keeping soil in place and preventing erosion and rapid surficial runoff (see previous discussion on vegetated buffers).

Low Impact Development (LID) and Green Stormwater Infrastructure (GSI) are stormwater management techniques that either incorporate natural systems and/or mimic natural systems for slowing, storing, infiltrating and/or filtering stormwater. These techniques must be incorporated into community planning in order to lessen the otherwise drastic impacts stormwater and flooding can have on communities.

Steps that Monkton has already taken to become a flood resilient community include the following:

- Maintain a current Local Emergency Operations Plans (LEOP), which must be updated each year after Town Meeting and before May 1st. LEOP better prepare towns for emergencies. The LEOP must be updated by the Select Board.
- Participation in the National Flood Insurance Program.
- Maintaining a FEMA approved Local Hazard Mitigation Plan (LHMP). Monkton has a current LHMP. The next plan needs to be approved by FEMA and updated every 5 years.

STEWARDSHIP

Map 22 Wetlands

The Lewis Creek Association (LCA), formed in 1990, and others, which protects, maintains and restores the ecological health of Lewis Creek, is monitoring the waters of Lewis Creek and Pond Brook in Monkton. Pond Brook flows into Lewis Creek. LCA is also conducting a study, funded by the Agency of Natural Resource, to identify water quality improvement opportunities with interested landowners in the Pond Book watershed. LCA works on river corridor conservation agrees with interested riparian landowners on Lewis Creek and Pond Book.

Air Quality Resources

GOALS

1. Identify, protect and improve the quality of air in Monkton.

POLICIES

1. Support the development of bicycle, equestrian, and walking paths in and through town to allow for alternative transportation.
2. Encourage forestland conservation and tree planting to improve air quality.

RECOMMENDED ACTIONS

1. Work with other Addison County towns to encourage the development of an air quality-monitoring program for the county.
2. Work with surrounding towns to develop park-and-ride areas in the north-south corridors of travel.

AIR QUALITY DISCUSSION

Given the rural nature of Monkton, issues regarding air quality are seldom expected. However, increases in traffic over the last 10 years will impact air quality. The State of Vermont has two air quality-monitoring stations in Chittenden County, one station in Rutland County and one in Bennington County. Addison County has no air quality monitoring station, providing no baseline data to determine how increases in vehicular traffic have impacted air quality.

Challenges to air quality in Monkton include illegal burning of trash and motor vehicle emissions as traffic on Monkton roads continues to increase. Monkton can encourage public transportation, bicycle, horse and foot traffic in town by developing infrastructure for these alternative forms of transportation. Forested areas play a key role in the maintenance of air quality in the Town and region.

Zoning regulations in place have use-restrictions that support maintaining clean air. Quality of air issues will continue to be among those factors considered during any subdivision or Conditional Use Application.

Scenic Resources

GOALS

1. Identify and conserve Monkton's prominent natural and cultural features.
2. Maintain Monkton's existing agricultural, forested landscape.
3. Minimize the impact of development in areas of high scenic or historical value.
4. Preserve the nighttime ambiance and aesthetic qualities of the village and rural landscape.

POLICIES

(See also Land Use, Transportation and Energy Chapter policies and recommended actions as they relate to scenic resources)

1. Commercial activities are encouraged to located within the existing town centers.
2. Support the development of alternative and conventional energy sources shall minimize adverse impacts to Monkton's scenic resources as Identified in the 2016 ***Monkton Scenic Viewshed Study***
3. Developers are required to minimize light pollution to night skies in all lighting plans.
4. Communication equipment should be located only on existing poles and towers.
5. Utility poles and lines shall be placed in areas lower than the principal view, or lines be buried.
6. Landscape plantings are required to shield properties from visual impact of any new utility lines.
7. Any new outdoor lighting policies should follow guidelines provided in: *The Outdoor Lighting Manual for Vermont Municipalities*

RECOMMENDED ACTIONS

1. Revisit Monkton's 2016 Scenic Viewshed Study to determine what, if any recommendations should be incorporated into regulatory and/or non-regulatory planning policies.
2. Require lighting that minimizes light pollution in all new construction and new installed lighting.

SCENIC RESOURCES DISCUSSION

In preserving scenic resources, The Vermont Agency of Natural Resources publication: *Vermont's Scenic Landscapes: A Guide for Growth and Protection,* recommends following these steps: 1) Describe the resource, 2) Identify the sensitivities, and 3) Prescribe the protections as a clear community standard. Scenic landscapes can include a village region, working landscape, public corridors or distant views.

Unique or prominent landscapes areas that are generally accepted as having scenic significance and thus, should be address in a public process include:

1. Shore lands immediate to public ponds, rivers or streams;
2. Areas immediately adjacent to scenic corridors;
3. Tree lined gravel roads.
4. Prominent ridgelines, mountain tops, or excessively steep slopes that can be readily seen from public corridors;
5. Exceptional agricultural and historic areas, recognized as outstanding resource values;
6. Areas within or immediately adjacent to significant natural areas; and
7. Areas of high scenic quality, which are publicly recognized as exceptional.

For a full discussion on Monkton's scenic viewsheds, a copy of the 2016 *Monkton Scenic Viewshed Study* can be found on Monkton's website, can be obtained at the Monkton Town Office or ACRPC.

LAND USE

See also the natural resource, transportation and energy policies of this Town Plan concurrently with this land use plan.

GOALS

1. Restore historic land use patterns of denser village regions and hamlets surrounded by agricultural lands and open space.
2. Guide growth which protects our natural, agricultural and scenic resources.
3. Prioritize an active, safe and accessible civic center.
4. Provide a diversity of more affordable housing options fitting within their site context.
5. Encourage growth which builds capacity for alternatives to single occupancy vehicle, including walking, cycling and public transit.
6. Maintain continuity of our upland forest blocks and connecting habitat corridors
7. Respect the right to farm.
8. Encourage a sense of place and civic identity for a diverse population, youth to senior citizens.

POLICIES

1. Encourage development to align with 'smart growth' principles and Vermont State Planning Goals which encourages intensive residential development primarily in civic centers.
2. Prioritize development proposals which provide opportunities for safe walking and cycling to and from amenities and services.
3. Prioritize development which allows for on-site stormwater management.
4. Development is restricted in Monkton's forestland and wetlands and prohibited in ridgelines and in those areas identified by the state as State Natural Heritage Sites and shown on the ***Important Resources and Habitat Map*** of this plan.
5. Discourage commercial strip development and large, big box store development which threatens the integrity of Monkton's unique identity.
6. Support the development of affordable and diverse housing options fitting within their site context.
7. Support appropriately located commercial and/or light industrial growth which benefits the local economy without compromising social and/or environmental resources and values.
8. Support the preservation of agricultural land and programs that encourage agricultural lands be kept for future generations.
9. Support and encourage the use of Agricultural Best Management Practices and Required Agricultural Practices.
10. Encourage the use of PUD's, and other planning tools, to minimize fragmentation of agricultural lands and natural areas.
11. Encourage buildings and siting of buildings consistent with the surrounding neighborhood.
12. Require development in any overlay district to meet the associated standards of that district, as stated in this Land Use section.

RECOMMENDED ACTIONS

1. Apply for the Village Regions Designation program.
2. Review and revise Land Use Planning Map to clearly define our conservation areas, including wetlands, forested lands and ridge lines as unique planning areas currently housed in one 'rural residential' planning area in order to minimize the future fragmentation of these resources and clearly guide future zoning regulations.
3. Consider specific design standards for PUD and/or commercial developments.
4. Better understand opportunities and restrictions for transportation linkages, including cycling and pedestrian opportunities, between the 'Boro' and the 'Village District' both on and off-street.
5. Identify growth areas appropriate for emerging commercial and light industrial uses.
6. Educate citizens and Town officials to the availability of digital resources for Monkton Zoning and Overlay Districts.
7. Review zoning district regulations and appropriate areas for design standards.
8. Propose a Ground Water Overlay District within Monkton's zoning regulations.
9. Identify and manage forest land for both wildlife habitat and as a local economic/forestry resource.
10. Consider impact fees for major subdivisions.
11. Assist on-going collaboration and periodic work sessions between the planning commission, the DRB, and the zoning administrator in order to bring efficiency and understanding to our shared planning process.

WHAT IS A LAND USE PLAN?

A land use plan guides discussion on future growth and development based on the understanding of the land base, historic and current land use patterns, the unique characteristics of land, including topography and floodplains, and on identified values and priorities of Monkton residents. The Land Use Plan provides the information necessary to create distinguished zoning districts within Monkton's Unified Zoning Bylaws. It is not in itself a regulatory tool, but is used in regulatory proceedings, such as Act 250 and Section 248 hearings.

MANAGING GROWTH

Policies and recommended actions within this Land Use Plan create a framework for growth which seeks to preserve the things residents most love and value in Monkton. These include protecting wildlife areas, contiguous forest, agricultural lands, groundwater recharge areas, environmentally sensitive areas such as wetlands and civic, cultural and/or historic features and amenities.

In order to avoid a suburban landscape throughout the municipality, growth is encouraged first and foremost in the Village Planning Area, with discussion increasingly focused on safer, walk-able/bikeable access to civic services and amenities. Re-routing and/or slowing traffic on Monkton Road and Silver Street is part of this conversation.

Residential development outside of the village district is encouraged to follow cluster development and

PUD (Planned Unit Development) techniques outlined in the zoning bylaws in order to preserve contiguous meadow and forest land. The use of master plans, the identification of wildlife corridors and riparian buffer areas, partnering with land trusts and other sustainable land use strategies are encouraged.

Future zoning regulations may offer incentives to encourage this kind of land use decisions. Examples of incentives could include density bonuses to encourage maintaining as much open and wooded land as possible and/or to provide affordable housing within PUDS, also known as inclusionary zoning.

Monkton residents participate in the May 2018 Pizza and Planning Event at the Fire Station.

PUBLIC PARTICIPATION IN LAND USE PLANNING
Residents of Monkton are an essential voice in town planning. With every town plan and land use plan update Monkton residents are asked to join the conversation. Community surveys and Open House events have asked residents to weigh in on topics such as rezoning, commercial development, scenic amenities, and energy infrastructure to name a few. Surveys at the 2018 Open House focused on local transportation options, solar and wind energy siting, village center planning and forest fragmentation.

VILLAGE-RESIDENTIAL PLANNING REGION

CHARACTER
The *village-residential planning region* encompasses the two traditional settlement areas of Monkton Ridge and Monkton Boro and the areas between them on the perimeter of Cedar Lake (Monkton Pond).

This area houses the traditional compact neighborhoods historic to Monkton, while capturing the vibrant community center of the Monkton Central School and Morse Park. Besides the school, this planning region includes commercial and civic amenities and services, such as the town hall and general store. It has denser residential development patterns than other areas of town. Monkton Pond is included in this region, although protected from further shoreline development by an overlay district distinction within the zoning bylaws.

This area is challenged by serving as a rural commuter route to points north and south of Monkton. Both Monkton Road, Bristol Road and Silver Street see high numbers of daily vehicles and high speeds which are non-conducive to a safe pedestrian environment.

FUTURE USE AND PURPOSE

Create transportation networks which include sidewalks, pedestrian and cycling paths, retrofitting of roads to include traffic calming techniques, striped shoulders and slowed traffic speeds appropriate for denser residential and civic activity.

Attract a diversity of activities that could include commercial, recreational, municipal and educational as well as residential.

Create a gradual increase in the housing density and affordability with the inclusion of multifamily units, PUD's (clustered housing with associated pathways and natural areas), and smaller homes/lots appropriate for down-sizing, seniors, young families and/or first-time buyers.

RURAL RESIDENTIAL PLANNING REGION

CHARACTER

The rural-residential planning area currently encompasses all land outside of the Village Residential Region. This region houses medium and low-density residential areas, clustered and scattered housing, and all of Monkton's agricultural, forest and other open space land. The Hogback range is a prominent natural feature in this region. The rise and fall of the surrounding landscape provides many broad views to valley farmlands. Foreground views include old orchards, wetlands, agricultural crops and livestock, historic cemeteries, old sugar maple stands and other quintessential Vermont backdrops.

FUTURE USE AND PURPOSE

A re-occurring topic for discussion for this area is how to guide new development within this region which will have the least impact on Monkton's rural character and natural resources and support a clear distinction in housing density between the village regions and the surrounding landscape. Below are uses and planning techniques which support this endeavor:

- Energy efficient residential development which clusters development and capitalizes on existing driveways, roads and utilities, and does not further fragment surrounding forestlands and agricultural resources.
- Residential growth, which is sited to minimize disruption of broad, public viewsheds.

- Solar and wind utilities sited in clear correlation to existing structures (or on rooftops for solar).
- Farmland and agricultural businesses which support healthy, contiguous, natural resources, including wetlands and other water resources.
- Local forestry businesses which support healthy, contiguous natural resources, including wetlands and other water resources.
- Outdoor recreation infrastructure which supports healthy, contiguous natural resources, including wetlands and other water resources.
- Protected wildlife areas.
- Protection of groundwater recharge areas.

Planning efforts should include understanding advances in septic technology and alternative septic systems in relation to existing soil conditions and current zoning. New technology allows for less restriction on where development can occur. It is in Monkton's best interest to understand how these fit in with the current zoning and land use goals and whether regulations should be adjusted to reflect this technology.

Monkton Pond serves as a unique focal point for the community. In order to preserve this area for the future an overlay district has been created to preserve the existing scenic and ecological characteristics of the Pond and surrounding residences.

SCENIC VIEWS

Critical to the unique rural character of Monkton is the preservation of our prominent scenic views, including views of our undeveloped ridgelines. This does not refer to any individual's right to a preferred view, but view sheds that are public landmarks and provide Monkton with a distinct familiarity. In 2016, the *Monkton Scenic Viewshed Study* was completed to identify Monkton's prominent natural and cultural features as seen and experienced from our public roads. This document does not have associated land use policy but is used in planning discussions as another way to identify places that have value to our community.

ZONING DISTRICTS

Within the above-mentioned *planning regions,* five underlining *zoning districts* have been identified. *(Please also refer to Monkton's Unified Planning Document):*

- High Density Village District
- Rural Agriculture Village District
- Medium Density Rural Agricultural District
- Low Density Rural Agricultural District
- Conservation, Prohibited (Forest and Wetland)

The five zoning districts in Monkton regulate the degree of density and the type of growth allowed based on the characteristics of these identified areas. Zoning districts are identified based on natural features of

the land (topography, elevation, slope etc.), distance and proximity to the historically denser center(s), important natural features, open space, existing road network etc.

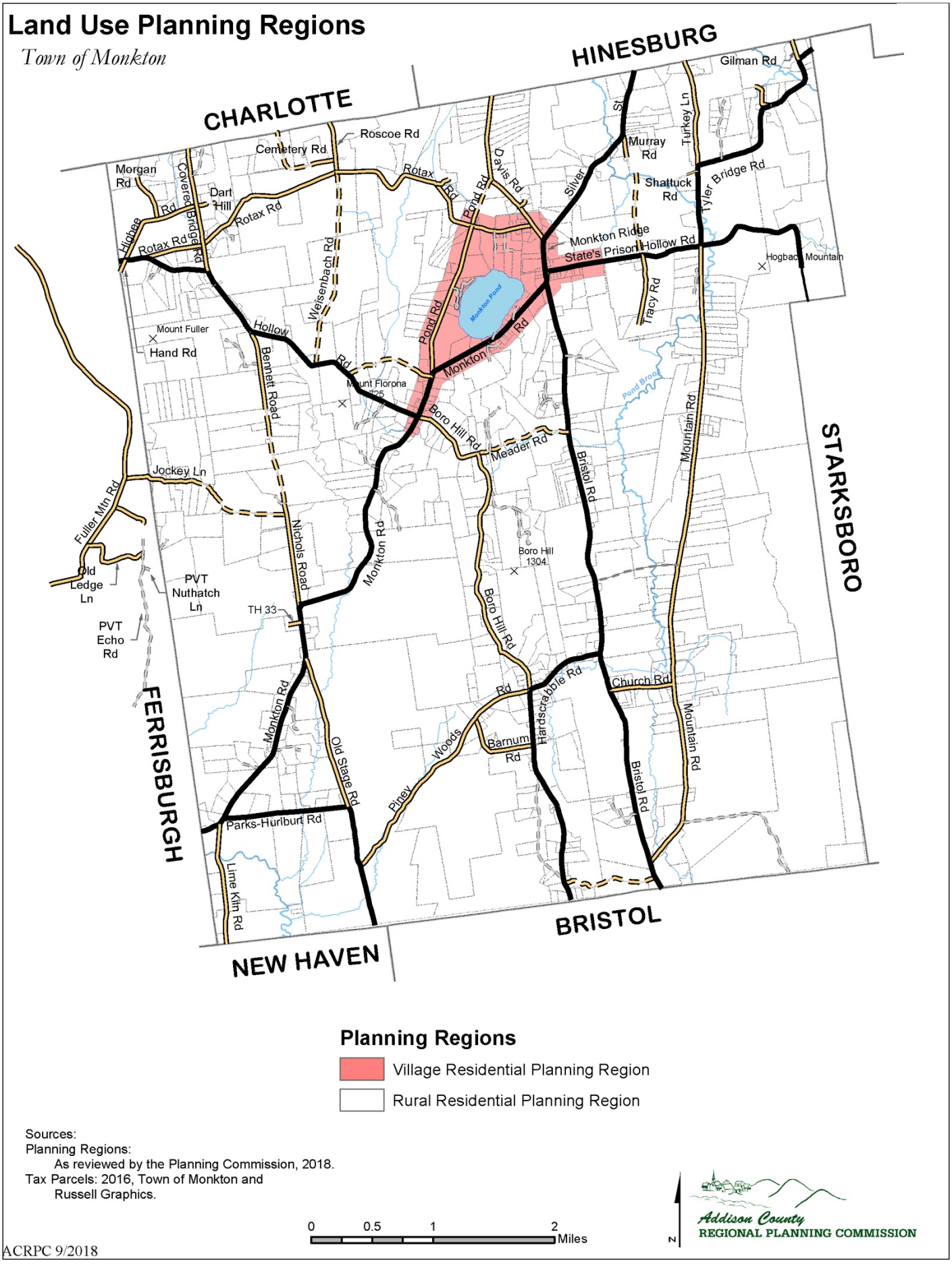
Monkton's conservation-prohibited districts, as outlined in the zoning regulations, allows limited development based on the importance of these areas for wildlife habitat, natural flood and erosion mitigation and/or scenic qualities. Potential uses for land in these areas are limited to agriculture, forestry, outdoor recreation such as walking or hiking trails, or wildlife refuge. Conservation-prohibited districts in Monkton include forest lands and wetland areas. See map for specific areas. The Ridgeline Overlay District prohibits any development due to the environmental and visual impact development would have on these prominent natural features.

OVERLAY DISTRICTS

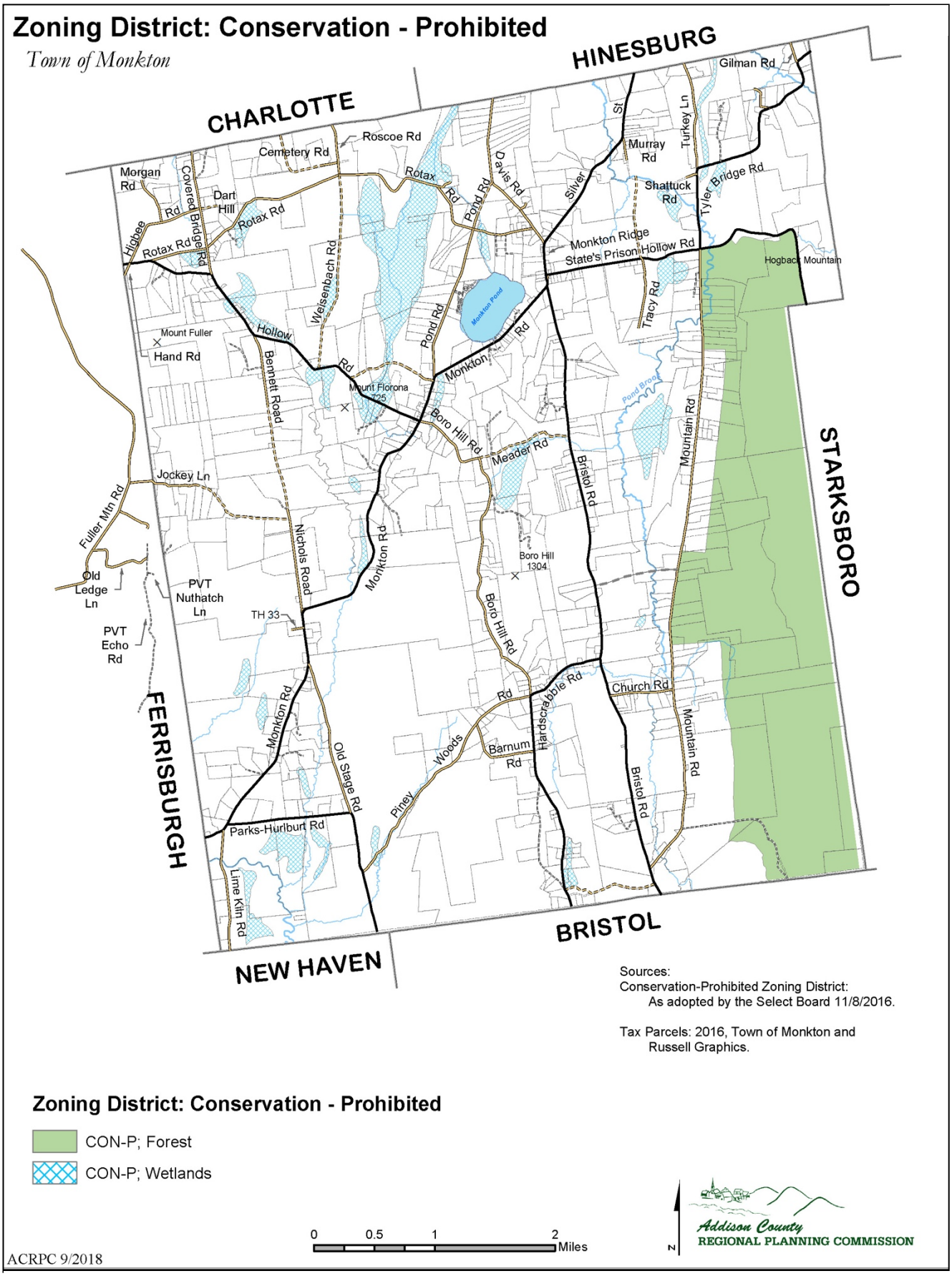
Overlay districts are used as additional regulatory measures, superimposed on existing zoning in order to protect specific characteristics of that land. Monkton's land use regulations include four overlay districts:

- Monkton Pond Overlay District
- Natural Heritage Protection Overlay District
- Ridgeline Overlay District
- Flood Hazard Overlay District

Monkton Pond. Photo credit: Ivor Hughes



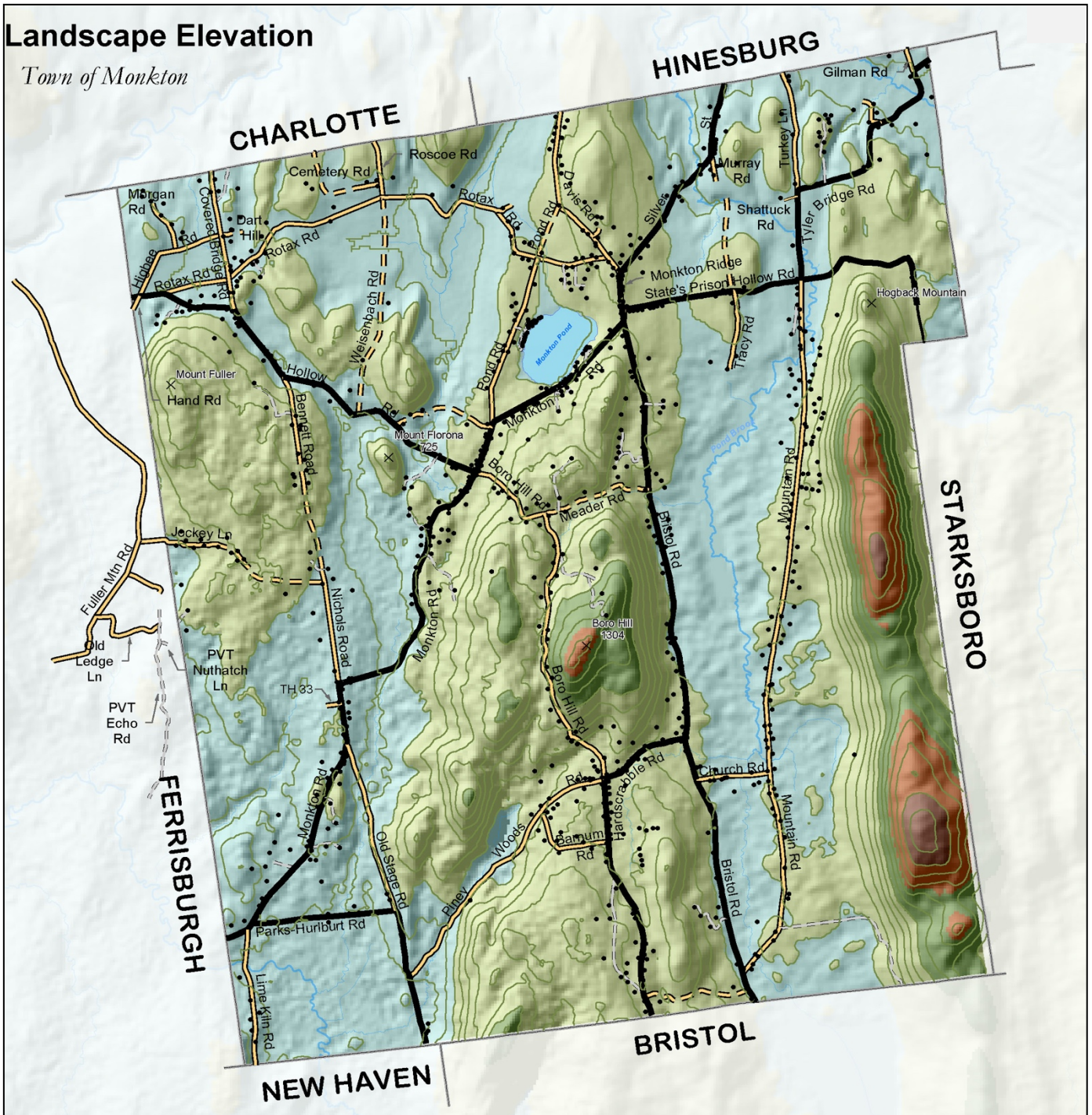
Map 23 Land Use Planning Regions



Map 24 Zoning Conservation / Prohibited

Landscape Elevation

Town of Monkton



● Residential Structures (2018)

— 100 Foot Contours

Elevation in feet

500 ft or less	1,251 - 1,500
501 - 1,000	1,501 - 2,000
1,001 - 1,250	2,001 - 2,500
	2,501 ft or more

Sources:

Elevation Classes: Generated from USGS Digital Elevation Model, 7.5 Minute Quad.

0 0.5 1 2 Miles

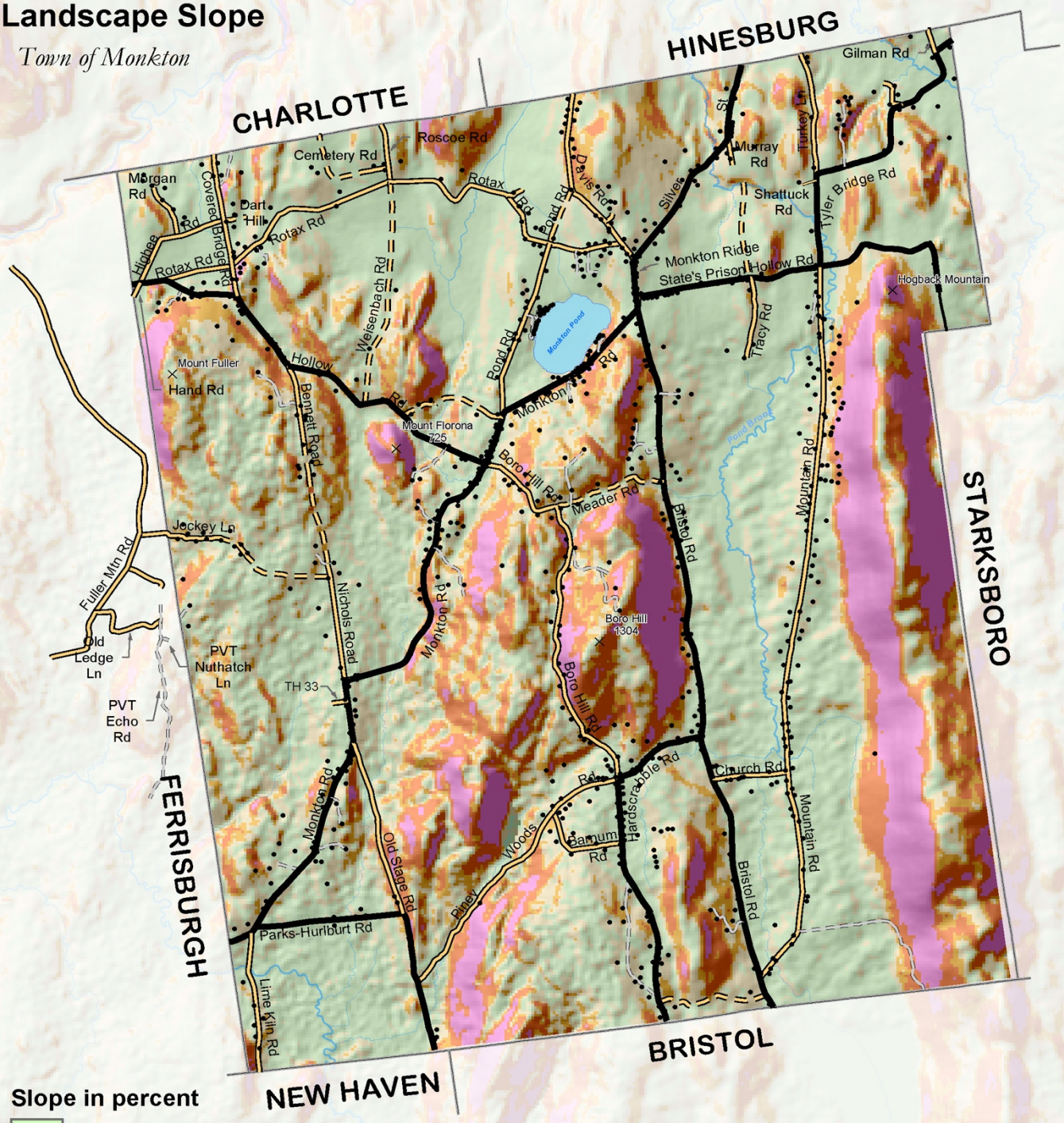
N

Addison County REGIONAL PLANNING COMMISSION

ACRPC 9/2018

Landscape Slope

Town of Monkton



Slope in percent

- 0% - 8%
- 9% - 15%
- 16% - 20%
- 21% - 30%
- Over 30 %

Sources:

Slope Classes: Generated from USGS Digital Elevation Model, 7.5 Minute Quad.

0 0.5 1 2 Miles

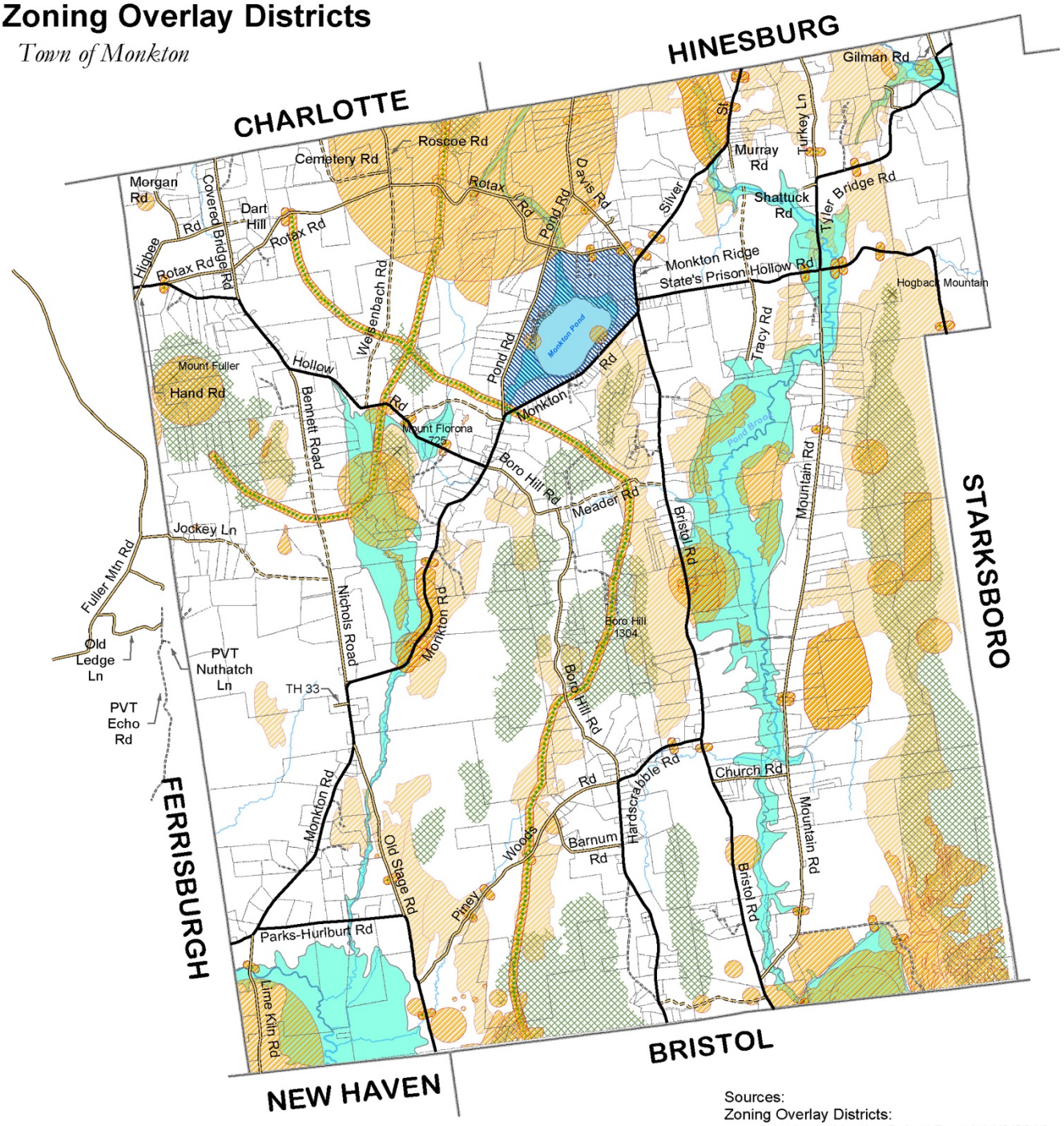
N

Addison County REGIONAL PLANNING COMMISSION

ACRPC 9/2018

Zoning Overlay Districts

Town of Monkton



Zoning Overlay Districts

- (POND) Monkton Pond Overlay
- (NAT) Fragile or endangered plant and wildlife communities, and critical transit corridors
- (RLA) Ridgeline Overlay District
- (FLHD) Floodplain Hazard Overlay District

Sources:
Zoning Overlay Districts:
As adopted by the Select Board 11/8/2016.
Tax Parcels: 2016, Town of Monkton and Russell Graphics.

Natural Heritage includes:
State Natural Heritage sites; Deer Wintering, White Cedar Community, Wood Turtle Habitat, Amphibian Migration Area and property within 150 feet of Bobcat Corridors or identified animal crossing sites

0 0.5 1 2 Miles

N

Addison County
REGIONAL PLANNING COMMISSION

ACRPC 9/2018

PLAN IMPLEMENTATION

This section provides a road map for the Monkton Planning Commission, prioritizing planning tasks based on goals and recommendations within the plan. The order of priority considers timing of projects with con-current and relevant activities occurring in Town, and concerns that have been raised by Town staff and residents of Monkton.

YEAR 1 TASK LIST (2020-2021)

Action 1: Work to develop planning and zoning that supports affordable housing for families and seniors.
Who: Planning Commission
How: Develop housing policies in our zoning regulations that encourage a diversity of housing types, including affordable options for young families and seniors.
Why: To keep Monkton affordable and to have multigenerational population of residents.

Action 2: Develop land use zoning regulations to prevent forest fragmentation and parcelization.
Who: Planning Commission
How: Zoning and subdivision regulation.
Why: Parcelization, the breaking of contiguous forestland blocks into smaller and smaller units, causes the loss of habitat through fragmentation, negatively impacts wildlife diversity, disrupts the movement, migration and behavior of wildlife, introduces exotic invasive species, and can degrade water quality.

Action 3: Develop a ground water recharge protection overlay district.
Who: Planning Commission
How: Zoning and subdivision regulation.
Why: Water is one of, if not the single most, valuable natural resource within the town. Everyone has a well. All possible steps should be taken to maintain the health and safety of water supplies in Monkton and ensure that no development is allowed that will degrade it.

Action 4: Revise regulations to require the use of best water conservation practices in all new construction to minimize its impact on groundwater and update bylaws using current recommended language to protect river corridors, and help manage streams and rivers toward naturally stable, least erosive conditions.
Who: Planning Commission
How: Zoning and subdivision regulation.
Why: To promote flood resiliency and protect property in Monkton.

Action 5: Revisit Monkton's 2016 Scenic Viewshed Study to determine what, if any recommendations should be incorporated into regulatory and/or non-regulatory planning policies.
Who: Planning Commission
How: Zoning and subdivision regulation.
Why: Scenic value of our landscape provide Monkton's quality of live and support our rural economy.

<u>Action 6:</u> Review and revise the Land Use Planning Map to clearly define our conservation areas, including wetlands, forested lands and ridge lines as unique planning areas that are currently based in one rural residential planning area.
Who: Planning Commission
How: Zoning and subdivision regulation.
Why: To minimize the future fragmentation of these resources and clearly guide future zoning regulations.

<u>Action 7</u>: Examine Planned Unit Developments (PUD's) and determine best practices. Consider specific design standards for PUD's or commercial Developments.
Who: Planning Commission
How: Zoning and subdivision regulation.
Why: PUDs are a major tool for regulation growth.

<u>Action 8</u>: Encourage the creation of Monkton's Town Forests
Who: Agriculture and Natural Areas Committee and Monkton Conservation Commission
How: Form a Town Forest Committee to:

- Define the town's priorities and guidelines for Town Forest land.
- Facilitate the process of establishing Town Forest land by working with landowners, agencies and other town committees.

Why: Town Forest improves residents' quality of life by providing opportunities for recreation, hunting, appreciation of the natural environment, and exercise for health and well-being.

YEARS 2-8 TASK LIST (2021-2028)

<u>Population:</u> *Also See Task 1 in Year 1 Tasks above.*
Survey the needs of the senior population of Monkton to identify the needs of the senior population and whether or not they are being met.

<u>Housing</u> *Also See Task 1 in Year 1 Tasks above.*
Offer educational seminars/workshops for homeowners regarding grants and programs supporting energy efficiency/weatherization, and best practices related to residential development and the protection of natural resources.

<u>Education and Childcare</u>
Survey families in Monkton to better understand daycare needs and offerings.

<u>Utilities and facilities</u>
1. Implement a capital budget and strategic planning for town facilities.
2. Survey the needs of telecommuters and other business owners in Monkton to learn about problems local regulations create and develop a welcoming climate for new businesses.

<u>Energy</u>
1. Research funding sources and support programs that would enable the town to retrofit/ install renewable energy systems for town buildings and the school.

2. Encourage energy conservation.

Transportation

1. Seek funds to create a Monkton cycling and pedestrian plan focused specifically on creating connections between Monkton Ridge and Monkton Boro for bikes, feet, horse riding, and other non-motorized opportunities.
2. Promote energy conservation, public transportation, and ride sharing programs.
3. Continue to work with Addison County Transportation Resources (ACTR) to create bus service to Monkton.
4. Work to implement the recommendation of Monkton's complete Streets document.
5. Partner with the Addison County Transportation Committee (the TAC) and neighboring towns to develop ways to redirect traffic back to route 116 and US Route 7.

Economy and Development

1. Survey the needs of telecommuters and other business owners in Monkton to learn about problems local regulations create and develop a welcoming climate for new businesses.
2. Work with ACTR to improve transportation options and ride sharing opportunities to employment centers such as Burlington and Middlebury.

Natural Resources *Also See Tasks 2 through 6 in Year 1 Tasks above.*

Soil and Mineral Resources

1. Work with NRCS and the Development Review Board to develop electronic tools and maps that identify primary agricultural soils and wetland soils to support their deliberations.
2. Conduct a detailed study to identify a source of sand and gravel for the Town of Monkton

Forestry Resources

1. Conduct a natural resource inventory to identify essential forested habitat blocks and linkages with emphasis on rare, threatened and endanger species.
2. Encourage the creation a town forest and recreational trail system that can serve education and recreation needs of town's people.
3. Develop data for wildlife corridors in town.

Agricultural Resources

Communicate with local agriculturally related committees to understand needs and concerns for growing markets.

Water Resources

1. Meet with ACRPC to discuss the implementation of bylaws to protect river corridors, in order to qualify for the 17.5percent rate of reimbursement from Emergency Relief and Assistance Fund (ERAF).
2. Develop a monitoring program for Monkton's surface waters.
3.Work with the Vermont Health Department to educate Monkton residents on the value of testing well water and create incentives where possible.

Air Quality

Develop bicycle, horse, and walking paths in and throughout town to allow for alternative

transportation.

Scenic Resources
Review regulations for new lightening and lighting in new construction top reserve the nighttime ambiance and aesthetic qualities of the village and rural landscape.

Land Use *Also See Tasks 2,3,6 and 7 in Year 1 Tasks above.*
Apply for village regions designation.
Better understand opportunities and restrictions for transportation linkages between Monkton ridge and Monkton Boro.

COMPATABILITY

GOALS AND RECOMMENDED ACTIONS

Our plan will:
Look to our surrounding towns as planning collaborators and stewards of our shared natural resources.

We will do this by:

1. Working with adjoining towns to develop transportation strategies that minimize traffic, air, water and noise pollution, which are energy efficient, appealing and serviceable for the region's people.
2. Improving communication and coordination with adjoining municipalities regarding land use and planning for future growth.
3. Working with adjoining towns to develop wildlife corridors that maintain and enhance wildlife habitat, and which preserve wildlife migration routes.
4. Working with adjoining towns to develop recreational corridors for enjoyment of the regions agricultural and forested landscape.
5. Collaborate with the neighboring towns to expand recreational opportunities for Monkton's residents.
6. Work with neighboring towns, organizations and state agencies to develop sustainable energy resources in the region and coordinate energy planning initiatives.

The following describes adjacent land uses of Monkton's neighboring towns. To the best of our knowledge, there are no major land use conflicts between Monkton and a neighboring town. There are many shared natural resources and roads.

Charlotte shares Covered Bridge Road, Roscoe Road and Raven Ridge. Bordering land is rural, agricultural and/or conservation land.

Hinesburg shares Turkey Lane, Silver Street, Baldwin Road, the Velco Easement and Raven Ridge. Bordering land is zoned Agricultural.

Starksboro shares Hogback Mountain and the Northern reaches of Lewis Creek. Land is zoned agricultural, rural, scenic-residential.

Bristol shares Pond Brook, an outlet of Bristol Pond (Lake Winona). It also shares Monkton Road, Hardscrabble Road and Hogback Mountain. Land is zoned low-density rural, agricultural and/or conservation district.

New Haven shares Lime Kiln Road and North Street and also a section of the Orb Weaver Farm property. It is zoned rural agricultural, and partly a flood hazard district.

Ferrisburgh shares Hollow Road, Fuller Mountain Road, Jockey Lane and Vergennes Road. It is predominately a rural-agricultural and conservation area.

APPENDIX A ENHANCED ENERGY PLAN

The Town of Monkton Enhanced Energy Plan is included on the following pages as a standalone document to allow its submission to various State agencies.

TOWN OF MONKTON

ENHANCED ENERGY PLAN

Date Edited 9/5/2023

PLANNING COMMISSION HEARING:	10/17/2023
ADOPTED BY PLANNING COMMISSION:	10/17/2023
SELECTBOARD HEARING:	xx/xx/20xx
ADOPTED BY SELECTBOARD:	
APPROVED BY TOWN VOTE:	

Table of Contents

SECTION I. INTRODUCTION

Importance of Enhanced Energy Planning

Energy is a major household and business cost to Monkton residents. It is relied on for heating, cooking, water pumping, sewage management, appliances and transportation. Reducing its cost and improving its efficient use is in everyone's best interest. However, our current energy sources of heating oil, propane, gasoline and diesel oil are not unlimited as well as being a major source of pollution and greenhouse gas emissions, which is now taking its toll on our climate conditions.

The State of Vermont has therefore addressed these issues with its "2016 Comprehensive Energy Plan" (CEP) and encourages each town to participate in the goals and objectives of the plan by supporting it through their own Regional and Town Plan. A major thrust of the CEP is to gradually wean us off fossil and non-renewable energy sources and move to renewable sources. The Vermont State goal is to have 90% of all energy used in Vermont to be sourced by renewable energy by 2050. The Town showed their support for the CEP by passing Article 9 at the 2018 Town Meeting. Also, Article 8 at the 2019 Town Meeting recommending the Select Board consider the viability of setting up a Town Energy Fund that will be used to support the CEP objectives. This of course brings its own set of challenges to which this plan lays out pathways towards achieving.

Through the work of the Monkton Energy Committee, various town surveys and the Energy Open House, Monkton residents have shown significant support towards moving towards renewable energy sources, which is borne out by the steady growth in the installation of residential solar, heat pumps, pellet stoves and electric and hybrid vehicles. Surveys of Monkton residents have also shown that they value the rural nature, natural beauty and history of the town. We therefore realize the importance of protecting our environment and to cherish and protect these resources for the future as we move towards renewable energy sources.

Monkton is and will continue to be very pro-active in the process of the State energy goals, as outlined in the 2016 Comprehensive Energy Plan, by continuing to enhance opportunities to create renewable energy sites, construction which encourages green development, promote transportation opportunities for carpooling and innovative vehicles, and availability to educate our residents in energy conservation. 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, alternative transportation 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 Monkton, thereby improving the quality of life for its residents. Furthermore, these energy goals will reduce Monkton'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 estimated energy cost in Monkton including residential and municipal (for heating, and transportation) is estimated to be in excess of $4.5 million per year and for electricity in excess of $1.3 million per year (see Energy Costs & Expenditures section below for a break-down of this figure). Because a large majority of this energy is imported from outside the town and Addison 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 as well as 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. Any efforts to reduce the use of non-renewable energy and shift to more environmentally-sound energy sources will benefit the town's environment. The recommendations in this plan become increasingly important in light of the 2018 report by the *Intergovernmental Panel on Climate Change* (IPCC). This report, based on established scientific facts, spells out the dire consequences of global warming and highlights the importance of locally adopted solutions for limiting fossil fuel use and its infrastructure expansion.

While Monkton 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 Monkton local actions for increasing our energy efficiency and promoting renewable energy generation, and overall pathways to become more resilient. A plan which meets the State's requirements (Act 174) has more standing in the new energy generation development permitting process which includes the siting of these developments.

This Enhanced Energy Plan combines energy and land use planning while looking to meet the State goal of 90% renewable energy by 2050.
Key sections of the plans are:

- Analysis on current energy use and projections and targets of future use
- Identifying pathways and policies to achieve the goals
- Supporting maps which analyze renewable resource availability

Local Consideration – MONKTON ENERGY FUND
To reach state and local renewable energy goals, the Monkton Energy Committee suggests creating a TOWN ENERGY FUND. This fund could provide funding to residents to incentivize energy conservation, efficiency and/or renewable energy efforts for municipal, residential, and local business properties.

MEETING VERMONT STATE ENERGY GOALS

This Enhanced Energy Plan includes the required analysis, target data, goals, policies, implementation actions, and associated mapping required to meet the municipal determination standards for enhanced energy planning enabled in 24 V.S.A. 4352. The purpose of enhanced energy planning is to further regional and state energy goals, including the goal of having 90 percent of the energy used in Vermont obtained through renewable sources by 2050 "90 x 50" and the following:

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

A positive determination of compliance with the requirements of enhanced energy planning, as provided by the Regional Planning Commission, will enable Monkton to achieve "substantial deference"[1] instead of "due consideration" in Section 248 applications for energy generation facilities (i.e. wind facilities, solar facilities, hydro facilities, etc.) under Criterion (b)(1)-Orderly Development.

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

A. An analysis of current energy resources, needs, scarcities, costs, and problems.
B. Targets for future energy use and generation.
C. "Pathways," or implementation actions, to help the municipality achieve the established targets.
D. Mapping to help guide the conversation about the siting of renewables.

ENERGY PLAN ASSUMPTIONS

- Energy may not be abundant or cheap in the future;
- The full social, environmental, and economic costs of energy are not reflected in present market prices;
- The public interest is served by conserving energy, reducing consumption of nonrenewable energy and shifting reliance to renewable energy; and,
- Each town must play a role in shaping and implementing policies and actions that promote wise energy use.

TOPICS COVERED

The following topics are covered in this energy plan:

- SECTION II: THERMAL USE
- SECTION III: TRANSPORTATION USE
- SECTION IV: ELECTRICAL USE
- SECTION V: LAND USE, GENERATION AND TRANSMISSION
- SECTION VI: COMMUNITY STANDARDS FOR SITING and DECOMMISSIONING

Section II through V have the following three sub-sections:

1. **USE ANALYSIS:** The first sub-section, entitled, "Use Analysis" will analyze current usage data in Monkton for each of the four energy sectors. It includes charts of usage and a discussion concerning the usage data.

2. **FUTURE TARGETS**: In 2016, Addison County Regional Planning Commission worked with the Vermont Energy Investment Corporation (VEIC) and the Vermont Department of Public Service ("PSD") to develop

[1] According to the Public Utility Commission, substantial deference means *to give significant and meaningful weight* to the land conservation measures in the plans of the affected municipalities and the recommendations of the municipal legislative bodies and the municipal and regional planning commissions regarding the municipal and regional plans, respectively.

regional targets for future energy use and generation. The intent of these targets is to meet the State of Vermont's 90 x 50 goal. The targets represent one scenario of what meeting this goal may look like. However, there are numerous different ways for Vermont to achieve the 90 x 50 goal.

The Target Scenarios represent approaches that appear reasonable given current technology and probable technological advance from present to mid-century. For more information about the regional targets, please see the Addison County Regional Energy Plan (www.acrpc.com).

3. **PATHWAYS TO IMPLEMENTATION**: The third sub-section, entitled "Pathways to Implementation" provides goals, policies and recommended actions to implement the plan.

Section VI, Community Standards for Siting and Decommissioning:
This section provides specifics on Monkton's energy generation siting, decommissioning and site restoration standards. It also provides project size definitions for residential and commercial energy generation developments. In association with the set of maps within this energy plan, 'preferred', 'poor', 'good' and 'prohibited' sites for energy generation are identified within this section.

Local Considerations
Throughout the plan there are tables and discussions labeled 'Local Considerations'. These provide additional data, analysis, information or discussion that are not necessarily highlighted or clarified within state and regional level analysis.

THERMAL USE ANALYSIS

Home heating makes up a significant amount of Monkton's residential energy demand due to Vermont's cold climate. An estimate of current residential thermal energy demand in Monkton, based on data from the American Community Survey (2011-2015), is shown in Table 1. The data shows that the majority of residences in Monkton heat their homes with oil, and to a lesser degree with wood and propane. Other renewable sources for heating homes, but for which data is currently unavailable, include wood pellets, wood chips and efficient heat pumps. Residents with heat pumps have some advantage as they can be reversed in their operation to provide cooling air conditioning.

Energy Unit Conversion		
FUEL	**BTU**	**Measure**
Propane	91600	1 gallon
Electricity	3,413	1 KWh
Fuel Oil	140,000	1 gallon
Wood	24,000,000	1 Cord

Estimates for commercial and industrial thermal energy use are more difficult to calculate. An estimate of total commercial energy use (thermal and electricity) is provided in Table 2. and based on data from the Vermont Department of Labor (VT DOL) and the Vermont Department of Public Service (VT DPS).

Table 1. Municipal Current Residential Thermal Energy Use

Fuel Source	Monkton Hseholds (ACS 2011-2015)	Monkton % of Hseholds	Municipal Sq. Ft Heated	Monkton BTU (in Billions)	Number of Gallons	Number of Cords	Cost $
Natural Gas	0	0.0%	0	0	0	-	-
Propane	196	24.8%	380,710	23	251,000		$891,000 [a]
Electricity	3	0.4%	6,432	0			
Fuel Oil	382	48.4%	774,340	46	329,000		$920,000 [b]
Coal	0	0.0%	0	0			
Wood	195	24.7%	406,054	24	0	1000	$277,000 [c]
***Solar**	3	0.4%	6,432	0			
Other	10	1.3%	21,440	1			
No Fuel	0	0.0%	0	0			
Total	789	100.0%	1,595,408	96			$2,038,000

a. Propane@ $3.55/gal average. Source US Energy Information & Vermont DPS.
b. Fuel oil @ $2.80/gal average. Source US Energy Information & Vermont DPS.
c. Wood @ $227/cord average.

* Table 1 shows a low number of homes heating completely with solar electrical generation. This does not represent homes that include solar as an element of their heating system. The latter is listed below in Table 1a.

Table 1a. Local Considerations – RESIDENTIAL SOLAR ELECTRICAL GENERATION			
Residential Solar	**Sites**	**% of households**	**Total Generation (MWh/year)**
Ground-mounted PV	33	3.7%	655.3 MWh
Ground-mounted PV Trackers	13	1.6%	167.3 MWh
Roof-mounted PV	63	6.7%	408.3 MWh
Hot water solar heater	14	1.9%	109.6 MWh
TOTALS	**123**	**14% approx.**	**TOTAL: 1,340.3 MWh/year**

Table 2. Current Municipal Commercial Energy Demand (Billion BTUs)			
	Commercial Establishments in Municipality (VT DOL)	Estimated Thermal Energy BTUs per Commercial Establishment (in Billions) (VT Dept. of Public Service)	Estimated Thermal Energy BTUs by Commercial Establishments in Municipality (in Billions)
Municipal Commercial Energy Use	13	0.725	9.43

COST OF HEATING

RESIDENTIAL

Cost of heating homes is expensive in Vermont and is incentive enough to look for alternative, more affordable methods. Though heating with oil is still dominant, there is some trend toward wood heating. Propane has held steady for numerous years at approximately 25 percent usage. The 2015 Monkton Energy survey showed a move toward the use of wood pellets, especially as a replacement system for old oil systems. According to *Efficiency Vermont*, five percent of Monkton households now use heat pumps for heating and cooling. Overall, the town and state home heating usage are very different from the national picture where natural gas (48 percent) and electric (37 percent) dominate.

MUNICIPAL

In 2015, the Monkton Energy Committee created the following energy use data table (Table 3.) for municipal buildings. This gives a good base point in which to measure future success of energy use and efficiency for municipal buildings.

TABLE 3. Monkton Municipal Building Energy Use								
Monkton Municipal Energy Usage	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Building								
Monkton Town Hall (1859)								
Electric Cost	$1300	$1401	$1587	$1550	$1366	$1409	$1270	$1354
Total kWh	6882	7131					5668	
Heat Cost (Propane and Oil)	$2600	$2704	$3639	$4151	$2452	$1736	$2182	$3452
Town Garage (1987)								
Electric Cost	$1586	$1514	$1575	$1621	$1595	$1581	$1643	$1816
Total kWh	9690	8851					9184	
Heat Cost	$8050	$4961	$4863	$5648	$2990		$2988	$4091
Monkton Fire Station (1974 + addition)								
Electric Cost	$2661	$2812	$2901	$2758	$2786	$2610	$2913	$2567
Total kWh	17428	15722						
Heat Cost	$5236	$4121	$4232	$5109	$6073	$4180	$5962	$1519
Russell Memorial Library (1971)								
Electric Cost	$1091	$1069	$1188	$1335	$1220	$1086	$1089	$1249
Total kWh	5896	5727					5705	
Rec Field Open Pavilion (1986)								
Electric Cost	$1300	$234	$260	$273	$230	$241	$541	$462
Total kWh	77	58					81	
Town Electric Total:	$7,938	$7,029	$7,509	$7,535	$7,194	$6921	$7462	$7448
Town kWh Total:	39,973	37,489						
Town Heat Total:	$15,886	$11,788	$12,733	$14,906	$11,513	$8296	$10,706	$9062
Town Total:	**$23,824**	**$18,818**	**$20,243**	**$22,441**	**$18,708**	**$15217**	**$18,168**	**$16,510**
Monkton Central School								
Electric Cost	$26490	$26,265	$25,719	$25,633	$21,778	$21,567	$22,641	$23,000
Total kWh	186,880	182,160						
Heat Cost (Propane & Oil)	$26,305	$32,996	$32,095	$39,356	$26,180	$36,651	$15,576	$25,200
School Total:	**$52,795**	**$59,261**	**$57,814**	**$64,989**	**$47,958**	**$58,218**	**$38,217**	**$48,200**
Electric Totals	**$34,428**	**$33,294**	**$33,228**	**$33,168**	**$28,972**	**$28488**	**$30,103**	**$30,448**
Total kWh	**226,853**	**219,649**						
Heat Totals	**$42,191**	**$44,784**	**$44,828**	**$54,262**	**$37,693**	**$44,947**	**$26,282**	**$34,262**
All Totals:	**$76,619**	**$78,079**	**$78,057**	**$87,430**	**$66,666**	**$73435**	**$56,385**	**$64,710**
Total Annual Change		1.91%	-0.03%	12.01%	-23.75%	+10.15%	-23.22	+14,76

NATURAL GAS

Vermont Gas Systems (VGS) installed a major natural gas transmission pipeline through Monkton as a feeder to towns south of Monkton. A Memorandum of Understanding signed by the town and VGS has the option to install a limited gas distribution network that would service the Village District, making gas available to approximately 10 percent of Monkton households should they choose. Currently there is no date as to when or if this distribution system will be installed. However, if it is installed, a specific plan to phase out the use of natural gas from fossil fuel sources and replace it with natural gas from renewable sources, should be negotiated in order to meet State energy goals by 2050.

The safety and risks of natural gas must be reviewed[2] and clearly explained to Monkton residents in order to decide if benefits out-weigh risks. Monkton must also consider how using natural gas fits into our state and local goals of switching to renewable energy sources.

THERMAL TARGETS

Monkton understands the need for greater energy efficiency in residential, commercial and municipal buildings. In the past several years Monkton has begun to monitor and analyze municipal energy usage, participate in state energy efficiency programs such as Button-Up Day, education events for residential renewable energy development, and conducted a town-wide energy survey. The Monkton Energy Committee has spearheaded these efforts with the support of the Select Board and Town staff. Moving forward, the Town of Monkton will support efforts to improve energy efficiency and the integration of renewable energy sources among residents, businesses, and municipal buildings. Thermal targets for Monkton include increasing weatherization of homes, new, efficient wood heat systems, and switching to efficient heat pump systems. See tables below for ideal target numbers to meet the 90 X 50 State goal.

Table 4. Thermal Efficiency Targets	Implementation Year		
	2025	**2035**	**2045**
Residential Thermal Efficiency Targets			
***Residential - Increased Efficiency and Conservation (% of municipal households to be weatherized)**	2%**	9%	47%
Commercial Thermal Efficiency Targets			
Commercial - Increased Efficiency and Conservation (% of commercial establishments to be weatherized)	17%	18%	51%
Thermal Fuel Switching Targets (Residential and Commercial) - Wood Systems			
New Efficient Wood Heat Systems (in units)	1**	2**	27**
Thermal Fuel Switching Targets (Residential and Commercial) - Heat Pumps			
New Heat Pumps (in units)	82	196	388

[2] The construction safety standards that were agreed to in the Certificate of Public Good (CPG) for the Addison Natural Gas Project is being investigated before the PUC to determine if stated standards were met.

Local Considerations – Thermal Targets
** The thermal fuel switching targets provided by state and regional data show very low targets of new efficient wood heat systems for Monkton. The numbers are also very low for overall efficiency and conservation, at 2 percent increase by 2025 of weatherized homes. The 2018 Monkton Energy Committee believes these are areas where Monkton could reach well beyond this given number in 2025, 2035 and by 2050.

THERMAL PATHWAYS TO IMPLEMENTATION

GOALS

1. Reduce reliance on nonrenewable energy sources such as oil and gas, and shift reliance to renewable energy sources such as solar, heat pumps and/or wood pellets or cord wood.
2. Reduce emissions of greenhouse gases and substances that cause acid rain.
3. Reduce annual fuel needs and fuel costs for heating structures,
4. Foster the transition from non-renewable fuel sources to renewable fuel sources
5. Maximize the weatherization of residential households and commercial establishments.
6. Encourage new building structures to maximize passive solar potential.

POLICIES

1. Promote building practices that use energy efficient materials and heating systems, solar orientation, and encourage net zero energy buildings.
2. Encourage energy usage analysis in all residential, commercial, and municipal buildings through partnerships with local contractors and Efficiency Vermont.
3. Support the conversion of oil and propane heating to efficient wood heating or electric heat pump systems and other technologies.
4. Lead by example. Encourage efficiency and the use of alternative means for energy production such as geothermal and solar in town buildings, the school and residences.
5. Conserve forest land as a renewable energy resource, tempered by the responsible use of wood for biomass energy production.

RECOMMENDED ACTIONS

1. Review updates to efficiency and energy usage at Monkton Central School and work with Monkton Central School to provide energy conservation and efficiency education for students
2. Create incentives that promote energy efficiency in new and existing buildings

and track energy usage in municipal buildings using the EPA portfolio manager.

3. The Monkton Energy Committee (MEC) will coordinate with ACRPC and *Efficiency Vermont* and any other state and low-income weatherization programs to encourage Monkton residents to participate in weatherization programs.
4. The Zoning Administrator will promote the use of the residential and commercial building energy standards by distributing code information to permit applicants and by acting as a clearinghouse for new information as it comes along.
5. The Selectboard and MEC, to the extent necessary, will conduct an energy audit of municipal buildings to identify weatherization retrofits and incorporate the recommendations into the municipal capital budget.
6. The Selectboard and MEC will promote and provide information about the *GoVermont* website which provides information to citizens regarding ride share, vanpool, and park-and-ride options.
7. The MEC and Selectboard will explore the funding opportunities and implementation possibilities to upgrade the efficiencies in (1) all town buildings including the school, town hall, library, town garage, fire station, and town offices, and (2) private residences and farms.
8. The Planning Commission will look for other ways to encourage the use of renewable energy sources for heating, hot water, and other electrical demands.
9. The Selectboard will exert leadership on municipal, commercial and residential energy efficiency and use of renewable energy sources
10. As of the writing of this energy plan, Monkton has no natural gas service to any part of town. MEC would like to encourage renewable energy systems rather than incorporating natural gas, a system reliant on fossil gas.
11. Seek funding for energy audits and other energy analysis and testing of residential, commercial and municipal buildings.

TRANSPORTATION USE ANALYSIS

See the Transportation and Land Use Chapters of this plan for associated discussion.

Table 5. Current Municipal Transportation Energy Use	
Transportation Data	**Municipal Data**
Total # of Vehicles (ACS 2011-2015)	1,795
Average Miles per Vehicle (VTrans)	11,356
Total Miles Traveled	20,384,020
Realized MPG (2013 - VTrans 2015 Energy Profile)	18.6
Total Gallons Use per Year	1,095,915
Transportation BTUs (Billion)	132
Average Cost per Gallon of Gasoline (RPC)	2.50
Gasoline Cost per Year	$2,531,564

Local Considerations – Municipal Fuel Use
In 2017, Monkton's Highway Department used 419 gallons of non-diesel fuel for a total of $1,472. 16,875 gallons of diesel fuel was used, for a total of $63,640.

The Vermont Comprehensive Energy Plan aims to reduce single-occupancy vehicle commutes by 20 percent in 20 years. At this time, Monkton residents rely primarily on single occupancy vehicles for transportation and there are limited alternatives to this transportation model in Monkton.

TRANSPORTATION TARGETS

The targets below are state and regionally generated data and suggest there should be at least 158 electrical vehicles in Monkton by 2025, 1037 by 2035 and 2092 by 2050. Monkton recognizes that the Town currently has little ability to switch private use of gas cars to electric cars. This change will depend on market demand, availability and affordability of electric vehicles in the future. In the short-term, transportation goals, policies and actions will focus on increasing access to alternative mobility such as public transportation, car-pooling, safe cycling and walking, and stressing the need for new growth to occur closest to existing services and amenities.

Table5b. Fuel Switching Targets by Year			
Target	**2025**	**2035**	**2050**
Transportation Fuel Switching Target - Electric Vehicles			
Electric Vehicles	158	1073	2092
Transportation Fuel Switching Target - Biodiesel Vehicles			
Biodiesel Vehicles	34	59	84
NOTE: While not noted on the data in Table 5b., hybrid vehicles are a stepping stone toward a renewable energy transportation system. Hybrid vehicles are used throughout Vermont and more EV charging stations are being incorporated into the State's transportation network.			

TRANSPORTATION PATHWAYS TO IMPLEMENTATION

GOALS

1. Reduce emissions of greenhouse gases and substances that cause pollution by reducing single occupancy car trips.
2. Increase access to fuel efficient and carbon neutral multi modal transportation options.
3. Increase ridesharing.
4. Adoption of a higher MPG and or electric municipal vehicle fleet
5. Increase walkability and bike-ability (and acceptance of) within Monkton village regions

POLICIES

1. Support the expansion of public transportation and make it a priority to establish a bus route with a stop in Monkton.
2. Encourage walking and cycling within town with appropriate sidewalk and paths linking amenities and services.
3. Support regional efforts to increase access to safe every day walking and cycling within and across municipal borders.
4. Support state and regional public transportation programs serving Monkton.
5. Prioritize development proposals with driveway siting and design scenarios which support energy efficiency and access to public transit, park and ride, and safe walking and cycling opportunities.

RECOMMENDED ACTIONS

1. Advertise the Monkton *Park and Ride*.
2. MEC and Selectboard will work with ACTR and other service providers to understand ways in which service to Monkton could be improved.
3. Selectboard and Monkton Energy Committee plan for and install electric vehicle charging infrastructure on municipal property, or in other appropriate locations, to the extent funding is available.
4. Prioritize fuel-switching for municipal equipment and support alternative fuels for farm equipment and schools.
5. Road Commissioner will review municipal road standards and/or work with the *Regional Walk-Bike* to ensure that they reflect all "complete streets" principles applicable to our rural roads, including adding 'Shared Road' signs to roads frequented by those walking, cycling, running and/or horse riding.
6. Selectboard will nominate a Monkton representative to sit on the *Walk-Bike Council of Addison County* to foster safe and accessible opportunities for walking and cycling as an alternative to SOV.
7. Review subdivision street and driveway design standards to insure they are energy efficient and incorporate multimodal amenities.
8. Encourage conversations between the Planning Commission, Selectboard, and Road Commissioner to ensure mutual understanding of energy goals as they relate to road and street maintenance.

SECTION IV. ELECTRICAL USE

ELECTRICAL USE ANALYSIS

Green Mountain Power Corporation (GMP) currently provides the distribution of electric power in Monkton. According to the GMP website, "We make a serious effort to maintain the cleanest fuel mix possible, and are focused on low cost, low carbon, and reliability." The distribution of three phase and single phase power lines together with their circuit ratings is shown in in the map section.

In addition to local distribution lines, a high voltage transmission line, owned and maintained by Vermont Electric Company (VELCO), currently runs north to south through the town: there is no distribution from this line to the town.

An estimate of current electricity use in Monkton is shown in Table 6. This data was made available from *Efficiency Vermont*. These numbers represent everyday electrical use by Monkton residents. Agricultural businesses account for most of the Commercial and Industrial category in the table below.

Table 6. Monkton Electric Utility Data
Usage by Year and Cost

Sector	**KWH 2015**	**KWH 2016**	**KWH 2017**	**Cost $ 2017**
Commercial & Industrial	641,958	624,932	579,643	$93,902
Residential	7,149,515	7,015,769	6,844,283	$1,225,127
Total	**7,791,473**	**7,640,700**	**7,423,926**	**$1,319,029**
Count of Residential Premises	869	881	893	
Average Residential Usage	8,227	7,963	7,664	$1,372

Data Source: Efficiency Vermont

ELECTRICAL POWER TRANSMISSION AND DISTRIBUTION

Electricity is difficult to store without specialized systems and is transmitted across long distances via high-voltage lines. These are vulnerable to system failures and localized outages, especially during winter storms. The distribution of three phase and single phase power lines is shown in the map section of this energy plan together with the circuit ratings.

ELECTRICAL TARGETS

The Town of Monkton believes that the existing distribution and transmission facilities serving Monkton are adequate to meet the current utility requirements. Over time, single phase lines may need to be upgraded.

Conservation and efficiency are important strategies in decreasing demand for electrical energy. The Monkton Energy Committee understands this work is done household by household, through weatherization programs, energy auditing, construction standards, education and outreach, and incentives. The long-term goal is to substitute electrical energy derived from renewable energy sources for up to 90 percent of the town's energy requirements in 2050.

As the region's electrical needs grow, Monkton prefers using small, localized power sources that encourage alternative fuel sources located to meet the need instead of wide scale transmission and distribution projects. Local, renewable energy generation combined with established and emerging battery storage technology can provide a clean, stable and resilient electricity supply for the Town of Monkton, even during times of localized or regional power grid failures.

Promising new battery technology offers individuals with both traditional electric grid access and domestic solar panels to store backup power on site. GMP is currently one the first utilities in the country to offer Tesla's 7 and 10kW domestic Powerwall batteries. A home battery such as the Powerwall can be paired with domestic solar panels to store energy, or it can be used without solar as a battery to store power from the grid. In the event of a grid outage, the battery can power essential parts of the home like lights, a refrigerator, and furnace. GMP grid customers can charge the batteries at inexpensive low- demand times and then use the stored battery power during peak energy times to reduce demand on the grid, lower household bills as well as transmission and capacity costs. Solar inverters are also available with an auxiliary 115 AC power outlet that can provide limited power during power outages.

Table 7. Electrical Targets Per Year

Electricity Efficiency Targets	**2025**	**2035**	**2050**
Increase Efficiency and Conservation	10.8%	37.2%	59.2%
Use of Renewables - Transportation			
Renewable Energy Use - Transportation	2.7%	18.2%	83.5%
Use of Renewables - Heating			
Renewable Energy Use - Heating	46.8%	60.3%	88.9%
Use of Renewables - Electricity			
Renewable Energy Use - Electricity (MWh)	10958.50	21917.00	33207.50

Local Considerations – Electrical Solar Generation
In 2017, Monkton generated 1,340.333 MWh of electrical power from solar generation. This is 17% of the electrical power consumed by the Town.

ELECTRICAL PATHWAYS TO IMPLEMENTATION

GOALS

1. Conserve renewable and nonrenewable energy resources.
2. Reduce reliance on nonrenewable energy sources such as oil and gas.
3. Reduce emissions of greenhouse gases and substances that cause acid rain.

POLICIES

1. Support energy conservation efforts and the efficient use of energy across all sectors.
2. Promote energy efficiency and increased use of renewable fuels in all buildings, especially new ones.
3. Plan for increased electric demand with the support of Green Mountain Power.
4. Encourage the shift from nonrenewable energy reliance to renewable energy sources, such as solar and residential wind, by encouraging conversion to electric heat pumps and electric cars.
5. Promote the use of the residential and commercial building energy standards by distributing code information to permit applicants and working closely with the Zoning Administrator.

RECOMMENDED ACTIONS

1. Clarify and Codify Tax Policy: Codify a town policy that eliminates tax assessments on the value of residential renewable energy installations when determining property taxes. Advertise this policy so it is a clear incentive for all Monkton residents.
2. The Energy Committee is exploring ways to participate in a group net metering arrangement in order to meet municipal energy needs through renewable sources. The Energy Committee will also explore energy procurement from other resources, including biomass and methane from biodigesters.
3. Community Solar Procurement. The Town, led by the energy committee, should pursue opportunities to develop community-owned solar projects to power municipal buildings, including the elementary school and homes that may not be able to site solar on their property.
4. Selectboard and MEC will investigate the installation of a municipal solar and/or wind net-metering facilities to off-set municipal electric use.
5. Selectboard and MEC will investigate installation of a community-based renewable energy project.
6. Selectboard will consider funding for firefighters to receive training in fighting fires on structures which have roof-mounted solar installations.
7. MEC and Selectboard will explore the funding opportunities and implementation possibilities to upgrade the efficiencies in (1) all town buildings including the school, town hall, library, town garage, fire station, and town offices, and (2) private residences and farms.

SECTION V. LAND USE, GENERATION AND TRANSMISSION

LAND USE

Please refer to the Land Use Chapter of the Monkton Town Plan for a full description of landscape characteristics, land use types, and land use planning areas and polices. Please refer to our Transportation Chapter for details on transportation policy and our Natural Resources Chapter for detailed natural, scenic, recreational and agricultural policies.

Clustered Settlement Patterns and Growth

Land use and energy are closely related. Land use patterns exert a strong influence on major end uses of energy, including transportation, heating and cooling of buildings, and the energy used in developing infrastructure. Development that is clustered provides for greater energy efficiency. Clustering means fewer miles of road are needed to connect the homes or commercial buildings, school buses and snow plows travel shorter distances, and utilities do not need to be extended. Carefully considered placement of a building on a lot adds to the efficiency of any new structure by increasing passive solar gain and decreasing wind pressures.

Concentrating development in the village district, encouraging job development in town, and supporting local businesses, including farms and our local food system, are some ways this plan supports reductions in energy use. Supporting alternatives to the car, such as partnering with ACTR to establish routes from and to Monkton, and providing walking and cycling provisions, are directly associated with decreasing energy consumption. This plan supports such efforts.

Building and Siting Practices

This plan encourages building practices that use energy efficient materials, heating systems, lighting and appliances. Where possible, buildings should be sited so as to take advantage of southeast, south, or southwest orientations for passive solar gain. This plan also encourages the siting of newly constructed buildings in a way that does not impede solar energy collection by adjacent buildings, except where topographically unreasonable. This plan also encourages renewable energy projects for new construction and retrofitting existing buildings.

Aesthetic and Scenic Considerations

Our land use plan goals and policies reflect our value of our bucolic rural landscape and viewsheds. Thoughtful siting of residential and commercial uses, services, utilities and facilities plays an important role in preserving unique landscape character, such as long reaching views, and minimizing negative impacts to property values. ***Please refer to the Section VI. Community Siting and Decommissioning Standards for policies associated with scenic impacts.***

EXISTING GENERATION

Although Monkton's energy supply is largely consistent with statewide patterns, Monkton does have a number of alternative energy installations that tap local energy resources. A growing number of homes have photovoltaic systems that supply at least a portion of their electrical energy. Thanks to Vermont's net-metering law, owners of these systems can sell excess power back to the grid during periods of high solar

production, and purchase grid power when needed. Thus, the grid serves as a kind of storage system for solar-produced electrical energy. Banking excess Kilowatt hours during solar generating periods and withdrawing it when needed when there is no solar generation periods (cloudy days and night time). A number of other homes have solar domestic hot water systems. No homeowners currently use wind energy to generate electricity. Table 8 depicts Monkton's existing generation resources as of May 29, 2018

Table 8. Existing Renewable Energy Generation Sites in Monkton

Source	**Sites 2015**	**Sites 2018**	**Generation (in MW) 2015**	**Generation (in MW) 2018**	**Generation (in MWh/year) 2015**	**Generation (in MWh/year) 2018**
Solar	45	123	0.621	1.156	761.6	1,340.333
Wind			0		0	
Hydro	0		0		0	
Biomass	0*		0		0	
Other	0		0			
Total	45	123	0.621	1.156	761.6	1,340.333

Source: Vermont Energy Dashboard https://www.vtenergydashboard.org/my-community/monkton/statistics

Local Considerations – BIOMASS

*****Table 1 indicates, in 2015, 25% of homes used wood as a primary source of heating. In 2018 it was estimated this number was closer to 30% when wood pellet use was also considered. Results from the Monkton Energy survey shows a number of households use these sources as a secondary or backup heat source. This would push the 30% number even higher.

FUTURE GENERATION

Hydropower
While regional hydropower is a significant source of Vermont's renewable electricity supply, very little potential for development exists in Monkton. While large-scale hydropower is not viable, "micro-hydro" for personal households or landowners may be a viable option to generate small-scale electricity.

Biomass
As mentioned above, wood or wood pellets are used by Monkton households as either a primary or backup heat source. Both wood and wood pellets offer a local, renewable heat source from potentially very local sources, increasing efficiencies while building our local forest industries. Local forests are being harvested to provide wood chips to heat Mt. Abraham High School and other buildings.

Some farms in Vermont are producing biomass crops, such as corn for corn pellet stoves, and seed-oil crops for the production of bio-diesel for both on-site production operations and off-site sales.

Methane Digester

Methane digesters could be located as part of Monkton farming operations with the first emphasis to supplement the farm's own energy needs, as demonstrated on other Addison County farms. Excess energy could be diverted to generating electricity distributed easily through the existing power grid. As technology evolves, there is the possibility to create a "filling station" for town vehicles which could be converted to burn methane. The emergence of farm-based methane and subsequent production of energy from the same, should be locally sourced and distributed separately from non-renewable natural gas sources.

Residential Wood

Within Monkton and nearby communities, local forests are being harvested to provide cordwood for local residents. There is a wood bank to provide wood and other home heating supplies to local families in need via HOPE. Utilizing volunteer labor and donated timber, the wood bank provides winter home heating security to residents.

Source: Vermont Energy dashboard https://www.vtenergydashboard.org/

Residential Solar Generation

Residential solar electric generation is widely popular in Monkton. Ninety percent of 227 survey participates were in favor of single-family solar generation in Monkton. For commercial solar farms, 59 percent of participants supported allowing them in town (14 percent strong yes, 45 percent yes if the town approves the siting).

The majority of the solar electricity generation in the town of Monkton is a mix of "grid-tied" systems along with a small number of "off-grid" systems coupled with battery bank storage. Grid-tied systems typically use "net metering" to allow customers to generate electricity during solar availability to meet their domestic needs and feed excess power capacity back to GMP. Credits are then awarded which significantly reduce or eliminate monthly electricity costs. At night and during periods when the sun is not available, the system draws power from the main grid. Solar inverters are also available that can provide a separate 115V AC output during grid outages and during periods of sun. Off-grid systems store electricity from panels in domestic battery banks that provide power during times without sun access. Back-up generators powered by

	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE	TOTAL
I would support commercial solar projects that are no greater than 150 kW (approximately 1.5 acres)	20.27% 15	43.24% 32	18.92% 14	6.76% 5	10.81% 8	74
I would support commercial solar projects greater than 150 kW, less than 500 kW (more than 1.5 acres, less than 4 acres)	10.81% 8	27.03% 20	18.92% 14	20.27% 15	22.97% 17	74
I would support commercial solar projects greater than 500 kW (exceeding 4 acres)	4.05% 3	10.81% 8	18.92% 14	28.38% 21	37.84% 28	74
How a solar project is sited within the surrounding landscape (screened by trees and/or topography, or proximity to abutting uses) impacts my support of the project.	39.47% 30	40.79% 31	7.89% 6	11.84% 9	0.00% 0	76
I would generally support commercial solar projects even if I can't see them.	24.00% 18	33.33% 25	22.67% 17	9.33% 7	10.67% 8	75
I do not support commercial solar projects even if I can't see them.	16.22% 12	6.76% 5	13.51% 10	28.38% 21	35.14% 26	74
Monkton should limit the number of solar array projects in town.	22.54% 16	30.99% 22	25.35% 18	14.08% 10	7.04% 5	71
It is important to identify places in Monkton where we do and do not want to see future energy generation projects.	40.00% 30	42.67% 32	8.00% 6	5.33% 4	4.00% 3	75
Monkton should directly benefit from commercial solar projects in town.	35.53% 27	38.16% 29	17.11% 13	5.26% 4	3.95% 3	76
I support commercial wind projects in town.	8.00% 6	21.33% 16	29.33% 22	12.00% 9	29.33% 22	75

gasoline or propane often supplement these systems.

Below are results from a solar siting and project-scale question at the 2018 Planning Open House of which there were just under 90 participants showing support for solar projects that are 1.5 acres and smaller.

Community and Commercial Solar Generation

Monkton has access to only one three-phase power line route that originates in Ferrisburgh and runs west to east through the northern section of town. This greatly limits commercial solar installation in our community. A high percentage of single-phase power lines are rated as 'poor' by Green Mountain Power. Fifty-nine

percent of 2015 survey participants support allowing commercial solar farms in town (14 percent strong yes, 45 percent yes if the town approves the siting).

Residential Wind Generation

Wind power systems are becoming more economically viable at the residential and commercial level. Wind turbines propelled by the wind generate electricity and come in a range of sizes for appropriate scale applications from small residential systems all the way to large commercial wind farms. The challenge for wind power in Vermont, and specifically Monkton, is the lack of reliable wind at lower elevations. Small-scale, on-site residential wind generation can harness wind at lower elevations by taking advantage of microclimates and local wind patterns. Good wind sites for larger applications are usually in high elevations with exposure to prevailing winds, mostly on mountaintops and ridgelines. Siting projects in these areas is controversial as they affect the viewsheds, prominent natural features that define Vermont, and disturb fragile ecosystems and impact groundwater recharge areas.

According to the 2015 MEC Survey, Monkton residents widely support residential wind generation and are generally opposed to commercial wind farms. In the survey, 77 percent supported single-family residential wind power generation with only 22 percent opposed. On the commercial side the data is more ambiguous. About 44 percent of survey participants supported wind farms with 32 percent only supporting the idea if the town approves of the siting. A majority 56 percent of participants did not support commercial wind generation. Twenty percent said there could be some exceptions to their opposition.

Residential Geothermal Heating

A properly designed and installed geothermal heat pump system is more efficient than electric, oil, or gas heating systems, providing a renewable alternative to heating with fossil fuels. This process begins as water is pumped through tubes underground or from a well. Throughout the winter the heat pump “extracts” heat from the water to distribute throughout the building, and the now-cooled water is returned to the earth. The system is reversed in the summer, with the heat pump drawing hot air out of the building and sending warmed water into the earth.

With an appropriately sited water well, the same efficiencies and energy savings apply and are very promising when balanced against the high heating costs incurred by our long, cold winters. The additional upfront costs are usually returned within 5-10 years of installation, with a system life of 25 years for internal components and 50 or more years for the well or ground loop.

Most broadly, geothermal is any use of heat from the earth. Geothermal heat pumps in Vermont rely on the constant (55 degrees Fahrenheit) temperature of the earth, or on groundwater in a well. Though there are only a handful of geothermal installations currently in Monkton (>1 percent household home heating) there is great potential to include geothermal heat pumps in combination with domestic water wells in new-build projects.

GENERATION POTENTIAL AND TARGETS

Table 9 and 9a. below, were provided to Monkton by ACRPC using Vermont State data and methodology. The data comes from the Public Utility Commission, Vermont Energy Investment Corp and Green Mountain Power. The numbers were generated in conjunction with GIS data used in mapping ‘Potential Solar Siting Areas’ and ‘Potential Wind Siting Areas’, included in this energy plan. The data used does not consider *all* locally-known

constraints, typically calculating development potential based on a larger acreage than may actually be available. This methodology results in the large 'potential generations' numbers listed in Table 9. below. While Monkton is including these numbers in the plan, local energy-use patterns, land-use patterns, policies and survey results should be considered in understanding how to best nuance this information for Monkton. The target numbers are relative to target numbers in the Addison County Regional Energy plan.

The PUC requires Vermont towns to reach specified energy targets in ways that make sense for each individual town. One town may have capacity for hydropower while another has greater capacity for switching to electric vehicles. While Table 9. notes that there is 3917.25MW wind generation potential in Monkton, local data shows that Monkton residents have invested and generally support solar generation over wind generation. This is reflected in the significant increase in residential homes integrating solar into energy systems over the past five years (Table 8.). In the same time period, there has been no wind development in Monkton. Recent community surveys indicate there is support for some commercial solar development, but not as much support for commercial wind development. Energy generation via biomass may be more viable than what Table 9. shows, due to the agricultural nature of Monkton businesses and an agricultural land base.

Table 8. shows Monkton energy generation at **1,340.33 MWh** in 2018. Table 9a., below, shows a target future annual generation, in 2025, of **2,638 MWh**. Given the exponential rate at which residents are incorporating solar into residential energy systems (see Table 8), this seems like an attainable target, by residential solar alone. While the data shows generation by wind as having a large potential in Monkton, the Town will likely focus on solar generation and, to a lesser degree, biomass and methane systems.

Table 9. New Renewable Generation Potential in Municipality

Source	**Generation Potential (MW)**	**Generation Potential (MWh)**
Rooftop Solar	1.46	1,794
Ground-mounted Solar	644.38	790,262
Wind	3917.25	12,010,289
Hydro	0.00	0
Biomass and Methane	0.00	0
Other	0.00	0
Total	4563.09	12,802,344

9a. Municipal Renewable Generation Targets (in MWh)

Renewable Generation Targets (in MW)	2025	2035	2050
Total Renewable Generation Target (in MWh)	**2,638**	**5,276**	**7,994**

Source: ACRPC in conjunction with PUC, VEIC, GMP

Longer Term Goals

To meet the long term goals, it is predicted that if the current rate of solar installations is maintained, then the 2035 target should be attained.

To meet the longer term goals of 2050 it would be necessary to generate an additional 6.5 MW via new solar arrays. This translates into approximately 50 plus acres that need to be identified for commercial solar. These general areas have been identified on the map called: "Renewable Energy: Potential Solar Resource Siting Areas -Monkton ". This map produced by the Department of Public Service (State Energy Planning Guidelines) is part of a larger regional map that in turn is a part of the Addison County Regional Plan. This map identifies Primary Solar Resources Siting Areas and Secondary areas. These areas are where renewable energy generation would be the most feasible according to the natural conditions of the area. Overlaid on these, are areas identified as "Preferred Net Metering Solar Locations". These are areas identified for meeting the towns longer term goals.

Siting such projects has to take into consideration known and possible constraints (see Table 10) as well as meeting the siting standards (detailed in Section VI: Community Standards for Siting and Decommissioning). The landowners in these areas are however under no obligation and would have to be agreeable to any such projects.

While the map identifies recommended areas, it does not eliminate other sites or projects as long as they meet the siting standards and, landowners' participation.

Should other forms of renewable energy sources or increased efficiency solar systems become available in the next 30 years it could change, and probably reduce the MW to acreage ratio.

LAND AND USE PATHWAYS TO IMPLEMENTATION

GOALS

1. Future growth will be concentrated in areas closest to amenities and services to reduce travel requirements for work, services, shopping and recreation.
2. Future growth will allow the continued conservation of our natural, recreational and scenic resources.
3. Future growth will prioritize close proximity to existing infrastructure and utilities.

POLICIES

1. Support public transit connections to and from our most compact neighborhood districts to other parts of the region and consider access to public transit when reviewing Act 250 applications.
2. Discourage fragmentation of forests and wildlife habitat.
3. Promote general stores and other businesses in village areas.

4. Promote infilling of existing large-lot development if higher density development is desirable and appropriate.
5. Support local farms and local food system which decrease energy demands of trucking and shipping and give value and purpose to our open agricultural lands.

RECOMMENDED ACTIONS

1. Review and update our Zoning Regulations to reflect significant advances in renewable energy and efficiencies going forward.
2. The Monkton Energy Committee will continue to work closely with the Monkton Planning Commission, Development Review Board (DRB) and Zoning Administrator on any proposed energy development projects within Monkton.

RENEWABLE GENERATION AND TRANSMISSION PATHWAYS TO IMPLEMENTATION

GOALS

1. Generation and transmission of renewable energy in conformance with the goals, strategies, mapping and community standards outlined in this energy plan and the town plan.
2. Improve access, understanding, and implementation of affordable, residential, small-scale[3] wind, solar, geothermal heat pumps and other renewable energy sources for daily use.

POLICY

1. Development of renewable generation shall be favored in identified preferred locations over the development of other sites.
2. Support production of energy from methane as a desirable agricultural practice.
3. Encourage the use of residential wind energy with due regard to aesthetic and environmental considerations, especially in high and medium density residential areas.
4. Support responsibly sited and responsibly developed renewable energy projects, which includes such structures as solar panels, wind turbines and all supporting infrastructure.
5. Incentivize residential solar systems

RECOMMENDED ACTIONS

1. The Monkton Energy Committee will work closely with the Monkton Planning Commission and Selectboard to evaluate any proposed energy generation or transmission projects pursuant to the policies and siting standards contained within this Energy Plan.
2. Investigate the installation of, or subscription to, municipal solar and/or wind net-metering facilities to off-set municipal electric use.

[3] Small-scale commercial solar is defined in this plan as a project 500 kW or smaller.

3. Investigate installation of community- owned renewable energy project(s) to allow Monkton citizens to participate in the economic benefits of local energy production.

MAPPING GENERATION POTENTIAL

Monkton has incorporated maps provided by ACRPC. These maps show data as required by the Public Utility Commission's *Determination Standards* for enhanced energy planning. The maps are a planning tool only and may not precisely indicate locations where siting a facility is acceptable. These maps show areas with potential access and constraints to energy resources such as: solar, wind, hydro, and biomass. Constraints considered on these maps are only those ones outlined on Table 10.

"Known" and "possible" constraints were subsequently identified on the maps. Known constraints are conservation resources that shall be protected from all future development of renewable generation facilities. Possible constraints are conservation resources that shall be protected, to some extent, from the development of renewable generation facilities. The presence of possible constraints on land does not necessarily impede the siting of renewable generation facilities on a site. Siting in these locations could occur if impacts to the affected possible constraints are mitigated, preferably on-site.

Table 10, describes the constraints, as identified on the maps, and the source of the specified data.

Table 10 – Mapping Constraints		
Solar, Wind and Biomass Maps - Known Constraints		
Constraint	**Description**	**Source**
Confirmed and unconfirmed vernal pools	There are a 600-foot buffer around confirmed or unconfirmed vernal pools.	ANR[4]
State Significant Natural Communities and Rare, Threatened, and Endangered Species	Rankings S1 through S3 were used as constraints. These include all of the rare and uncommon rankings within the file. For more information on the specific rankings, explore the methodology for the shapefile.	VCGI[5]
DEC River corridors	Mapped River Corridors were depicted.	ANR
Class 1 and Class 2 Wetlands	**Vermont State Wetlands Inventory (VSWI) and advisory layers from site specific work collected by the municipality**	VCGI
Solar, Wind and Biomass Maps - Possible Constraints		
Constraint	**Description**	**Source**
Protected lands	This constraint includes public lands held by agencies with conservation or natural resource oriented missions, municipal natural resource holdings (ex. Town forests), public boating and fishing access areas, public and private educational institution holdings with natural resource uses and protections, publicly owned rights on private lands, parcels owned in fee by non-profit organizations dedicated to conserving land or resources, and private parcels with conservation easements held by non-profit organizations.	VCGI
Deer wintering areas	Deer wintering habitat as identified by the Vermont Agency of Natural Resources.	ANR
Hydric soils	Hydric soils as identified by the USDA/NRCS.	VCGI
Agricultural soils	Statewide, and prime agricultural soils are considered.	VCGI
Act 250 Agricultural Soil Mitigation Areas	Sites conserved as a condition of an Act 250 permit.	ANR
FEMA Flood Insurance Rate Map (FIRM) special flood hazard areas	Special flood hazard areas as digitized by the ACRPC were used (just the 100-year flood plain -500-year floodplain not mapped). The inclusion of this resource as a regional constraint is consistent with goals and policies of the Addison Co Region Plan.	ACRPC[6]
Vermont Conservation Design Highest Priority Forest Blocks	The lands and waters identified here are the areas of the state that are of highest priority for maintaining ecological integrity. Together, these lands comprise a connected landscape of large and intact forested habitat, healthy aquatic and riparian systems, and a full range of physical features (bedrock, soils, elevation, slope, and aspect) on which plant and animal natural communities depend. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Addison County Regional Plan. (Source: ANR)	ANR

[4] Agency of Natural Resource: http://anr.vermont.gov/
[5] Vermont Center for Geographic Information: http://vcgi.vermont.gov/
[6] Addison County Regional Planning Commission: www.acrpc.org

SECTION VI: COMMUNITY STANDARDS FOR SITING AND DECOMMISSIONING

A. INSTALLATION SCALE DEFINITIONS

A1. Solar Installations

Residential-scale Solar: projects 15kW or less (typically consist of a roof or ground mounted)
Small-scale Commercial Solar: any project 150 kW-500kW (about 1.5-4 acres)
Large-scale Commercial/Industrial Solar: any project over 500kW (typically exceeding 4 acres)

A2. Wind Installations

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

B. SITING – GENERAL

Project siting requires the careful balance between the necessity to move to renewables while not upsetting the balance of what the community considers as the desirable attributes and features of the town. These have been detailed in previous sections of this plan based on town surveys and open house's as well as guidance from ACRPC. Accordingly all renewable energy projects must evaluate and address the proposed site's aesthetic impact on the surrounding landscape and significant view sheds, prime agriculture land, ecological sensitive and natural areas. Monkton's Ridgelines are protected by the "Ridgeline District" in which any building is prohibited. Poor siting cannot be mitigated. The Public Utility Commission Map shows where solar and wind energy generation is most feasible according to natural conditions. However, there are a number of constraints that might preclude these areas for solar and wind projects, such as conserved land, wildlife areas, watershed or floodplains, prime agricultural land, access to electrical power lines or where use would conflict with policies within the Town Plan. For example, where clearing trees would conflict with policies supporting the preservation of upland forests and wildlife corridors.

B1. Siting for Solar Installations

Good Solar Sites have one or more of the following characteristics:

- Roof-mounted systems;
- Systems located in close proximity to existing larger scale, commercial, industrial or agricultural buildings;
- Proximity to existing hedgerows or other topographical features that naturally screen the proposed array from view from at least two sides
- Systems fit the scale and context of their location.
- Reuse of former brownfields or otherwise impacted property.
- Glare and noise are minimized to the extent possible.

Poor Solar Sites have one or more of the following characteristics:

- No natural screening;

- Topography that causes the arrays to dominate the skyline from common vantage points like roads or neighborhoods;
- Installations that require large amounts of clearing of existing forested areas.
- Any site that requires extensive clearing of meadow or woodland for access.
- Locations in floodways or mapped river corridors;
- A location in proximity to and interfering with a significant viewshed. Significant viewsheds within the municipality of Monkton include open farm fields with unobstructed views from roads or other points in Monkton. Specifically, these include, but are not limited to, those sites valued and identified in the "Monkton Viewshed Study 2016" and include:
    - Views towards the west from Covered Bridge Road at Higbee Road
    - Views visible from Raven Ridge, looking west and southwest
    - Views down the valleys from both sides of Rotax Road, west of the Rosco Road intersection, looking north and south
    - The valleys north and south below Monkton Ridge, looking east and south
    - Looking south from Prison Hollow Road, heading west, prior to Tracy Road
    - Looking south from Boro Hill Road as it descends towards the Hardscrabble Road intersection.
    - Views to Camels Hump Mountain from Monkton Ridge, Silver Street, Turkey Lane and Tyler Bridge Road.

- These viewsheds are admittedly described broadly, and when looked at in the context of a particular location the town might be able to accommodate carefully sited installations. By identifying these viewsheds, the town is making it clear how important retaining the integrity of these areas is to the character of the town;
- The removal of large parcels of productive agricultural land from agriculture use; and
- Sites that require public investment in electrical transmission and distribution infrastructure in order to function properly.

B2. Siting for Wind Installations

Good Wind Sites have one or more of the following characteristics:

- Reuse of former brownfields or otherwise previously impacted properties (instead of sites with no-previous development).
- Within agricultural, commercial or industrial contexts and where practical, near other structures.
- Proximity to existing electrical transmission system to minimize the new infrastructure required to serve the project.

Poor Wind Sites have one or more of the following characteristics:

- In landscapes valued for natural or scenic features, particularly the Hogback Mountains, vistas allowing views of Camels Hump Mountain, and views identified below:
    - Ridge lines
    - Views towards the west from Covered Bridge Road,
    - Views visible from Raven Ridge,

- Views down the valleys from both sides of Rotax Road, west of the Roscoe Road intersection.
- The valleys north and south below Monkton Ridge from Prison Hollow Road.
- Boro Hill Road as it descends towards the Hardscrabble Road intersection.
- Views to Camels Hump Mountain from Monkton Ridge, Silver Street, Turkey Lane and Tyler Bridge Road.
- Impacts the flight and migration patterns of birds

Prohibited Wind Sites:

- Industrial scale wind installations are prohibited in Monkton (total capacity of greater than 1MW or with a tower or towers taller than 200 feet or requiring night lighting for any reason.)
- Community scale (consists of 1 or more towers all less than 200 feet high, so as not to require night lighting and producing less than 1 MW of electricity) wind is prohibited in Monkton's Ridgeline Overlay District, as outlined in Monkton's Unified Planning Document (UPD).

B3. Siting for Electrical Transmission Power lines and Substations

Good sites have one or more of the following characteristics:

- Systems located in close proximity to existing larger scale, commercial, industrial or agricultural buildings;
- Proximity to existing hedgerows or other topographical features that naturally screen the proposed corridor from view from at least two sides;
- Shared or neighboring ROW with other transmission or transportation infrastructure

Poor Sites have one or more of the following characteristics:

- No natural screening;
- Topography that causes the lines to be visible against the skyline from common vantage points like roads or neighborhoods;
- A location in proximity to and interfering with a significant viewshed;
- The removal of productive agricultural land from agricultural use
- Where the land use, as identified in the Land Use Plan and Unified Zoning document, would become restricted

C. MASS and SCALE

C1. Solar Mass and Scale

Rural structures like barns and silos fit into the landscape because their scale and mass generally do not impact large tracts of otherwise open land. When houses are added to Monkton's landscape, sensitive siting and appropriate screening are required by the Monkton Town Plan, Zoning and Subdivision Bylaws Renewable energy systems shall also be limited in mass and scale, or have their mass and scale broken by screening, to fit in with the landscape.

Solar systems of 150 kW and less (which comprise 1.5 acres or less) should fairly easily conform to these standards given the smaller size. All commercial scale solar arrays (i.e. above 150kW) shall also be limited in mass and scale, and/or have their mass and scale broken by screening to fit in with the

landscape. Large commercial solar projects larger than 500 kW, are typically in excess of four acres and larger than any other structure within the municipality of Monkton. This size solar project is difficult to screen or otherwise mitigate from visual and ecological perspectives. In the event such inability to adequately screen or otherwise mitigate from visual and ecological perspectives is the case, large-commercial solar projects, above 500kW, are prohibited.

C2. Wind Mass and Scale

- Use white or other colored materials (tower, hub blades) and earth tones for ground infrastructure or fences that blend into the landscape instead of metallic or other brighter colors).
- **Residential Wind projects:** shall follow the Public Service Department guidelines and scoring system in their Wind Siting Handbook[7] for small turbines and be reasonably construed to score below the "significant" zone.
- **Community Scale Wind projects**: Shall not exceed 200 feet in height, excepting movable blades.
- **Noise** from commercial wind projects will also meet Vermont State Guidelines[8]

C3. Electrical Transmission Power Lines and Substations Mass and Scale

- Industrial and commercial scale transmission lines and associated sub-stations or other buildings may need to be limited in height and scale, and/or have their height and scale broken by screening to fit in with the landscape in any given municipality.

- Projects which on balance are found to have poor siting characteristics pursuant to the community standards contained above or in other parts of the Monkton Town Plan are considered to be in violation of orderly development as outlined in this Town Plan.

- Any subsequent upgrades to the current VELCO electrical power transmission system shall first consider the use of existing poles, shall not expand further deforestation or expansion of the ROW, and shall not exceed the current power pole height. Any additional power lines and poles in parallel with the current transmission lines is highly discouraged, as is seizing land by eminent domain.

- In the event that the PUC grants VELCO the right to upgrade the power transmission system then the following criteria shall be considered prior to expanding poles and lines:

    a. Preference for the use of existing power poles (or substituted with poles of the same height)
    b. The use of higher carrying capacity conductors or the doubling of conductors on existing poles
    c. Consideration of using DC voltage transmission on existing conductors to meet new power requirements.

In the event of upgrades or changes to the power transmission system, then the following must be performed:

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

8 In 2017, the PUC held the daytime sound level limit to be 42 decibels, and changed the allowable nighttime level to be 39 decibels. These numbers may change in the future.

1. Provide documentary evidence that such changes do not present a safety or health hazard to residences in close proximity to the power lines.
2. Perform an analysis and provide documentary evidence that no safety hazard exists with proximity to the gas transmission pipeline that parallels the electrical transmission line. The systems installed to mitigate electrical induced currents and provide corrosion protection of the gas transmission pipeline should be analyzed and tests performed to ensure that they fully function and comply with all Federal and State of Vermont specifications in the presence of the new power line installation.
3. All corrective actions taken to comply with these system requirements shall be installed and tested prior to commissioning any powerline upgrade or modification.

D. MITIGATION METHODS.

D1. Solar Mitigation Methods

In addition to properly siting a project according to the criteria set forth above, solar developers must take the following action to mitigate all project sites:

- Locate the structures on the site to keep them from dominating the skyline above the horizon from public vantage points;
- Shorter panels may be more appropriate in certain spaces than taller panels to keep the project lower on the landscape.
- Use the existing topography, development or vegetation on the site to screen and/or break the mass of the array;
- In the absence of existing natural vegetation, the commercial development must be screened by native plantings beneficial to wildlife and pollinators that will grow to a sufficient height and depth to provide effective screening within a period of 5 years. Partial screening to break the mass of the site and to protect public and private views may be appropriate.
- Practice a "good neighbor policy". The siting of the array should be done in such a manner that the array creates no greater burden on neighboring property owners or public infrastructure than it does on the property on which it is sited. As an example, a landowner may not site an array on his or her property in a location calculated to diminish the visual impact of the array from his or her residence, but places the array immediately within their neighbor's or the public's viewshed.
- Use black or earth tone materials (panels, supports, fences) that blend into the landscape instead of metallic or other brighter colors, and take all possible steps to eliminate or reduce reflection on affected properties or views from the public roads.

D2. Wind Mitigation Methods

The actual footprint of a wind turbine tends to be small but its resource impact is more substantial within the footprint area, and wind turbines (particularly wind farms) are likely to have scenic or esthetic impacts, sometimes quite dramatic. Scale and landscape context are important considerations in siting wind installations. Because the siting of wind will be more challenging given potential heights and visibilities due to Monkton's often open and rolling landscapes, proposals need to be considered on a one-by-one, specific basis. Using the criteria in A-E of this *Community Standards* section will be used to evaluate whether on balance potential wind installations meet or violate the Monkton Town Plan:

D.3 Transmissions and Substations Mitigation Methods

In addition to properly siting a project, transmission and substation developers must take the following action to mitigate all project sites:

- Consider burying the transmission infrastructure as a potential way to lessen visual/aesthetic impacts;
- Locate the structures on the site to keep them from dominating the skyline above the horizon from public vantage points;
- Shorter structures may be more appropriate in certain spaces than taller structures to keep the project lower on the landscape.
- At a minimum, all sub-stations must observe the setback restrictions listed in the Municipal Zoning Regulations within the Zoning District in which it lies;
- Use the existing topography, development or vegetation on the site to screen and/or break the mass of the array;
- In the absence of existing natural vegetation, the commercial development must be screened by berms and/or native plantings beneficial to wildlife and pollinators that will grow to a sufficient height and depth to provide effective screening within a period of 5 years. Partial screening to break the mass of the site and to protect public and private views of the project may be appropriate;
- Practice a "good neighbor policy". The siting of the towers should be done in such a manner that the substation creates no greater burden on neighboring property owners or public infrastructure than it does on the property on which it is sited. Locating a sub-station in a manner designed to reduce impacts on neighbors or public viewsheds constitutes reasonable mitigation.
- Use black or earth tone materials (towers, supports fences) that blend into the landscape instead of metallic or other brighter colors).

E. DECOMMISSIONING AND RESTORATION. All commercial energy projects shall be decommissioned at the end of their useful life. No more than a year shall pass from end of life to the decommissioning and restoration of site. Pursuant to the requirements contained in Rule 5.900 of the Vermont Public Utility Commission rules. This means equipment shall be removed, landscaping kept and disturbed areas restored. Developers of all projects 150 kW and greater shall provide the municipality with appropriate assurances to guarantee funding exists to decommission the project and restore the site in keeping with Monkton's desire to retain its agricultural land base, a solar array's useful life shall be deemed to be at the end of its useful life when the tower(s) are taken off line.

For commercial scale solar, the requirements of section 5.904(A) (of the VPUC rules) shall apply to installations greater than 100Kw.

Transmission and distribution utility lines associated with non-renewable energy sources, such as natural gas, shall be transitioned to carry renewable natural gas or other fuels as they become available in Monkton in order to meet our 2025, 2035 and 2050 targets. New distribution infrastructure must be transitioned to renewable energy sources or must be decommissioned pursuant to a plan agreed upon by the utility and the Town of Monkton prior to its installation.

SECTION VII MAPS

MAP #1. Renewable Energy Planning: Know Constraints - Monkton.

MAP #2 Renewable Energy Planning: Possible Constraints - Monkton.

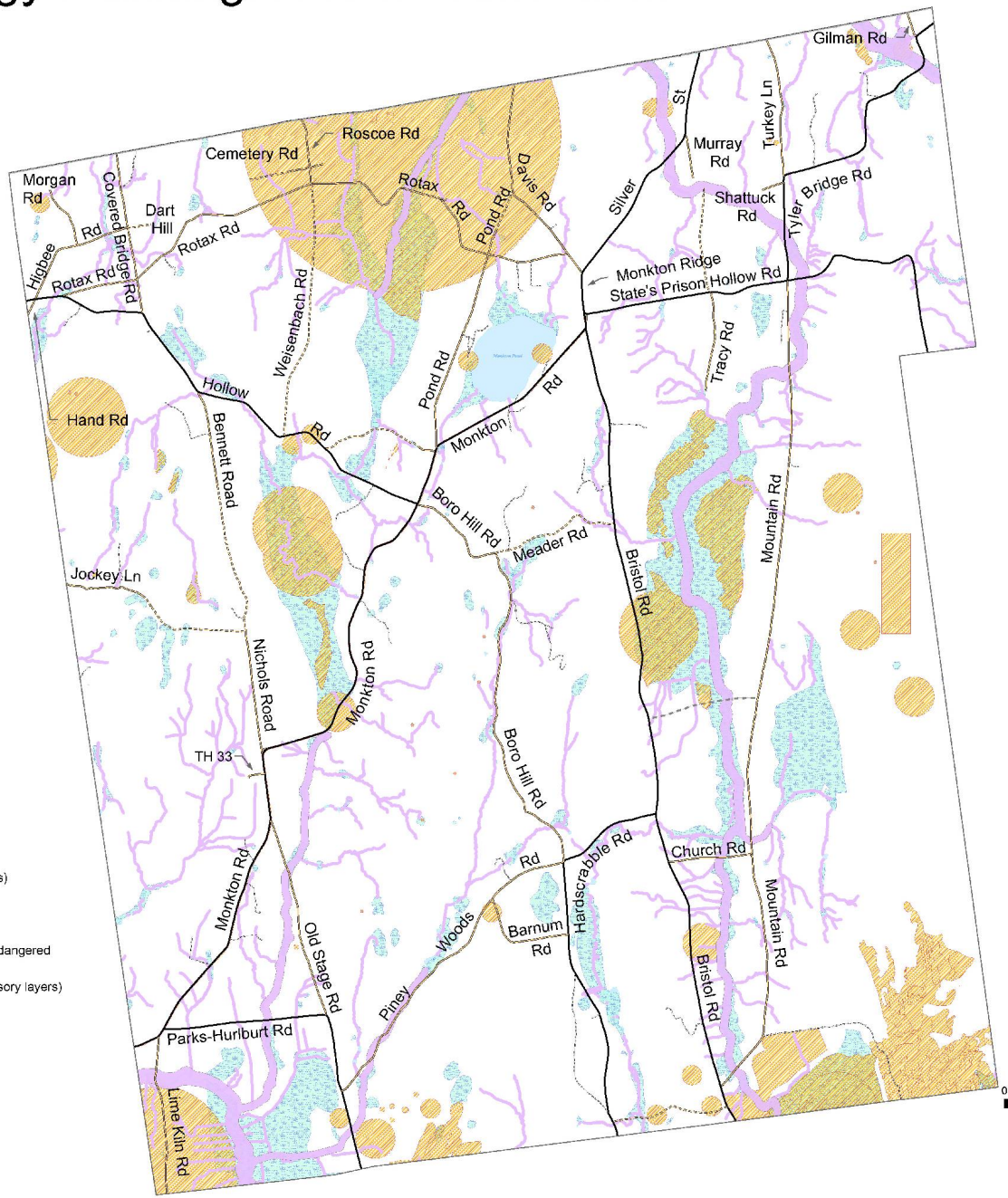
MAP #3. Renewable Energy Potential: Transmission and Distribution Resources and Constraints - Monkton.

MAP #4. Renewable Energy: Potential Woody Biomass Resource Siting Areas- Monkton.

MAP #5. Renewable Energy: Potential Wind Resource Siting Areas - Monkton.

MAP #6. Renewable Energy: Potential Solar Resource Siting Areas - Monkton.

Renewable Energy Planning: Known Constraints - Monkton



Legend

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

Known Constraints (State Energy Planning Guidelines)

Vernal Pools (confirmed and unconfirmed)
DEC River Corridors (inc stream 5oft buffer)
FEMA Floodways
State Significant natural Communities and
Rare, Threatened and Endangered Species
National Wilderness Areas
Class 1 and Class 2 Wetlands (VSWI and advisory layers)
Regionally or Locally Identified Critical Resources (none currently)

0 0.5 1 2 Miles

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

Renewable Energy Planning: Possible Constraints - Monkton

Legend

- Agricultural Soils
- FEMA Special Flood Hazard Areas
- Protected Lands
- Agricultural Soil Mitigation (Act 250)
- Deer Wintering Areas
- Highest Priority Forest Blocks
- Hydric Soils

Possible Constraints (State Energy Planning Guidelines)

Agricultural Soils (Prime, Statewide and Local USDA)
FEMA Special Flood Hazard Areas
Protected Lands (State fee lands and prvt cons lands)
Act 250 Agricultural Soil Mitigation areas
Deer Wintering Areas
ANR's Vermont Conservation Design Highest Priority Forest Blocks
Hydric Soils
Regionally or Locally Identified Critical Resources (none currently)

0 0.5 1 2 Miles

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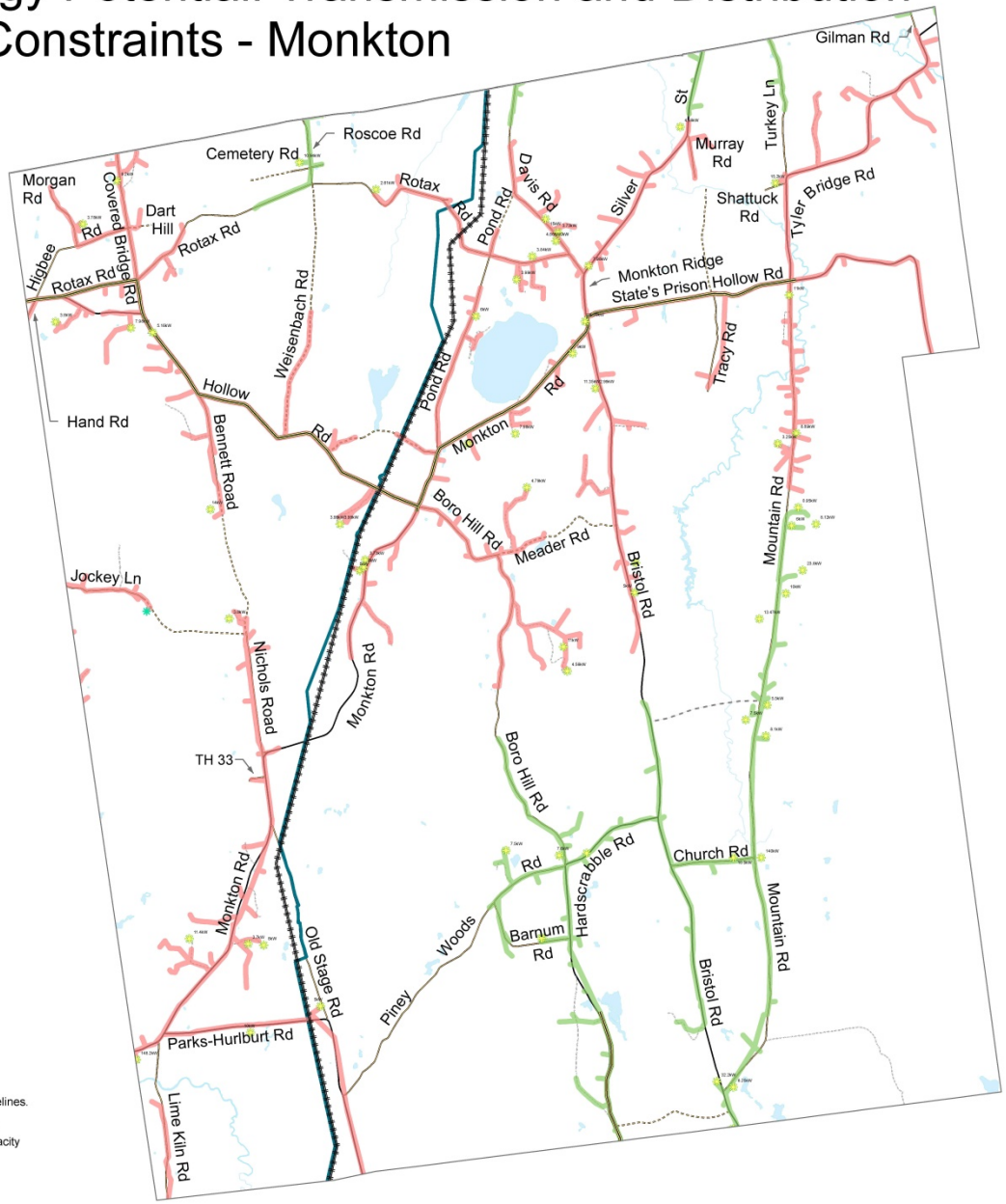
Renewable Energy Potential: Transmission and Distribution Resources and Constraints - Monkton



Legend

- Substations
- Transmission Lines
- 3 Phase Power Lines

Circuit Ratings

- Good
- Fair
- Poor

Distributed Generation

- Solar
- Wind
- Bio
- Other
- Hydroelectric Dams
- Vermont Gas Line

Transmission and Distribution under the State Energy Planning Guidelines.

Substations, Transmission lines and 3-Phase power distribution lines from Green Mountain Power/ACRPC, Circuit Ratings identifying capacity loads and Distributed Generation also from Green Mountain Power , 4/28/2017.
Hydroelectric facilities from agency of Natural Resources.

Vermont Gas Line provided from Vermont Gas and Town of Monkton.

ACRPC 4/2017

0 0.5 1 2 Miles

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Renewable Energy: Potential Woody Biomass Resource Siting Areas - Monkton

Legend

- Primary Biomass Siting Areas
- Secondary Biomass Siting Areas

Woody Biomass Potential Analysis under the State Energy Planning Guidelines.

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

Dept of Public Service Methodology

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

Known Constraints

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

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

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

Possible Constraints

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

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

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

0 0.5 1 2 Miles

Addison County
REGIONAL PLANNING COMMISSION

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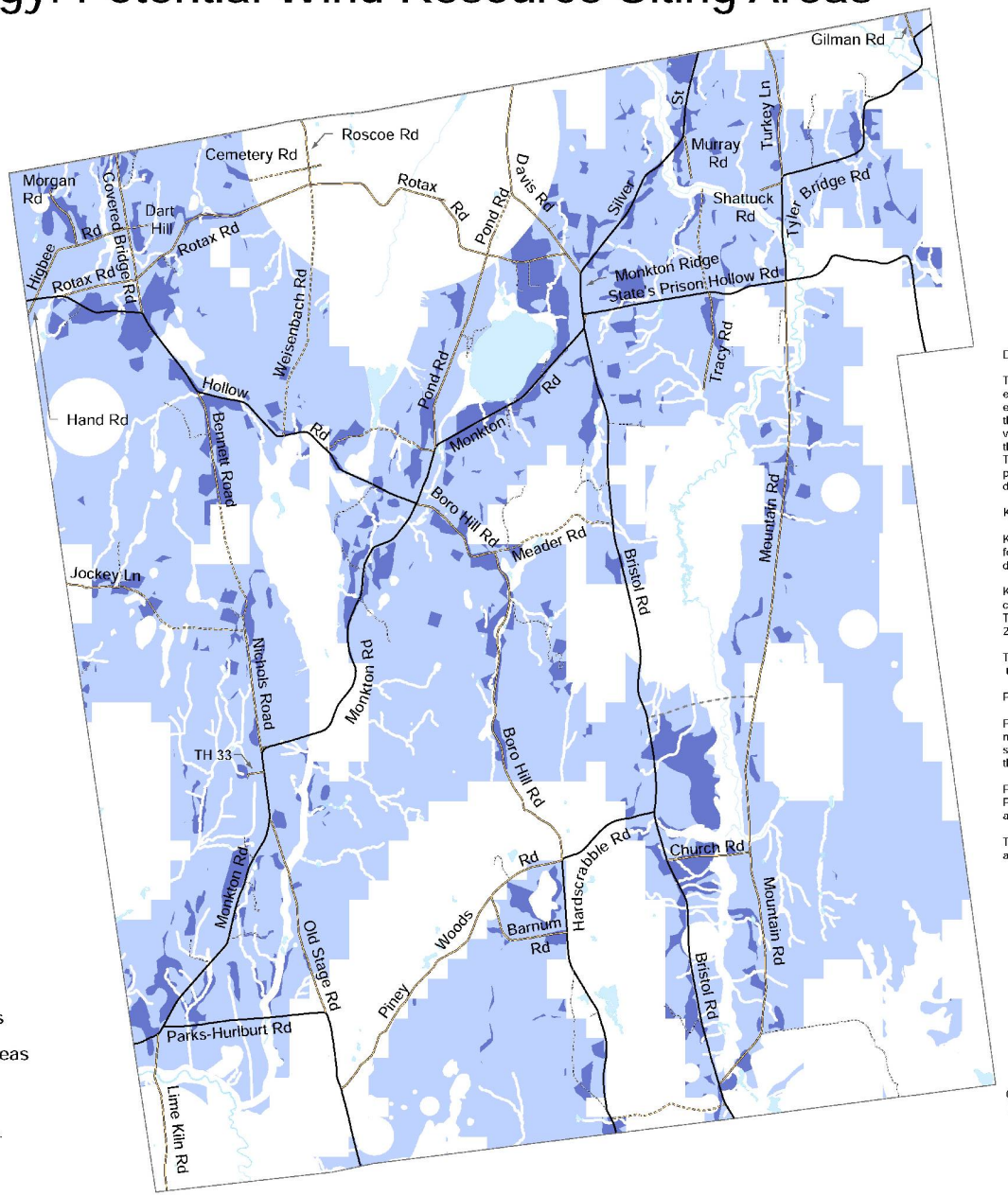
Renewable Energy: Potential Wind Resource Siting Areas - Monkton



Legend

- Primary Wind Resource Siting Areas
- Secondary Wind Resource Siting Areas

Wind Potential Analysis under the State Energy Planning Guidelines.

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

Dept of Public Service Methodology

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

Known Constraints

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

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

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

Possible Constraints

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

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

These areas are shown on the map where they coincide with areas of renewable wind potential identified in the wind analysis.

0 0.5 1 2 Miles

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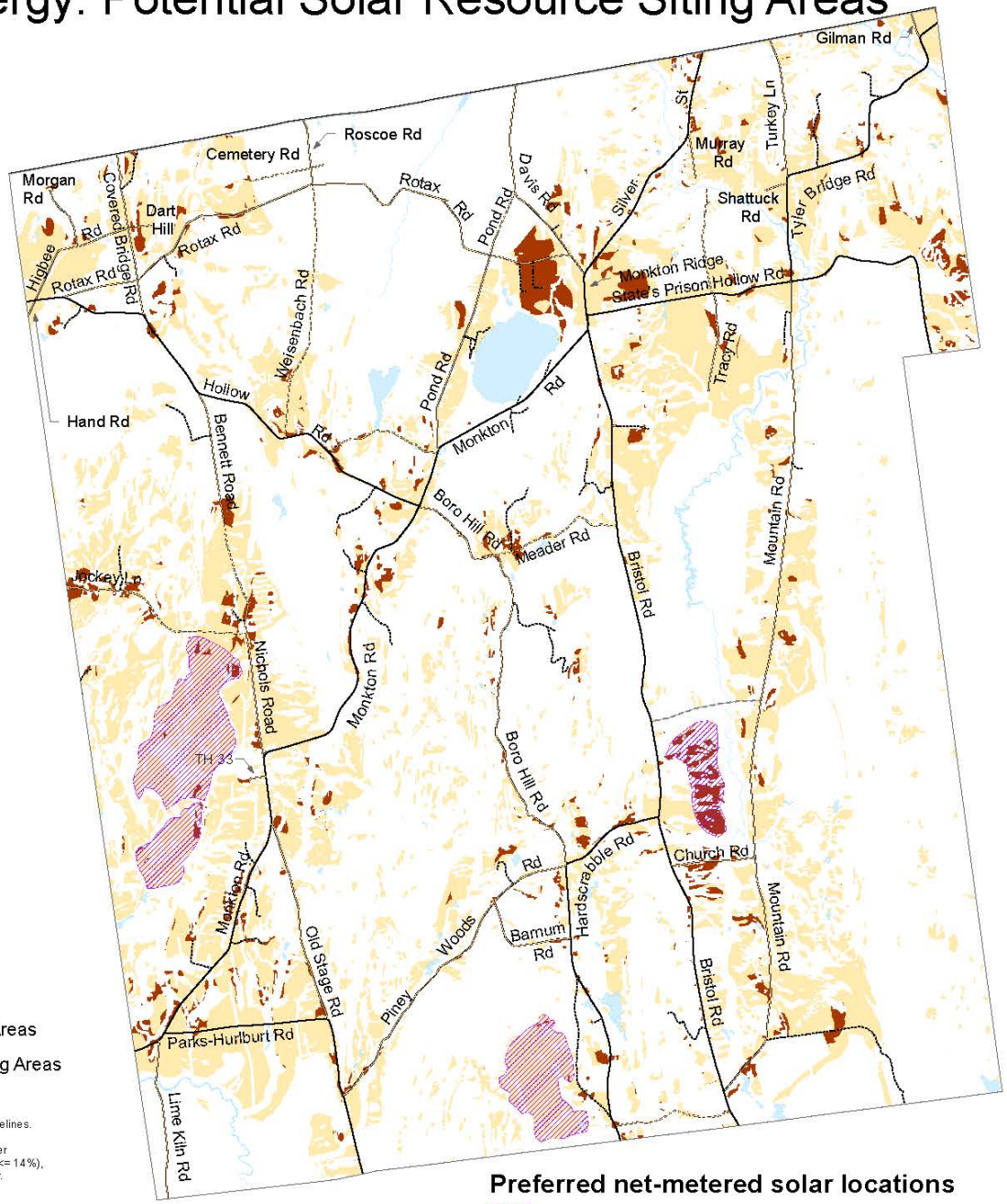
Addison County REGIONAL PLANNING COMMISSION

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

Renewable Energy: Potential Solar Resource Siting Areas - Monkton



Legend

- Primary Solar Resource Siting Areas
- Secondary Solar Resource Siting Areas

Solar Potential Analysis under the State Energy Planning Guidelines.

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

Dept of Public Service Methodology

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

Known Constraints

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

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

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

Possible Constraints

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

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

These areas are shown on the map where they coincide with areas of renewable solar potential identified in the solar analysis.

Locally preferred net-metered solar locations with conditions are identified in 3 areas. Specific sites must also meet the siting standards in the town plan. Sites in other locations in Monkton may also meet the siting standards.

Preferred net-metered solar locations

- Preferred area with conditions

0 0.5 1 2 Miles

Addison County REGIONAL PLANNING COMMISSION

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

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SECTION VIII REFERENCES

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SECTION IX ENERGY BULLETIN – 2018 PIZZA AND PLANNING OPEN HOUSE

This one-page bulletin and questionnaire was provided to residents who participated in the 2018 Community Planning Open House. There were five stations corresponding to the five topics – transportation, natural resources, village center, housing and energy.

Act No. 174 – Enhanced Energy Planning

Background

Vermont has a long history of both land use and energy planning. As Vermont has experienced the growth in renewable energy generation as one of the state's largest new land uses, the need for integration of energy planning with land use planning has grown Both the Governor's Energy Generation Siting Policy Commission (2013) and the Solar Siting Task Force (2015) recommended establishing a paradigm of enhanced energy planning integrated with land use planning. Informed by those recommendations, Act 174 of 2016 establishes a new set of municipal and regional energy planning standards, which if met allow those plans to carry greater weight - substantial deference - in the siting process for energy generation. Meeting the standards is entirely voluntary; if regions and municipalities do not wish to update their plans, they will continue to receive due consideration in the Section 248 process.

Process

Though there are many details to work through, at its core, the process of enhanced energy planning consists of three major tasks:

1) Understanding your municipality's current energy use and setting targets for the future that are in alignment with state energy goals;
2) Deciding how to reach the targets through "pathways," or implementation actions; and
3) Preparing maps to help guide renewable energy development in the municipality or region.

Towns in Addison County currently working on enhanced energy planning include: Ripton, Salisbury, Panton, Monkton, Leicester, and Weybridge. Addison County Regional Planning Commission has recently drafted their regional Enhanced Energy Plan. Their public hearing is scheduled for June 2018.

Definitions

Substantial deference: a land conservation measure or specific policy shall be applied in accordance with its terms unless there is a clear and convincing demonstration that other factors affecting the general good of the State outweigh the application of the measure or policy.

For more information on enhanced energy planning, please visit the Department of Public Service's site: http://publicservice.vermont.gov/content/act-174-recommendations-and-determination-standards

Questions and Concerns

The Vermont Energy Plan states a target of 90 percent renewable by 2050. Vermont towns are considering what this means at the local level and how to incorporate energy planning into town planning and policy. It is helpful to get a sense of what Monkton residents think about energy conservation, efficiency and generation in order to understand Monkton's priorities in the context of Vermont's energy goals. Please answer the following questions to the best of your ability:

- Residential-scale Solar: projects 15kW or less (typically consist of a roof or ground mounted tracker)
- Small-scale Commercial Solar: any project 150 kW-500kW (about 1.5-4 acres)
- Large-scale Commercial/Industrial Solar: any project over 500kW (typically exceeding 4 acres)

A. Commercial Solar Projects

Do you agree or disagree with the following statements?

1. I would support commercial solar project that are no greater than 150 kW (approximately 1.5 acres).

   Strongly Agree Agree Neither agree or disagree Disagree Strongly disagree

2. I would support commercial solar projects greater than 150 kW (1.5 – 4 acres).

   Strongly Agree Agree Neither agree or disagree Disagree Strongly disagree

3. I would support commercial solar projects greater than 500 kW (exceeding 4 acres)

   Strongly Agree Agree Neither agree or disagree Disagree Strongly disagree

4. How a solar project is sited within the surrounding landscape (screened by trees and/or topography, or proximity to abutting uses) impacts my support of the project.

   Strongly Agree Agree Neither agree or disagree Disagree Strongly disagree

5. I would generally support commercial solar projects that are hidden from the right-of-way (road).

   Strongly Agree Agree Neither agree or disagree Disagree Strongly disagree

6. I do not support commercial solar projects even if I can't see them.

   Strongly Agree Agree Neither agree or disagree Disagree Strongly disagree

7. Monkton should limit the number of solar array projects in town.

   Strongly Agree Agree Neither agree or disagree Disagree Strongly disagree

8. It is important to identify places in Monkton where we do and do not want to see future energy generation projects.

   Strongly Agree Agree Neither agree or disagree Disagree Strongly disagree

9. Monkton should directly benefit from commercial solar projects in town.

   Strongly Agree Agree Neither agree or disagree Disagree Strongly disagree

B. Energy Conservation and Efficiency

The State strives to limit carbon emissions to less than 80-95% below 1990 levels by 2050. How we use, conserve and generate energy at the local level will have an impact on reaching this goal. Do you agree or disagree with the following statements?

10. Monkton should require all new buildings be sited to maximize passive solar exposure.

Strongly Agree **Agree** **Neither agree or disagree** **Disagree** **Strongly disagree**

11. Monkton should require all new buildings to include rooftop solar arrays where siting allows for efficient generation.

    Strongly Agree **Agree** **Neither agree or disagree** **Disagree** **Strongly disagree**

12. Monkton should require all new construction to include a cold climate heat pump.

    Strongly Agree **Agree** **Neither agree or disagree** **Disagree** **Strongly disagree**

13. Property tax breaks should be given for new construction which includes a minimum percent of energy use derived from renewable energy.

    Strongly Agree **Agree** **Neither agree or disagree** **Disagree** **Strongly disagree**

14. It would be great to have a volunteer energy committee to help residents reduce energy use and emissions and save money.

    Strongly Agree **Agree** **Neither agree or disagree** **Disagree** **Strongly disagree**

15. I would like to receive more information from the Town on how to weatherize my home and other ways to conserve energy.

    Strongly Agree **Agree** **Neither agree or disagree** **Disagree** **Strongly disagree**