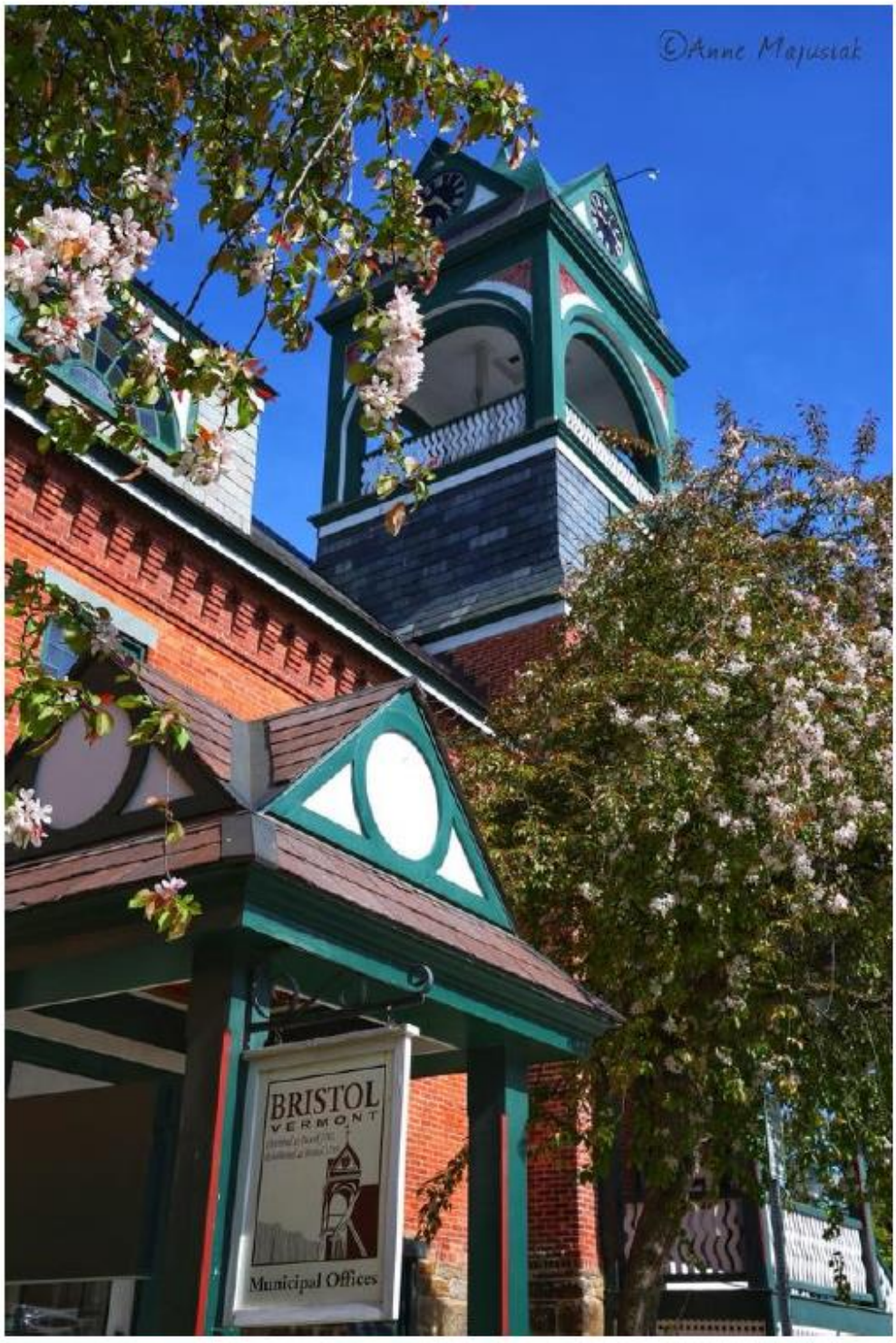

2020-2028

BRISTOL TOWN PLAN

Bristol, Vermont
Town Plan
2020

This plan was updated in 2020 by the Bristol Planning Commission,
supported by the Addison County Regional Planning Commission
and funded by a Municipal Planning Grant

Cover Photo: Bristol Town Hall in Spring, ©Anne Majusiak

Addison County
REGIONAL PLANNING COMMISSION

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INTRODUCTION

Background

Entering the town of Bristol, one passes a sign identifying the town as the "Gateway to the Green Mountains." It's a fitting description of this forty-two square mile municipality that transitions from Champlain Valley farmland to the wooded slopes of the Green Mountains. West of Bristol's inviting, compact village is a plateau that marked the shores of Lake Vermont and the Champlain Sea thousands of years ago, as they arose in turn during the melting of the Wisconsin glacier. To the east of the village, rises the heavily wooded Hogback ridge. Part of the Green Mountain National Forest begins just to the south of Main Street and the New Haven River, a portion of which is the Bristol Cliffs Wilderness Area. Agriculture, forestry, and other natural-resource-based endeavors surround the village. The beauty of our setting also enhances the numerous opportunities for outdoor recreation.

Purpose

In planning for the future of Bristol, the Planning Commission has kept in mind four fundamental charges:

- To protect the health and beauty of this remarkable natural setting;
- To foster a vibrant, prosperous, and socially inclusive human community;
- To support the historically successful and commercially sound downtown; and
- To sustain our foundation of value-added natural resource-based industries.

This Town Plan defines a long-term vision for the Town of Bristol and a means for achieving that vision. The plan is designed to serve as a primary reference when making community decisions and to provide guidance to local officials when setting public policy. The plan:

- Provides historical data and background information,
- Describes Bristol's current conditions, character and challenges, and
- Includes town goals, policies and actions.

Vision

The following broad vision reflects both research and consideration by the Planning Commission and many eloquent comments by residents attending public meetings. This statement, which will continue to evolve, expresses our highest aspirations for the community we love.

Bristol's citizens will have a deep sense of community yet remain independent and self-reliant. The town will be economically, environmentally and culturally diverse. It will have access to appropriate transportation and communication options. Affordable energy and efficient housing opportunities will be available close to the village area and within walking distance of its businesses. Other support services, such as childcare, health centers, and a wide variety of retail facilities will operate in the village of Bristol. The village area will remain the heart and core of Bristol.

The natural environment in both the rural and village sections of the town will be clean and healthy. Local merchants and businesses will benefit from tourism that fits into and reinforces the healthy, working landscape.

The town will have a healthy, local economy. The local economy will include businesses that are diverse, energy efficient, and compact. The economic climate will foster locally- owned and entrepreneurial enterprises. Employment opportunities will be stable and will provide competitive wages. These businesses will place minimum demands on municipal services, emphasize recycling and conservation, and provide meaningful work without limits to career growth.

There will be competitive returns on investment for employers and businesses. Businesses will often provide a type of economic growth that conserves or even restores environmental quality. These businesses will be attracted to the economic opportunities and quality of life in Bristol. They will rarely require local tax credits or incentives. Many businesses will add value to locally produced renewable natural resources.

There will be a cooperative relationship between local government and local businesses leading to good communication and coordinated changes where needed. Local government and local business will work together closely, effectively and efficiently. The local permit process will be clear, consistent, efficient, and predictable.

Bristol will maintain its quality of life by committing itself to changes for its energy future. This is a critical time for encouraging and supporting renewable energy sources and promoting energy efficiency. Energy prices are expected to rise and consume a larger part of household, business and municipal budgets. To keep Bristol an affordable place to live, the town will ask the Energy Committee to take the lead in researching and reporting back to the Selectboard about energy-saving possibilities.

Authority

The Planning Commission has prepared this Town Plan in accordance with the Vermont Municipal and Regional Planning and Development Act, Title 24 VSA Chapter 117.

Interpreting the Plan

The Bristol Town Plan is a guide for future growth within the town and provides for the development of land, public services and facilities commensurate with that growth. The terms "goal", "policy" and "action", are defined for use in this plan as follows:

- **Goal.** Expresses the long-range community vision relative to one or more issues or topics. This is a statement of achievement to which the town aspires.
- **Policy.** Expresses the town's intent or position with regard to specific issues or topics. In certain settings, such as during Board of Adjustment hearings or Act 250 proceedings, policy statements should serve as the basis for determining a project's conformance with the town plan. While other sections of the plan, in particular the narrative sections and goal statements, provide useful context for understanding the policies, it is the policies that serve as the final statement regarding the town's position.
- **Action.** Describes a specific measure to be taken to support one or more policies and achieve the community's long-term goals.

The town recognizes and appreciates the difficulties and challenges involved in balancing the rights of all individuals within a community. It accepts the premise that individuals may find that some property rights may need to be restricted in order to preserve the rights of others in the community. At the same time, the town continues to place a high value on property rights and intends that restrictions to those rights should be no more than necessary.

The Planning Commission, Selectboard, and Development Review Board or their successor will only approve land use changes and proposed projects that in their judgments conform to the entire Town Plan.

Guidelines for Consistency in the Chapters to Follow

Each of the subsequent chapters concludes with a series of numbered Goals and Policies. These are the community vision and town's position related to each of the Town Plan's main sections. The actions are listed at the very end of the document for ease of reference.

THE PEOPLE

Photo by Ian Albinson

Population and Housing

Formation of the Town

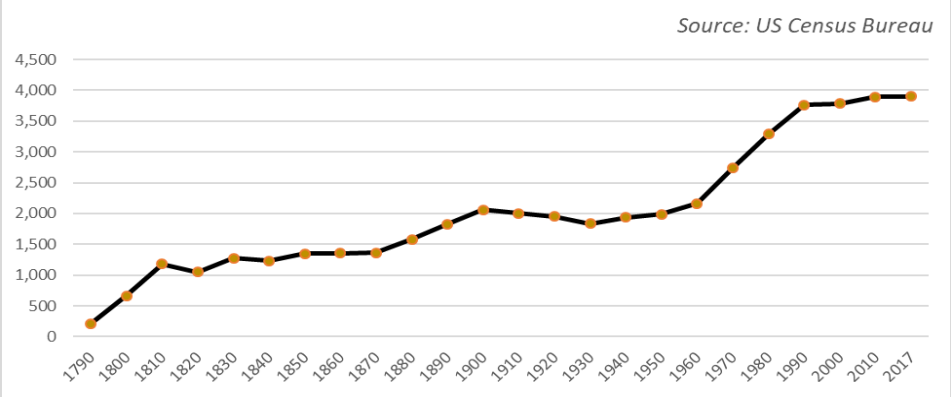
On June 26, 1762, Benning Wentworth, colonial governor of New Hampshire, granted a charter for the Town of Pocock[1] to Samuel Averill and 62 associates for 23,600 acres. As soon as 50 families had settled, they could hold a town organizational meeting. Landholders were required to cultivate five acres of every 50 acres, live on it, and improve it.

The first known European to become a resident, a fugitive from New York named John Broadt, arrived in 1773 and built a cabin about a mile west of the present village. Around 1784, a survey committee met in Canaan, Connecticut to decide on a method for a first division of land in Pocock. In 1785, the first survey of the town was made, and a pardon was obtained for John Broadt, who subsequently returned to New York. The first permanent settlers arrived in Pocock in 1786. Samuel Stewart and Eden Johnson and their wives came from Skenesboro (Whitehall), New York. On March 3, 1788, the first town meeting was held, and on October 21, 1789, an act of the legislature changed the name from Pocock to Bristol, possibly after the manufacturing city in Rhode Island [2].

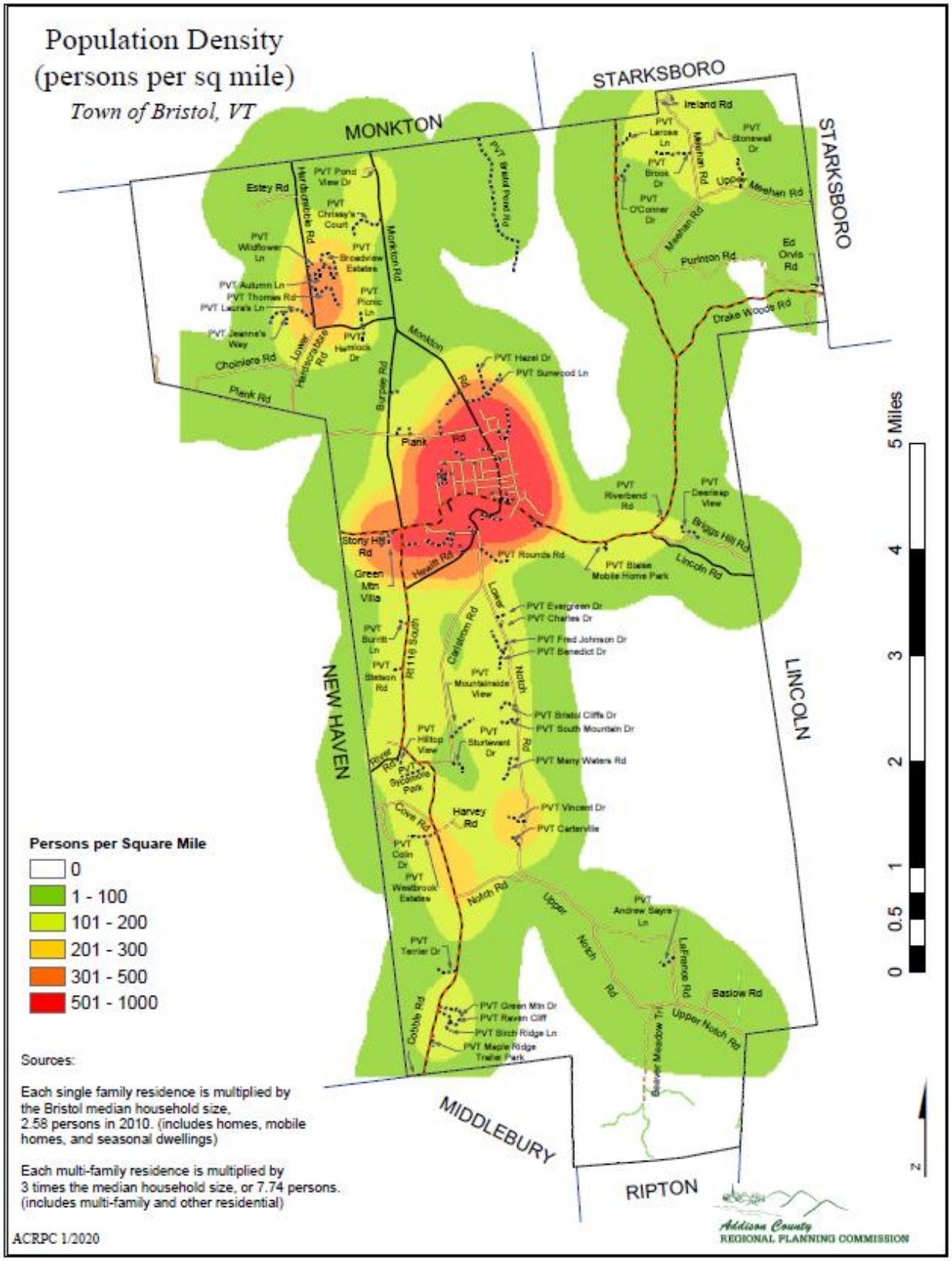
Historic Growth Patterns

In 1791, the first year of the federal census, Bristol's population was 211 people. By 1800, the population more than tripled to 665 and continued to increase at a steady rate. In 1810, the population was 1,179 and reached 2,000 people by 1900. For the first half of the 20th century, the population remained around 2,000 residents. Starting in the 1960s, Bristol grew by about 500 people per decade (Figure 1). This trend ended by 1990, and the population has remained at around 3,800 people into the 21st century. The 2010 Census counted Bristol's population at 3,894 and the American Community Survey (ACS) five-year estimate reports the population at 3,901 in 2017, an increase of only 7 people.

Figure 1. Population Change in Bristol



[1] Named after British Admiral Sir George Pocock, then engaged in the siege of Havana during Britain's war with Spain.
[2] The Vermont Encyclopedia, edited by John J. Duffy, Samuel B. Hand, Ralph H. page 67.


Population Density
(persons per sq mile)
Town of Bristol, VT
MONKTON
STARKSBORO
STARKSBORO
NEW HAVEN
LINCOLN
MIDDLEBURY
RIPTON
Persons per Square Mile
0
1 - 100
101 - 200
201 - 300
301 - 500
501 - 1000
Sources:
Each single family residence is multiplied by the Bristol median household size, 2.58 persons in 2010. (includes homes, mobile homes, and seasonal dwellings)
Each multi-family residence is multiplied by 3 times the median household size, or 7.74 persons. (includes multi-family and other residential)
ACRPC 1/2020
5 Miles
0
0.5
1
2
3
4
Addison County
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Demographics

Changes in the age distribution of Bristol's population have, in many ways, followed the broader demographic shifts in the region and state. The largest component of the population is part of the "baby boom" generation, which is now moving towards retirement, while the Millennial or "Echo Boomer" generation is starting to raise families. The subsequent generations have been smaller and therefore, the town has been seeing a decline in young adults and children as a percentage of the population. The average number of births each year to Bristol residents has declined over the past three decades, while the average number of deaths has increased, leading to a rate of natural increase that is approaching zero (Figure 2). This trend may present a problem for existing and prospective employers, local commerce, tax revenues, and the character of Bristol.

Figure 2. Vital Statistics by Decade

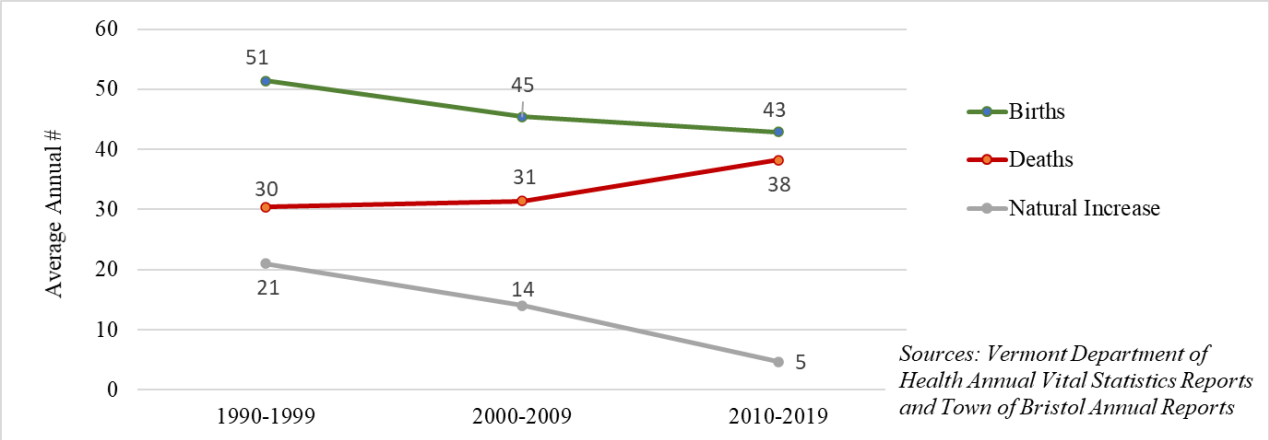
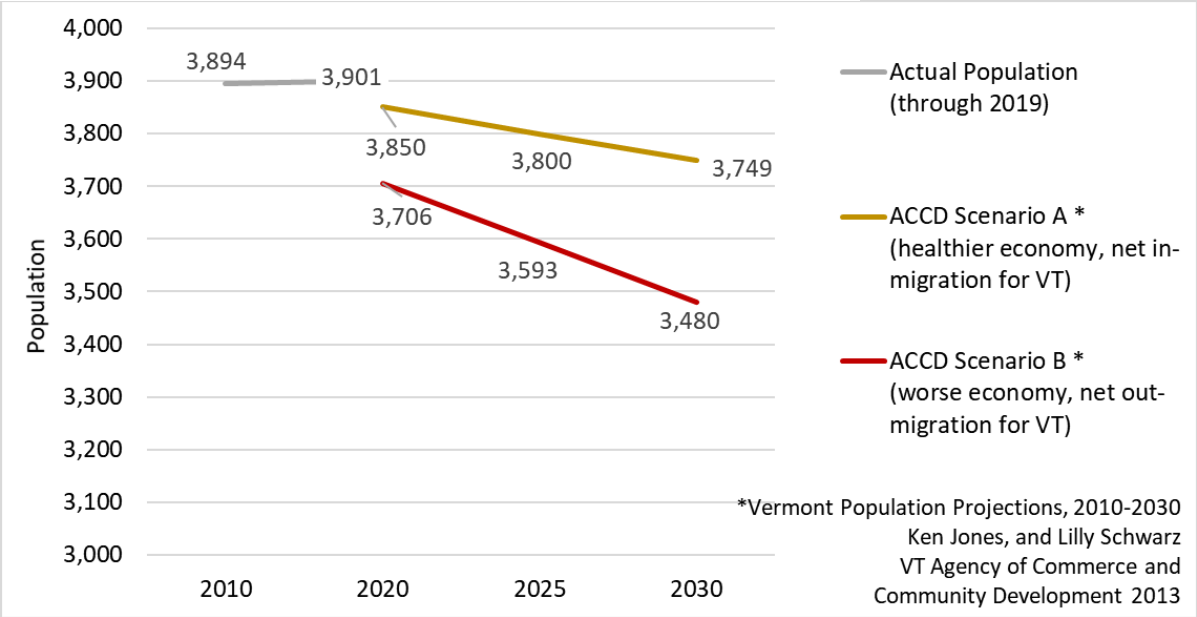


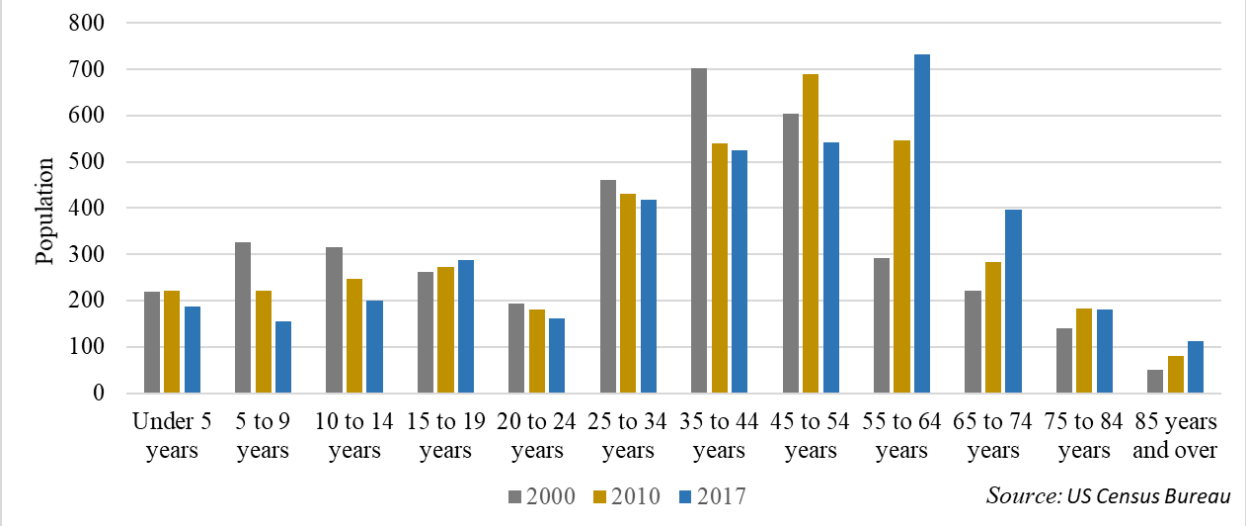
Figure 3 presents several population projections including the 2010-2030 population projections by the Vermont Agency of Commerce and Community Development and the Addison County Regional Planning Commission extrapolations of US Census information using the Small Population Projection Model. The projections anticipate a wide range of population change, from declines of 3 to 10%. While projections are useful in estimating demand for housing and services, they cannot always anticipate unforeseen events that may lead to rapid rises or declines in population or age groups.

Figure 3. Bristol Population Projections



Of particular note is the ongoing increase in residents above the age of 65, much like the region and state (Figure 4). Median age has increased from 37.1 (2000) to 41.1 (2010) to 45.2 years old (2017). As the population of Bristol and its neighbors continues to grow older, there will likely be an increased need for services that meet the needs of the elderly population.

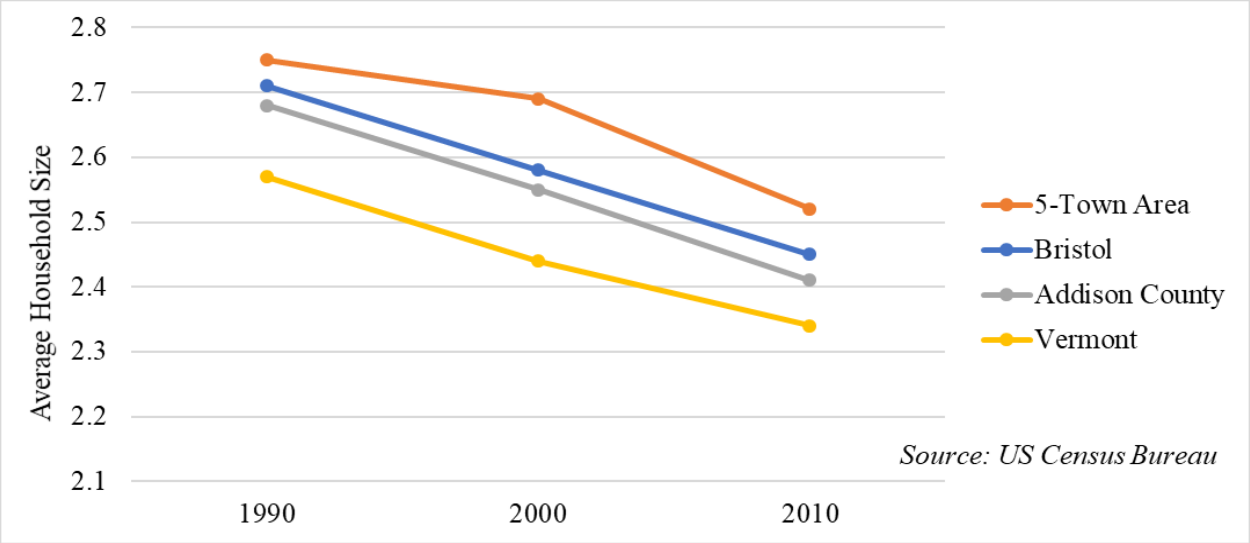
Figure 4. Distribution of Bristol Residents by Age Group



Households

A household is defined as all the people who live together in a single home or housing unit as their usual place of residence. A household can be a single parent with children, an elderly couple or a single person. In 1990 there were 1,376 households in Bristol increasing to 1,687 households in 2018[3]. Household size, however, has declined from 2.71, in 1990 to 2.45 in 2010 and is likely to continue this path, mirroring a state and national trend towards smaller families (see Figure 5). Household size is a significant factor in the growing demand for housing, because the smaller the average household size, the more individual housing units are needed.

Figure 5. Median Household Size

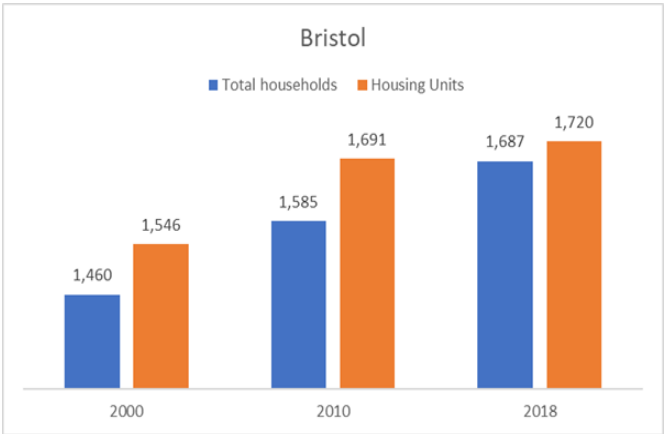


Housing Stock

Number of Units

During the rapid population growth of the 1960's and 70's, Bristol saw an increase in dwelling units as well. After the 1980's, however, the addition of new units slowed, increasing only modestly from 2010 to the present. According to the 2018 Census estimates, the town of Bristol had a total of 1720 housing units, an increase of 29 units from the last Census in 2010[4]. During that same period, however, the total number of households increased by 102, reducing available housing options and resulting in a low vacancy rate. Figure 6 shows the total housing units paired with the total households since 1970.

Figure 6. Total Households vs Housing Units



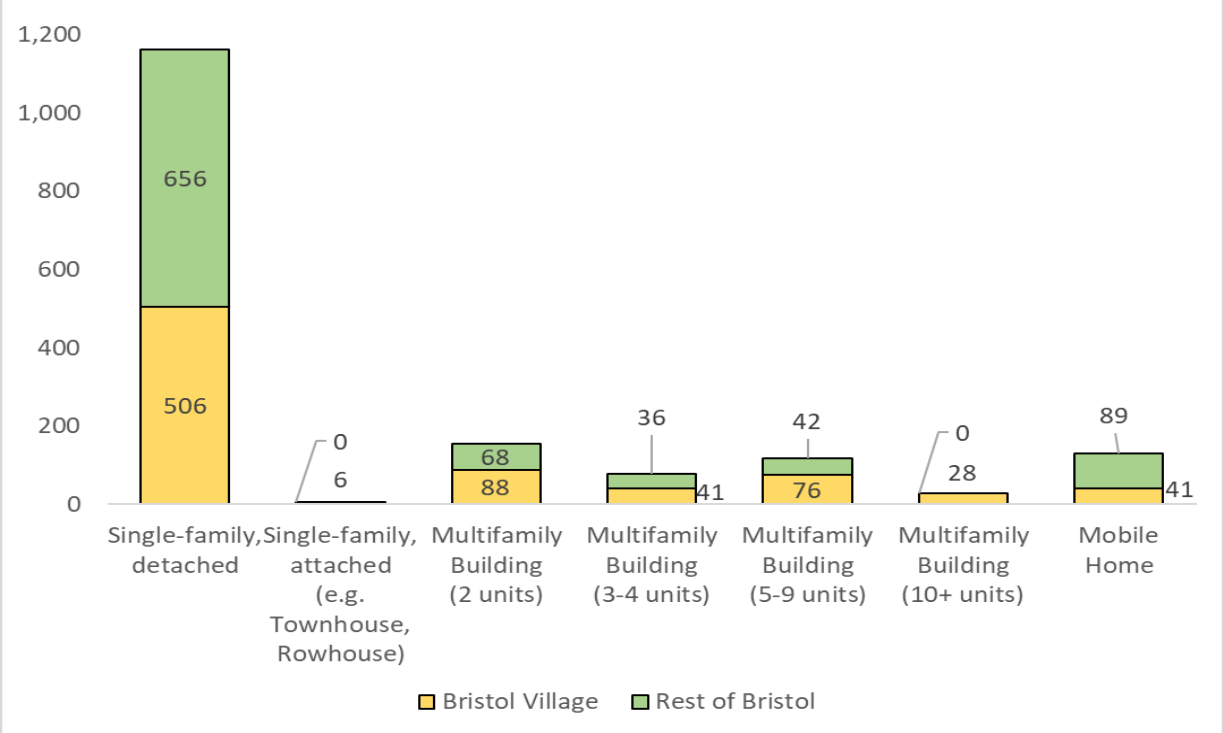
[3] Census data: ACS 2017 3-5 year estimate
[4] Census data: ACS 2017 5year estimate

Type and Age

The creation of housing units is not limited to new construction but any restoration or renovation that increases living space for households. A housing unit (HU) can be a single-family home, a duplex, an apartment, a mobile home, a group of rooms or a single room occupied as separate living quarters.

A variety of housing options can support a diverse population and the changing demographic of smaller households seen in Bristol. As illustrated in figure 7, approximately 47% of the total housing units in Bristol are located in the village area. During Bristol's boom years, the 1880's and 1890's, many large homes were constructed. These buildings were designed primarily to be grand, single-family residences with multiple bedrooms and plenty of living space. In 2017, 69% of all housing units were detached single family and of those, 49% were 3-bedroom homes.

Figure 7. 2017 Housing Types

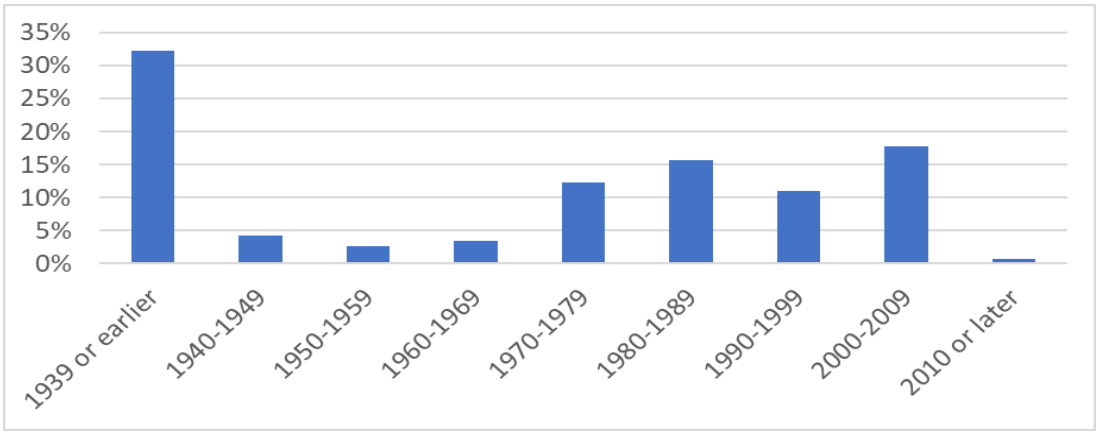


Over the years, some houses have been renovated to add an apartment or converted to duplex or multi-family units. Such conversions, if done thoughtfully, can be beneficial for landowners, renters and the surrounding neighborhood, providing additional housing units. Living Well, an assisted retirement community, is housed in a large, Queen Anne home on Maple Street.

Residential development has continued to infill the village area, resulting in a mix of housing types, sizes and architectural styles. Three mobile home parks are integrated into the Village residential area, Lauristen Lane, Kountry Trailer Park and Blaises. Woodland Apartments, a multi-building complex, has a total of 45 one and two-bedroom apartments. In 2017, Bristol Cohousing Village was completed, adding 14 housing units; 5 single family homes, 1 duplex and 2 multi-family structures. Two similar projects, featuring smaller, energy-efficient homes are in the development stages. Outside the village area, homes are scattered along the main thoroughfares, Route 116, Route 17 and Monkton Road, in-between farmland and forests and along the New Haven River. Areas of denser developments exist in the Hewitt Road/ Lovers Lane neighborhood, up on Lower Notch Road and along Hardscrabble Road. A mix of housing types and sizes is evident in these areas as well.

Bristol has an abundance of older homes, more than 30% built in 1939 or earlier, see figure 8.[5] Although, many have been renovated, some need significant repair or renovation to make them efficient, accessible, safe and affordable. In many cases, due to increased utility, energy and construction costs, individuals and families struggle to maintain and afford homes they have owned for years.

Figure 8. Housing Units by Year

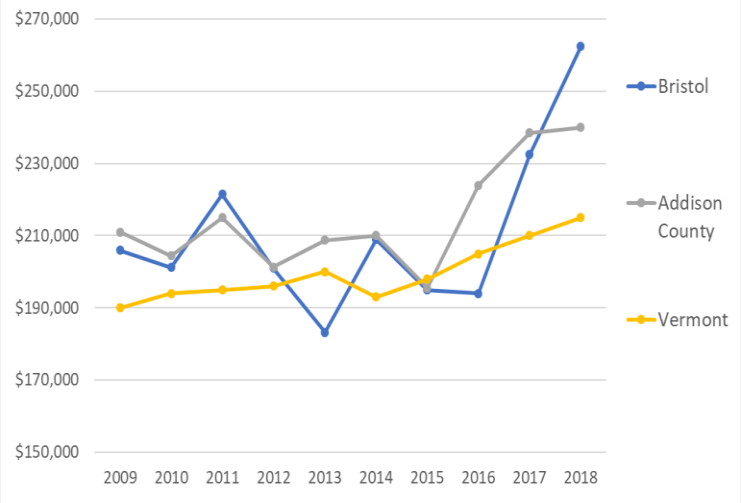


[5] Housingdata.com

Costs and Affordability

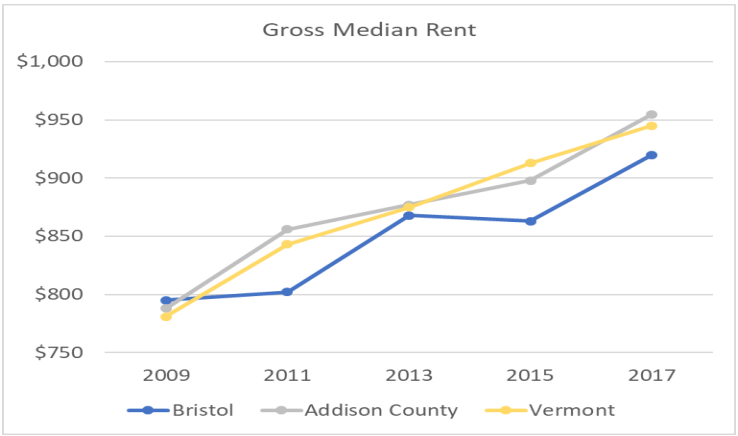
Most of Bristol's housing is year-round. The small percentage of seasonal homes does not significantly impact the availability of homes or the vacancy rate. Approximately two-thirds of Bristol residents own their homes and the ratio of owner occupied to rental units in the village, about 2.6 to 1, is equivalent to that of the town as a whole. Bristol experienced escalating housing prices in the early 2000's. While the national economic market downturn of 2008 slowed the rapid rise of housing costs, home prices begun to climb significantly in recent years (Figure 9). Real estate prices in Bristol generally follow the county-wide trend, but often exceed the statewide median price for all homes.

Figure 9. Median Housing Costs



Multiple factors contribute to Bristol's increased housing prices; rising energy and construction costs, a low vacancy rate resulting in a competitive market and the appeal of the town's walkable village and surrounding natural resources. In 2010 the median home price was $201,250, in 2017 it increased to $232,500, by approx. 15%. The monthly cost to rent has also risen 15% during this period, from $795 in 2009 to $920 in 2017 (Figure 10).

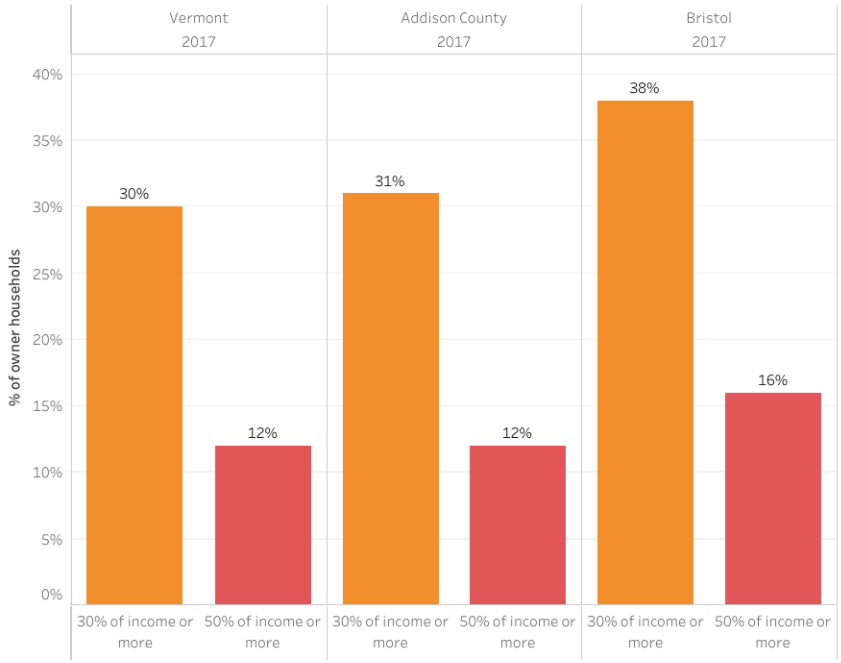
Figure 10. Median Rental



Income and wages earned by Bristol residents, however, did not increase at the same pace as housing costs. In 2010 the household median income was $50,801 (based on two wage earners) and in 2017, household median income grew only to $51,417.

Due to this disparity, buying or renting a home has become unaffordable for many. Affordability is based on the percentage of the household's income being spent on housing costs; rent or mortgage, utilities, insurance and taxes. Spending 30% or more of one's household income on housing is considered unaffordable.

Figure 11. Homeowner Cost Burden



In 2017, 38% of Bristol residents were spending above the 30% affordability threshold and 16% spent 50% and over what was affordable. The ability to afford housing is especially problematic for the town's elderly residents on fixed incomes and first-time buyers and renters needing to provide funds for down payments or security deposits. The 'wage gap' between household income and available housing is a growing problem in Bristol and throughout the State. In 2018, an average fair market one-bedroom apartment was $870/ month in Addison County. The household income needed to afford this home would be $34,800, or $16.73/ hour (40 hours). For a two-bedroom apartment at $1,021/month the household income needed would be $40,840, or $19.63/hour.

Housing Needs and Concerns

Housing demand in Bristol currently exceeds supply. Due to the increased number of households there are fewer housing units available for purchase or rent. If available, housing units may not be the right fit the following reasons:

- **Too Large**: 70% of Bristol's housing stock was built prior to 1990, for larger families (households). These homes are large with more bedrooms than are needed for the current smaller households. Larger homes are typically more expensive and cost more to heat and maintain.
- **Location:** The ability to walk to services, schools and public transportation is a necessity for many families. The compact nature of Bristol Village affords this amenity as well as access to bike and hiking trails and recreation opportunities. Housing options outside the village may restrict transportation and employment options for some residents. Development of smaller, efficient housing outside the village can be prohibitive to build due to the cost of infrastructure, such as water and sewer.
- **Accessibility:** Many long time Bristol residents fear that they will not be able to remain in their community as they age. Many still live in the homes where they raised families but now do not have the means to maintain or renovate these structures to meet their current needs. Options to downsize to smaller, accessible homes or apartments are limited.
- **Too Expensive:** 38% of Bristol residents are spending 30% or more of their median income for suitable housing. Not all households can afford these extra costs and live in units that are substandard.

Housing Opportunities and Support

Individuals and families that cannot afford market rate housing are often eligible for financial support from local and federal organizations and programs. Typical types of housing assistance can be individual support, such as housing vouchers or access to subsidized housing units owned and managed by a non-profit. Mobile home parks provide housing for many of Bristol's households. The preservation of these homes and communities is essential to provide an affordable option for residents. Addison County Community Trust (ACCT), a non-profit housing organization, owns and manages several mobile home parks in Bristol. ACCT's involvement and financial support in these communities, provides a safe and sustainable housing option for residents.

Support can be in the form of grants or low interest loans used to renovate existing structures making them more energy efficient and responsive to the local housing needs. Pleasant Hills Apartments for the elderly, in collaboration with Housing Vermont & Addison County Community Trust, recently underwent an extensive renovation, which included weatherization, energy efficiency improvements, a new roof, siding, windows and doors. The parking area and pathways were also repaved to meet Americans with Disabilities Act (ADA) standards. Currently these apartments are subsidized to 30% of median income of the residents. Regulatory changes in local planning and zoning law that allow smaller and affordable dwelling units, such as accessory dwelling units (ADUs) or duplexes, in existing dense areas can also ease the housing shortage and support the needs of Bristol residents.

Goals and Policies

Goal 1. To increase the supply of available and appropriate and affordable housing that meets the needs of Bristol's population.

Policies:

- Promote changes in municipal infrastructure (septic and water) and regulatory mechanisms that support compact, mixed-use development and increased density in the village center area**.**
- Ensure that new and rehabilitated housing development will reinforce and reflect the traditional character and form of Bristol's settlement patterns.
- Support existing affordable/ subsidized rental housing.
- Support efforts to improve substandard rental housing to comply with state laws for Vermont Fire and Building Safety Codes and standards.
- Support zoning regulations to allow more flexibility in creating accessory dwelling units, duplexes and multi-family units within existing neighborhoods.
- Support efforts to maintain existing mobile home parks and increase the sustainability of these communities.

Goal 2. To ensure that the Bristol's housing stock provides for all segments of the community.

Policies:

- Support the incorporation of accessible design standards in new and rehabilitated housing to facilitate access for people with disabilities and aging adults.
- Plan for the development of elder housing to meet the needs of the Bristol community.
- Encourage housing that support aging in place.
- Support housing projects that are accessible to services, educational and recreational facilities by public and other forms of transportation.

Goal 3. Collaborate with public and private organizations to develop solutions to current housing challenges facing Bristol.

Policies:

- Support the restoration and development of vacant or underused buildings to create new housing through adaptive reuse.
- Encourage developers and communities to create shared utility infrastructure; and community septic systems and water systems.
- Support and collaborate with Addison County Community Trust (ACCT), Housing Vermont (HV) and other non-profit, private development and financial organizations that serve our region's housing efforts.
- Consider the use of public-private partnerships to help reduce the cost of new housing projects.
- Explore the possibility of a 'Housing Trust Fund' to support housing initiatives.

Goal 4. Promote innovative and sustainable planning, design and construction of homes in order to achieve energy efficiency goals, reduction in housing costs and minimize environmental impacts.

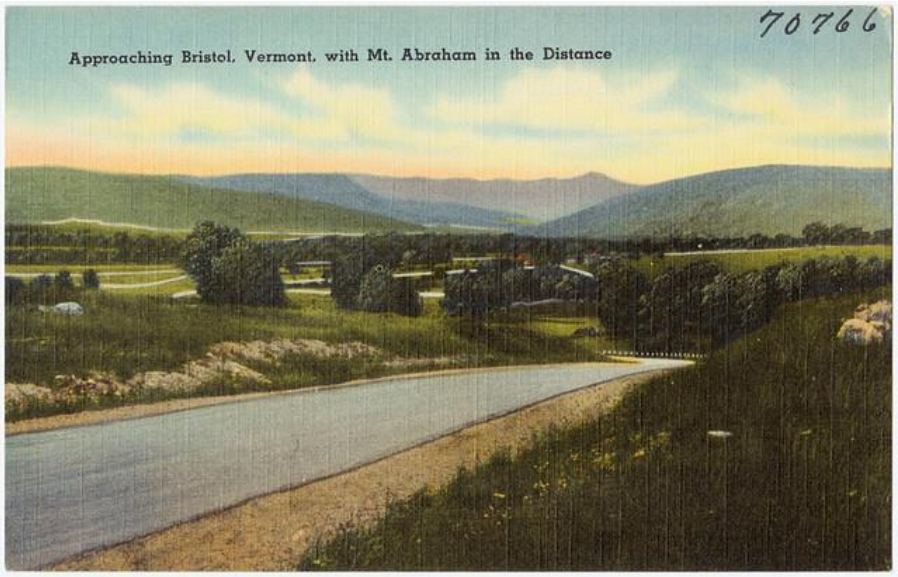
Policies:

- Encourage housing developers to locate projects in existing village centers, on vacant "infill" lots, close to jobs, public transportation and services.
- Help residents work towards 2050 energy targets of increased weatherization, conservation and renewable generation.
- Ensure that all new construction meets Residential Building Energy Standards as required by the State.
- Encourage the construction of new homes in areas planned for growth, reducing fragmentation of productive or ecologically important farm and forest lands**.**
- Support projects that share community resources and responsibilities.

THE COMMUNITY

Scenic, Historic and Cultural Resources

Scenic Views



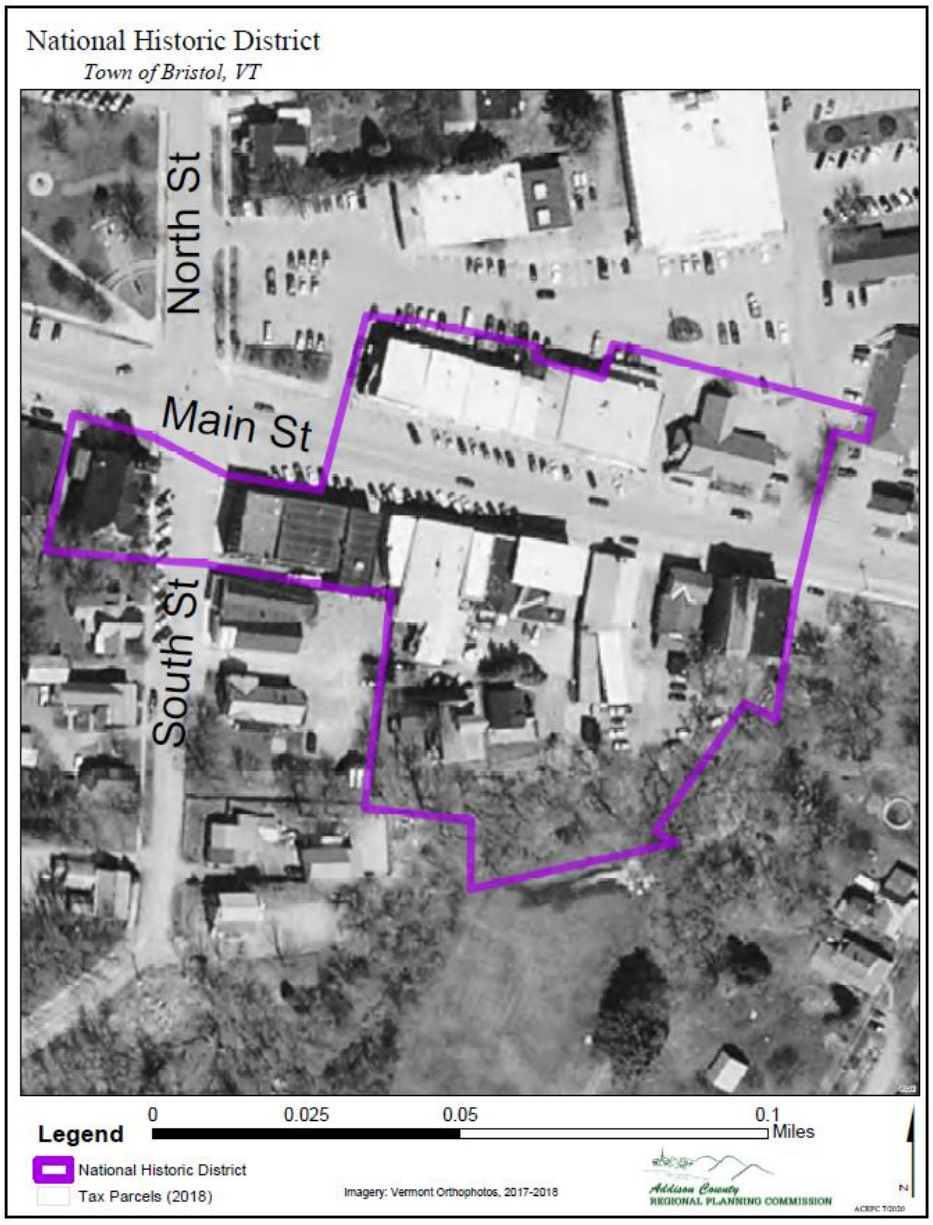
The location of Bristol at a distinctive confluence of mountain ridges and a river notch provide scenic approaches from nearly every direction Entering from the west on Vermont Route 17, the view is of the north-south spine of the Green Mountains, centered on Mount Abraham. The view of Mt. Abe third highest peak in Vermont at 4,100 feet has stopped many a camera-clicking tourist at the Route 17 and 116 intersection, just west of the village. Another scenic view is the approach from the north along Route 116, south of the Route 17 intersection, as mountains surround the road through a picturesque valley.

Just as there are many scenic views towards Bristol, there are a number of priceless views from town gazing outwards. A hike up to The Ledges, on a popular route originating from the end of Mountain Terrace, through privately-owned forestland, provides a great viewing area overlooking the village as well as sunsets over the Adirondacks and Champlain Valley. The view from West Main Street across the bend in the New Haven River and down the Green Mountains to the Notch and Elephant's Head is breathtaking.

And of course, there are innumerable local views within Bristol with distinct and beautiful natural features. The town's rivers and streams are some of the most scenic and recreational spots. The most visited area is Bartlett Falls on the New Haven River, town property used 100 years ago to generate electricity for the village. Its ledges and pools are now crowded in warm weather with locals and visitors. Another scenic waterfall is town-owned Memorial Park on Route 17 near South Starksboro, where wooden steps leading down to a breath-taking gorge. Sycamore Park along the New Haven River provides views of the clear riffles and pools with Bristol Cliffs as a backdrop. Beaver Meadows, originally farmland, has been transformed by beavers into a stunning landscape of ponds and meadows attracting a variety of wildlife. Many roadways, including Drake Woods (Route 17), Lincoln Road, Notch Road and River Road, follow these same streams and rivers affording travelers everchanging vistas.

Historic Buildings

The Bristol Village Historic District is a large, well-preserved area with a range of 19th and early 20th century building styles and structures reflecting the village's evolution. Initially a crossroads with a rectangular green, the village evolved in a loose grid pattern. The Main Street block is lined with 2-story commercial Italianate storefronts and has been included in the National Register of Historic Places. Building styles are intermixed: on original streets early buildings were often remodeled and lots filled in with later buildings; on later streets the habit of moving buildings resulted in surprising juxtapositions. On several streets, early farmhouses and barns remain, engulfed by the village's late 19th century expansion. As a result, each street has its own character. The village has maintained uniformity of building scale, setback, and materials with few alterations or intrusive structures.



Some noteworthy buildings that still exist in Bristol include:

- **The Hatch Block.** The Hatch Block at 29-31 Main Street is a 3-story wood vernacular Italianate structure with a central hallway and a 2-tiered front porch. It was originally a 2-story building built about 1871 and served as a hotel, furniture store and undertaking parlor. Early in its history it became the birthplace of the Bristol Band. During the mid-20th century, there were a series of restaurants at the east bay. A series of bar establishments followed at this location.
- **The Thomas Building.** This 2-story Federal period building at 27 Main Street was built about 1835 as a private residence. It was converted into commercial use. The Ramie C. Martin paint and paper business was there from 1907 to 1942, followed by Way's Hardware until 1962. Tony and Madine Thomas owned and operated their Sporting Goods store there until 2004, followed by a series of antique stores.
- **Deerleap Building.** Originally known as the Van Patnode building, this one-story clapboard building was built in 1920 and operated as a garage by a succession of three owners. In 1990, new owners redesigned its façade in the Colonial-style and added a cupola with weathervane. The building is currently home to Art on Main, a cooperative arts and crafts gallery.
- **Kilbourn's Cyclone Grist Mill.** Behind the south side of Main Street sits this 1924 Grist Mill occupied later by a toy company and completely renovated and updated in 2004, to a residence, offices and studio.
- **Dunshee Block.** This block at 19-21 Main Street is a 7,500 square foot, three-story Italianate building built in 1880 originally with retail below offices and retail above. Since mid-1980s five apartments have been located in the second and third floors, with retail and offices on first floor. By 1990, this building was in serious disrepair. In 2000, seventeen community-minded "investors" came together, purchased the property, and substantially upgraded it. This group took full advantage of historic tax credits, and this redevelopment project became the cornerstone for a community investment concept that has continued in use in Bristol since that time.
- **Almost Home Market.** 28 North Street has been the home of a series of small country markets, delis, and related businesses for over 110 years. The location operated as Brown's Market from 1938 to 1966. It was Bristol Market, a health food store location prior to Almost Home Market, which opened in 2003. The building has two residential apartments above the store.
- **Bristol Railroad Station.** This building at 83 North Street was erected as a railroad station in 1892 and is now a residence.
- **Colonial Theatre/Brown McClay Funeral Home.** Built in 1915, this building on South Street operated as a theatre until 1956. It was converted to a funeral home in 1961.

- **Old Bristol High School.** This building is on Park Place, behind the Green, and was built in 1856 and converted to its present office and health club uses in the 1980s.
- **Old Bristol Firehouse.** The North Street station housed the original fire department, founded as the N.H. Munsill Hose, Hook & Ladder Company, from its construction in 1897 until the department moved to its present location in 2016.
- **Local Churches.** These include: (1) Federated Church on North Street was built in 1840; (2) The first Baptist Church on Park Street on the Green was built in 1819, but substantially renovated several times in the 1800s; and (3) The original Congregational Church built in 1889 was converted to the Libanus Masonic Lodge in 1948.
- **Private Residences.** Bristol has many historic houses including the Dr. David Bosworth Homestead (1805) at the corner of Park and North Street; the E.B. Patterson/Dr. Dewees Brown House (c. 1898) at 6 West Street; the William A. Lawrence/Crystal Palace (1897) at 48 North Street; the Harry Dunshee/G.L. Heffernan House (1877) at 60 West Street; the Edward Dunshee/Merritt Allen/Clair & Ruth Lathrop house known as "The Maples" (1832) on Hewitt Road; the Gaige-Moor/Prudence Tomasi House (1817) at 1 North Street, Peake House at 16 North Street.
- A number of **Municipal Buildings** are also historic- these are described in the Municipal Facilities section.

Fires and floods have been frequent instruments of change to the built landscape. In 1898, a fire destroyed all of the contiguous buildings on the north side of Main Street. The Drake-Farr block of stores at the corner of Main and South Streets burned in 1914. Except for the Dunshee block, a 1924 fire destroyed all of the remaining contiguous buildings on the south side of Main Street. Multiple floods and fires destroyed or incapacitated virtually all of the forges, factories and mills along the New Haven River. The Bristol Manufacturing Company, once a nationally known coffin maker, suffered major flood damage in 1927. That flood and the effects of the Great Depression brought it to bankruptcy in 1937. The company's closed buildings were destroyed by fire in June, 1947.

Other noteworthy buildings have changed over time due to changes in economic needs and owner desires. The venerable Colonial-style Bristol Inn, erected in 1818 in the heart of the village, was torn down in 1961 to make room for a grocery store, now a Walgreens drugstore, and a parking lot. The Bristol Inn Annex, however, was preserved and is now located on Mountain View Street and used for housing. A beautiful Gothic-style Catholic Church, built in 1877 on the northwest corner of the green, was torn down in 1971 and replaced with a contemporary brick structure a few yards away on the corner of Park and West Streets.

Cultural Resources and Events

Many organizations and individuals perform remarkable efforts to providing cultural, educational and social activities and facilities for the quality of life in Bristol and surrounding areas. The following is a partial listing and short commentary on some of the better-known groups that are presently active in the community. This list is not necessarily complete and there are many other individuals and groups who contribute significantly to the community's well-being.

The Bristol Band. The community band, recently incorporated, has functioned in one guise or another since about 1870. It provides several services to the community. Primarily, the band plays weekly concerts on the green's Bandstand through the summer months. The community has shown a high level of interest in these concerts which attract an enthusiastic gathering and that provide opportunities for local organizations to hold fund-raising activities in conjunction with the concerts. Other important band functions include providing opportunities for musicians to use their talents in contributing to the community's quality of life, providing funds for young musicians for music participation, education, and instruments, and representing the Bristol community at out-of-town concerts and celebrations.

Bristol Historical Society. Formed in 1977, the Historical Society's goals are to discover, collect and preserve information and materials on the history of Bristol. It welcomes donations of photos, diaries, genealogies, artifacts and oral testimonies supporting that history. The society presently maintains a headquarters and museum in the town's Howden Hall on West Street.

Fourth of July Committee. An outgrowth of former activities of the Recreation Club, centering around the 4th of July, this group of dedicated citizens annually put on the single most attended event in the community's annual list of activities. Members of the committee find that the work of preparing and running events, as well as fund-raising, is strenuous and invite other community members to participate in the committee activities.

The Outlook Club. The Outlook Club began as a women's book club, known as the Bristol Women's Club, which was formed in 1900 and functioned continually until 2010. Its purpose was to promote culture and community improvement. Its records indicate sponsorship and contributions to many local worthy causes over the years.

Bristol Friends of the Arts (BFA), Art on Main. A non-profit organization, BFA's mission is to enrich the lives of Bristol area residents by providing opportunities to participate in and to appreciate the arts and cultural heritage of the community. BFA supports Art on Main, a cooperative arts and crafts gallery, and also promotes and participates in activities of Bristol Historical Society and restoration of the town's historic Howden Hall.

Northeast Addison Television (NEAT). A non-profit, community television station serving Bristol and the neighboring 5-town area, it was launched in 2003 with a mission of using locally run television to strengthen community life. In addition to broadcasting local events, the station

provides production workshops, movie camps, after-school labs, teen internships and on-the-job training. Original works by young film-makers are also broadcast. NEAT also collaborates with other local organizations including the Recreation Department and the local schools.

Bristol CORE (former Downtown Community Partnership) and Design Review Commission. The town earned a "Downtown Designation" from the State of Vermont in 2006. The Bristol Downtown Community Partnership, an independent non-profit tax-exempt entity, was formed to undertake efforts to support the business community in this area, via community events, marketing, economic restructuring, and community education on the benefits of shopping locally. Under the rules of this designation, a Design Review Commission appointed by the Selectboard was established to review alterations and construction in the designated area, and to make recommendations to the appropriate municipal panel.

Free & Accepted Masons and the Order of the Eastern Star. Libanus Lodge No. 47 was chartered on January 01, 1970 by the Grand Lodge of Vermont F.& A. M. Volunteer work, scholarships, senior meals, and support of needy families and the community food shelf are some of the fraternal organization's contributions to the community. Lodge located in the former Congregational Church built in 1898 at 2 Elm Street.

Knights of Columbus. The Bishop Robert F. Joyce Council of the St. Ambrose Parish in Bristol is an integral part of the Knights of Columbus organization. Monthly meetings are held on the second Sunday of each month at St. Ambrose. The Knights of Columbus is the world's largest Catholic Family Fraternal Service Organization. Founded in 1882, and headquartered in New Haven, CT, there are now nearly 13,000 councils and nearly 1.7 million members plus their families who are actively involved in volunteer service programs for the Catholic Church, their communities, their families, young people, and one another. Fellowship is promoted among members and their families through educational, charitable, religious and numerous programs and projects directed to benefit the parish and community.

American Legion. Bristol American Legion Post 19 is a non-profit organization serving veterans, their families, children and youth programs, the elderly, and various other causes in our five-town area and beyond. The total membership averages 800-900, and this includes the Sons of the American Legion and the Auxiliary. They annually donate over $50,000 to various causes that include: $6,000 in scholarships to MAUHS seniors, fund the annual academic banquet, Little League, Babe Ruth and Legion Baseball programs, major contributor to the new Elderly Services Project in Middlebury and the new wing at Porter Hospital, financially assist Cub Scout Pack 543 on summer camp costs, the only contributor to girls AAU basketball program, and many more worthy causes in our five town area. The Legion is the chartering organization for Boy Scout Troop 543.

Religious Organizations

- Baptist Church, Park Street
- Federated Church, North Street
- The River Church, Rocky Dale Road
- Seventh Day Adventist Church, Rocky Dale - Routes 116 and 17
- St. Ambrose Catholic Church, West Street and School Street
- Terasem Movement TransReligion Inc.

Events

The town of Bristol also hosts a number of cultural events that bring residents and visitors together. These include:

Fourth of July Parade

The event is reportedly the oldest continuing 4th of July event in Vermont. The festivities include Bristol's infamous Outhouse race, a large parade, fireworks and an afternoon of entertainment and other opportunities on the Village Green.

Pocock Rocks Music Festival & Street Fair

For a decade this event has celebrated Bristol as a great place to shop, dine, live, work, and visit. The event features live musical performances, vendors, and activities for kids. Money raised from the Pocock Rocks Music Festival & Street Fair supports the community-building efforts of Bristol CORE.

Chocolate Walk

The Chocolate Walk is held on the first Friday night in December. Downtown businesses provide complimentary chocolate treats.

Bristol Harvest Festival

The last Saturday in September is a day of harvest fun and music on the Bristol town green.

Lumen Celebration of Fire & Light

On the third Saturday in December the Village hosts fire performers, a lighted walk and fire pits on Main Street.

Goals and Policies

Goal 1. Bristol will protect and improve the scenic resources, historical, and cultural assets that provide a significant benefit to the general public.

Policies:

- Encourage and promote efforts to enhance the appearance of historic structures and districts.
- Support the listing of historic sites and buildings on both the National and Vermont Register of Historic Places if the property owner desires it.
- Promote and support the activities of organizations and individuals that are involved in community historical, cultural, scenic resource development and eco-tourism.

Municipal Facilities and Lands

Municipal Departments and Buildings

Holley Hall. This is the center of town administration and legislative activity. The Town Offices, and meeting rooms are located in the renovated ground floor of the building. The Hall, on the main floor, has a balcony and stage is the location for Bristol's Town Meeting Day, as well as numerous community events, concerts, plays, recreation classes and conferences. The following municipal positions and departments are located in the Town Offices:

- Administrator
- Clerk and Treasurer
- Planning and Zoning
- Water and Sewer Department.
- Recreation Department

This Bristol centerpiece was erected in 1884 at its present location as a municipal building. The building's style is Queen Anne with a brick veneer, wood shingle siding, stained glass windows and a corner bell tower. In 2010-2011, extensive restorations were made to the main hall interior, balcony and roof supports. The ground floor was renovated to accommodate the new Town Offices and improved handicapped access. In 2018, acoustic improvements were made in the main hall, enhancing the experience of cultural events and Town Meeting Day. The iconic landmark was acknowledged with a preservation award from the Preservation Trust of Vermont in 2012.

Howden Hall. This structure began its life as a Congregationalist church, completed in 1841. The building was purchased in 1890 by William S. Howden and Mrs. Susan Hall, and donated to the Advent Christian Society in which they were active members. In 1947 the building was donated to the Town of Bristol for school purposes. During the 1950's the building was used for various educational programs such as vocational agricultural training, industrial arts, homemaking, two primary grades and as an office of the Superintendent of Schools. When Mount Abraham Union High School opened in 1968 and the elementary classes were moved to the former high school space, Howden Hall was no longer needed for school purposes. Since 1991 it has been a home for the Bristol Historical Society and other municipal meeting purposes.

Lawrence Memorial Library. The colonial revival white clapboard library was built in 1911, as a gift of William A. Lawrence, who paid for the building and gave the land in honor of his late wives, Mrs. Lockie Partch Lawrence and Minnie Peet Lawrence. His will continued his support for the Lawrence Memorial Library, and included the donation of four houses on Lawrence Lane that would help finance the library. Today, financial support for the library comes from tax revenue, endowment/investment income, and various fundraisers. In 1998 a handicapped accessible entrance and lift leads to the Children's Room and Community Room. In 2002, the main floor of the library was renovated to maintain the historic integrity of the building. On April 22, 2011 the Vermont State House recognized the library and its service to the Bristol community for 100 years.

Bristol Firehouse. In the summer of 2016, the Bristol's all volunteer Fire department moved to a new, 11,500 square foot, energy efficient facility on West Street across from Airport Road. The original fire department, founded as the N.H. Munsill Hose, Hook & Ladder Company in 1894, was housed in the North Street station since 1897 when the building was constructed. The spacious new station, on 2.7 acres, has drive-in, drive-out garage bay doors eliminating the need for vehicles to back up. This safety feature allows trucks and rescue vehicles to park strategically to depart for responses. The new facility also has the required space for firefighters to store and care for their protective gear, something that was lacking in the previous structure. The town will also have access to the fire station. A large community room and kitchen will be available for events.

Town Garage. Located at the west end of Pine Street, at the entrance to the old landfill, this structure supports Bristol's Public Works Department and other municipal functions of the town including the Recycling Center, Scales, Dog Pound, and gravel storage.

Parks

Bristol owns and maintains several parks and recreation areas. The following is a list of these resources:

- **Bristol Town Green, Bandstand, and Playground (1.5 acres)**
- **Bartlett Falls (30.36 acres)**
- **Sycamore Park (8.4 acres)**
- **Eagle Park (5.5 acres)**
- **Memorial Park (19.3 acres)**
- **Saunders River Access (40.1 acres)**

See the recreation section of the plan for detailed description of these properties and what they offer the community.

Cemeteries

Bristol has two active cemeteries located close to the village, and three smaller town-owned cemeteries located farther from the town center[6].

- **Greenwood Cemetery,** Stony Hill Road- The Bristol Cemetery Association is responsible for the operation and maintenance
- **Mt. St. Joseph's Cemetery**, Burpee and Plank Road- The Roman Catholic Diocese of Burlington.
- **Briggs Hill Cemetery**, Briggs Hill
- **Varney Cemetery**, Hardscrabble Road
- **Meehan Cemetery,** Meehan Road

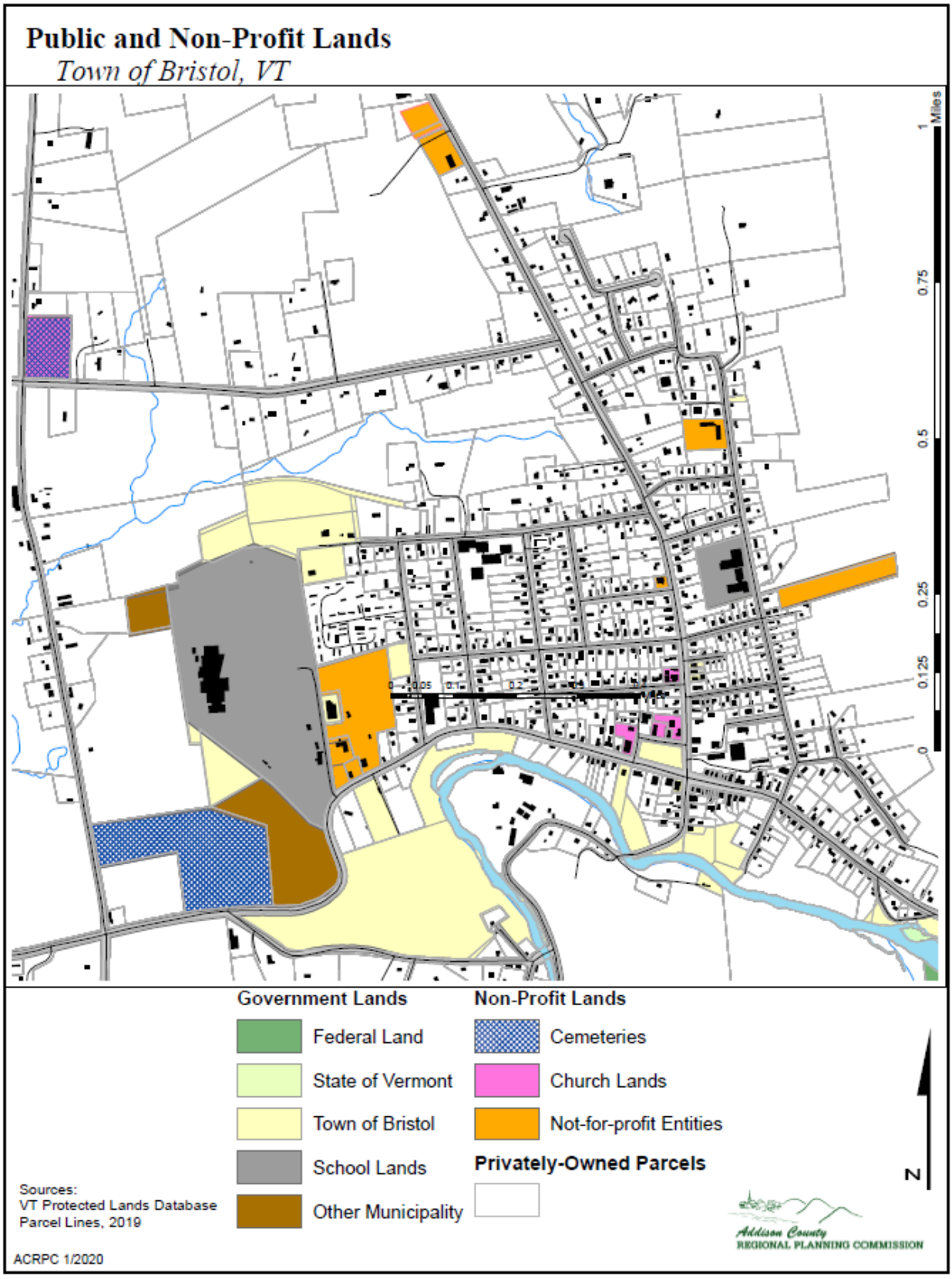
[6] Vermont Old Cemetery Association, Burial Grounds of Vermont

Other Municipal Facilities and Land

- Gravel Pits (Town Pit- 4.5 acres) Routes 116 & 17
- Water district property, reservoir (2 acres)
- Ground water Spring and pump station
- Town landfill (12.34 acres) Pine Street
- Village Garage (80 Pine St)
- Salt Shed (2.4 acres)
- Sewage Treatment Facility (4.2 acres)
- Town Forest (113 acres) located in the Town of Lincoln (including a discontinued water line through Lincoln and the easterly portion of Bristol.)
- Lord's Prayer Rock (1 acre) and Shackett parcel, Route 116 south
- "Riding Ring" parcel (no buildings), 1 acre, Liberty Street
- Skating rink, Airport Drive
- Sewer District property, Basin St, administered by the Downtown Sewer District
- All sewer & stormwater lines, dry wells, and support facilities, which are displayed on plans on file in Bristol Town offices.
- Stoney Hill Property (no buildings), 31 acres, Routes 116 & 17
- Water District property, which is administered through the Bristol Water District
- Briggs Hill (old chlorinator facility)
- Municipal spring, end of Pumphouse Road
- Pump Storage Facility, easterly of Mountain Terrace
- All district water lines, hydrants, and control facilities including pumphouse, water storage, valves, etc., which are displayed on plans on file in Bristol Town offices.

State and Federal Land

- State-owned parcels on Bristol Pond, Bristol Pond Access, Monkton Road
- Green Mountain National Forest, including the Bristol Cliffs Wilderness Area


Public and Non-Profit Lands
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Government Lands
Federal Land
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Town of Bristol
School Lands
Other Municipality
Non-Profit Lands
Cemeteries
Church Lands
Not-for-profit Entities
Privately-Owned Parcels
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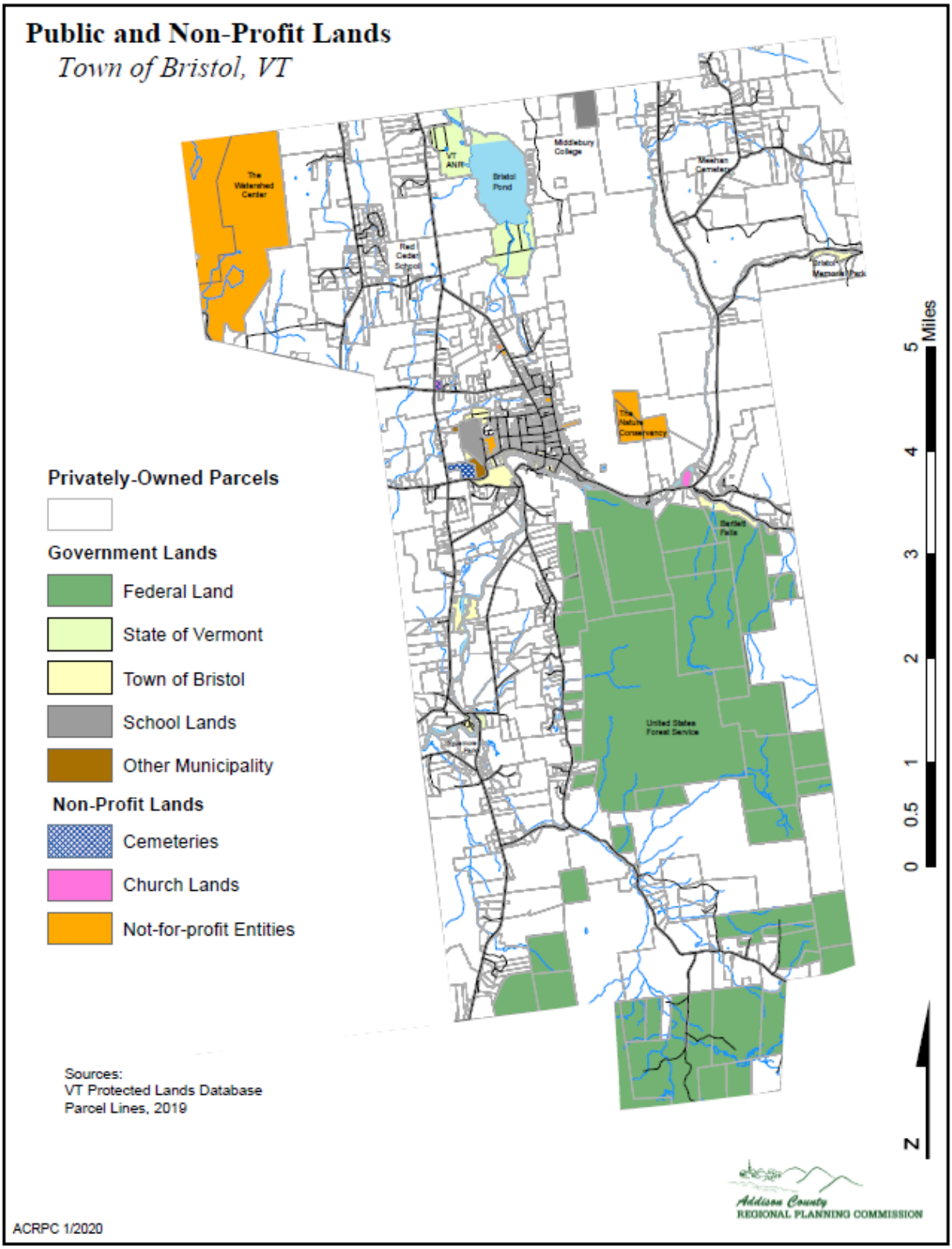
Sources:
VT Protected Lands Database
Parcel Lines, 2019
ACRPC 1/2020
Addison County
REGIONAL PLANNING COMMISSION


Public and Non-Profit Lands
Town of Bristol, VT
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Not-for-profit Entities
Sources:
VT Protected Lands Database
Parcel Lines, 2019
ACRPC 1/2020
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Goals and Policies

Goal 1. Bristol will support and maintain the community facilities that have a positive impact on resident's quality of life.

Policies:

- Encourage the development of and improvements to community facilities, utilities, and amenities that enhance the quality of life for residents and increase opportunities for economic gain while decreasing inefficient energy use.
- Maintain the long-term view, rather than short-term, in evaluating whether to increase or reduce town holdings.
- Recognize the importance of privately-owned sites and facilities that are voluntarily made available by the owners to benefit the community (e.g. Bristol Rescue Squad, Bristol Recreation Club, Inc., and others listed in Figure 11).
- Develop long-term plan for major renovation (if needed) of all the town-owned buildings (e.g. the Town Garage, Shed, and Dog Pound) including schedule and possible funding sources.

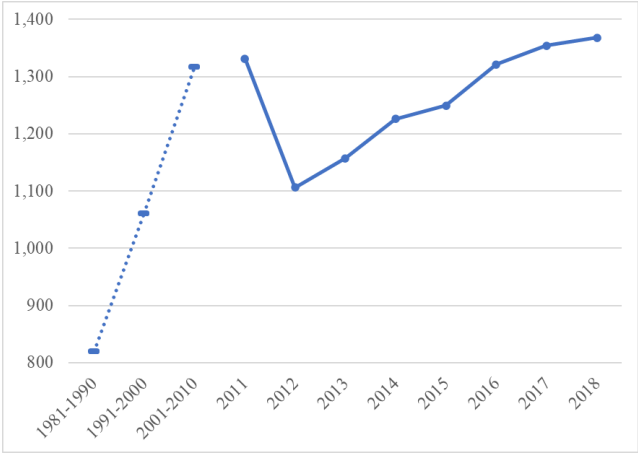
Economic Development

Bristol is the third largest center of employment in Addison County after Middlebury and Vergennes. Between 2010 and 2017, Bristol's local economy added 30 business establishments (21%) and the number of people working in town increased by 97 (7.6%) (Figures 1 and 2).

Labor Force

The Vermont Department of Labor counted 1,368 people working in Bristol in 2018[7]. Their numbers, however, are based on employees eligible for unemployment insurance and therefore may not include business owners, sole proprietors, partners, and some agricultural workers. Including those workers may increase the total employment number by as much as 30%.

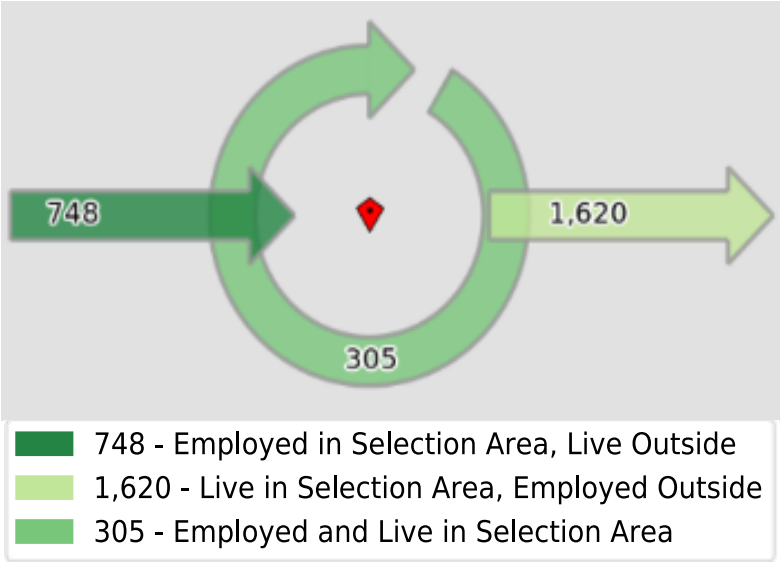
Figure 1. Annual Employment in Bristol



Where Town Residents Work

An increasing number of Bristol residents are commuting out of the town to their primary places of employment (Figure 2). From 2010 to 2017, the percentage of Bristol residents that also worked within the town declined from 19% to 16%, while the percentage of people employed within Bristol that lived in a different town[8] grew from 68% to 71%. Most workers are employed within 10 miles of their home (54%), but 26% travel 10 to 24 miles, 11% travel 25 to 50 miles, and 9% commute more than 50 miles. This mirrors similar trends across the nation, where commuting times have grown and people work further from their homes.

Figure 2. Primary Jobs Inflow/Outflow for Bristol, 2017



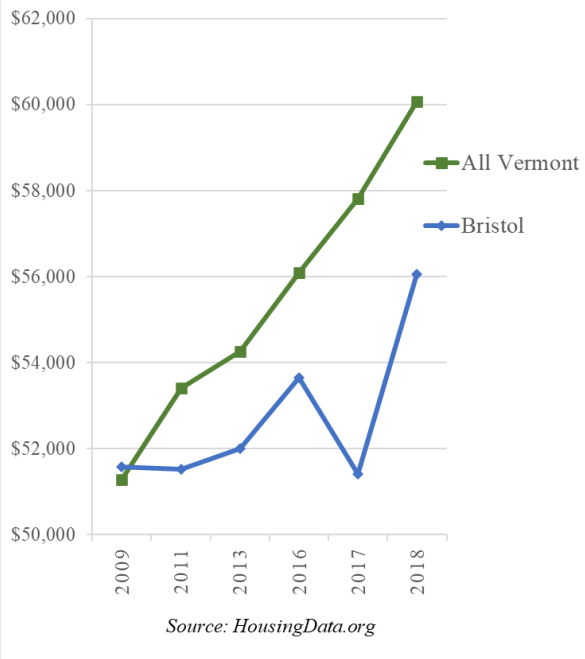
[7] VT DOL 2018 publication: http://www.vtlmi.info/profile2018.pdf
[8] US Census, https://onthemap.ces.census.gov/

Income and Wages

Annual average wages for Bristol workers remain lower than the average for the county or the state. The average annual wage paid by an employer in Bristol in 2017[9] was approximately $37,890 (Figure 3). The average annual wage in Addison County $45,845 and statewide was $46,115. While the average annual income in Bristol grew by about 12.3% from 2010 to 2017, this was slower than the rest of Addison County (23.1%) and the all of Vermont (17%)[10].

Figure 3. Average Wages in Bristol, Vermont

Figure 4. Median Household Income in Bristol, Vermont



In recent years the largest employer in town has been the school system. Within the private sector, health care and social assistance and educational services are the largest (both 16%), followed by manufacturing and retail trade (14%). During the past 20 years, the goods producing sectors (manufacturing, construction, agriculture and forestry) have contracted, while the service sectors have grown.

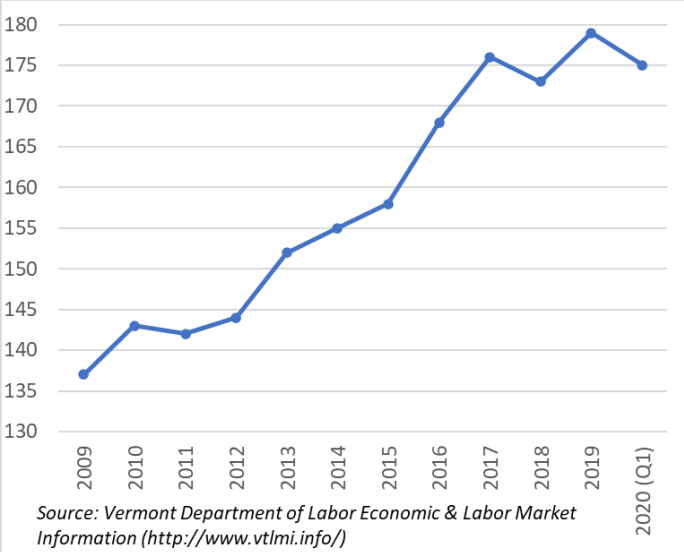
[9] VT DOL 2018 publication: http://www.vtlmi. info/profile2018.pdf
[10] https://www.housingdata.org/profile/income-employment/median-household-income

Small Businesses in Bristol

Bristol's Main Street is home to a diverse assortment of small business; retail shops, restaurants, banks, studios, offices and other personal services that serve many of the community's needs.

Many additional traditional and home-based businesses are found throughout the village and town as well. Bristol Works!, a collection of medical services, food and furniture production, offices and retail is located on a small campus of buildings (1/2 block square) in the center of the Village. The Old High School on the park, houses a fitness center, a yoga studio and other personal services.

Figure 5. Number of Business Establishments in Bristol, Vermont



Source: Vermont Department of Labor Economic & Labor Market Information (http://www.vtlmi.info/)

Given the importance of small businesses to Bristol's economy and the livelihood of its residents, it is a priority for the town to work retain these businesses and to cultivate new endeavors. In the past, some businesses have had to relocate due to the lack of appropriate infrastructure and space to expand. As a result of this, the town updated its zoning regulations in 2017 (now Unified Development Regulations), opening up more land for commercial and mixed-use development. The town has also worked with private investors to plan and develop an industrial park. Providing opportunities for businesses to grow is crucial to the stability of Bristol's economy, and should continue to factored into land-use decisions in the future.

Business Park

An industrial park, business park, or business incubator site has had wide support in Bristol for some time. As the literal and figurative center of the five-town area, Bristol is a logical location for this type of development. Two decades ago, the town purchased property, on Stoney Hill from the state of Vermont in the hopes of developing a business park. Not until 2016, however, was a master plan for this site developed. Funding from the Town, Stoney Hill, LLC and the Vermont Community Development Program, has supported the development of a mixed-use project of housing, commercial and light industrial. In 2019, Bristol received $500,000 in Federal Grants from the Northern Border Regional Commission (NBRC) and the U.S. Economic Development Administration (EDA) to dedicate to the Stoney Hill project. The federal funds will support infrastructure, such as a roadways and sidewalks, communication and storm drainage elements needed on the site.

The development would be a visual gateway to the community, with new housing connecting to the existing village network of sidewalks and a business park set behind.

Resources

Bristol CORE (formerly Bristol Downtown Community Partnership), a non-profit 501(c)(3), comprised of area business people, property owners and community members, was originally established as a requirement of Bristol's State Designated Downtown status. This group is committed to increasing and maintaining the economic vitality of the Bristol Downtown through the organization and promotion of community events, design review and technical business support. A town appropriation provides a third of Bristol CORE's funding, which they use in addition to fundraising, sponsorships, and volunteered power to implement projects and events in Bristol.

The town currently maintains a revolving loan fund, the Bristol Revolving Loan Fund (RLF) for use by local businesses. This fund was established with grant money the town received in the mid 1980's for Downtown Storefront improvement and low-income housing (apartment) renovations. The current RLF is money that has been repaid from the original and current loans. The RLF is designed for use in instances where conventional sources (bank loan, VEDA or SBA loan) may not fully support a project. The fund can be used in conjunction with other sources of money.

Impacts of COVID-19

The total impact of the COVID-19 pandemic, which rapidly and significantly limited the local, state, and national economy beginning in early 2020, is likely to be felt for many years. Until the virus is under control, many commercial businesses will likely be unable to operate at full capacity and many small businesses will be under immense financial stress. Many more people are working from home, so access to modern communication infrastructure, such as broadband internet, will be critical for maintaining employment of many residents.

Goals and Policies

Goal 1. Bristol will attract and retain businesses that are consistent with the town to provide a balanced economic base while ensuring the economic stability of Bristol residents.

Policies:

- Encourage retention of existing businesses and cultivate and attract new businesses that are consistent with the town's character.
- Support continued appropriate-scale commercial activity in Bristol's downtown.
- Support the development of tourism-related enterprises that are appropriate to the town's character and scale.
- Support development of recreation and recreation-related businesses that capitalize on the town's natural, scenic and historic resources.
- Provide infrastructure that supports businesses in appropriate areas, including support for modern communication infrastructure initiatives for businesses and residences.
- Support employers that provide wages that are comparable to, and when feasible aspire to be higher than, wages paid elsewhere in Addison County and Vermont.
- Support town festivals and seasonal events, that promote local businesses and arts.
- Permit residents to operate a limited-impact small business on their property, provided that such a business is allowed as a conditional use and meets the requirements for a conditional use permit.
- Encourage property owners to search for innovative and\or affordable ways in which access to individual businesses and retail establishments can be improved or altered.
- Support business education and assistance programs and the dissemination of their services, including the Small Business Development Center in Middlebury, the Vermont Women's Business Center, the Champlain Valley Office of Economic Opportunity, Bristol CORE (formerly Bristol Downtown Community Partnership), and the Addison County Economic Development Corporation.

Goal 2. Bristol will achieve and maintain 100% business occupancy in the downtown business district and add a net minimum of one large-scale employer (10+ employees).

Policies:

- Encourage the development of business and employment opportunities, and home businesses.
- Encourage citizens to purchase goods and services from local businesses.
- Encourage efforts to improve the downtown retail and business climate.
- Encourage an economic climate that retains and attracts businesses.
- Support the location of new non-industrial commercial and retail businesses near population centers (primarily the Village) to provide access to work without the use of a motor vehicle.
- Support policies to help create new jobs in Bristol as well as to help businesses expand to meet the ever-changing business and environmental needs for the community.
- Facilitate public improvement projects that will promote economic development.

Goal 3. Bristol will provide a favorable climate for light industry development that is appropriate for, beneficial to, and acceptable by the community.

Policies:

- Encourage appropriate light industry growth in designated development areas.
- Encourage the development of a light industry industrial park, incubator or business park
- Provide the infrastructure necessary for the development of a light industry industrial park

Goal 4. Bristol will maintain and support its agricultural and forest-product industries enterprises that have been an important part of the town's history and development.

Policies:

- Support agriculture and forestry-based, including the processing, manufacturing and marketing of value-added agricultural and forest products.
- Encourage the purchase of locally-grown agricultural and forest products,
- Limit land uses that have adverse impacts on agricultural land use and the farm economy.

Education and Childcare

Planning for the education of our town's children bears on every aspect of Bristol's social health and economic vitality. Such planning must take into account such other broad issues as population, housing, and transportation.

School Facilities

Two public educational facilities are located in Bristol. The Bristol Elementary School (grades K-6) and Mount Abraham Union High School (grades 7–12). The elementary school serves students from Bristol only whereas Mount Abraham serves the surrounding five towns; Bristol, Lincoln, Monkton, New Haven and Starksboro. Mt. Abraham students can also enroll at the Patricia A. Hannaford Career Center, located in Middlebury, VT. Patricia A. Hannaford offers 12 technical training courses and 4 foundational courses.

In addition to the public-school system, there is one private school operating in Bristol. The Red Cedar School serves students from kindergarten through grade 8. It draws students from throughout Addison County, as well as from Chittenden, Rutland and Washington counties. The school offers a bus service to Chittenden County and northern Addison County.

Built in 1969, Mount Abraham High School was a modern educational facility, and boasting the State's first indoor swimming pool. Since that time, however, the building has aged and according to school administrators, the facilities need to be updated to address a multitude of issues. Maintenance costs are increasing per year as antiquated systems continue to age. Efforts to pass a renovation bond for the facility have been turned down by District residents three times over the last several years.

Enrollment

In the 2018-2019 school year there were 254 students attending Bristol Elementary and 607 students at Mt. Abe with a combined total of 861 students. This has followed a steady decline from combined student population over the last decade and a half. It is not expected that enrollment will eclipse that number in the near future given the current demographics in Bristol or the other four neighboring towns. A draft study examining Facility Best Use for the five-town community in the Mount Abraham Unified School District (MAUSD) estimated Kindergarten-12th grade enrollment based on demographic and housing trends, and projected a 15% decline in overall enrollment and nearly 20% decline in grades 7-12 enrollment from 2020 to 2030 (Figures 1 and 2)[11].

[11] Facility Best Use Study (Draft) by New England School Development Council, August 1, 2020.

Figure 1. MAUSD Historical and Projected Enrollment for Kindergarten–12th Grade[11]

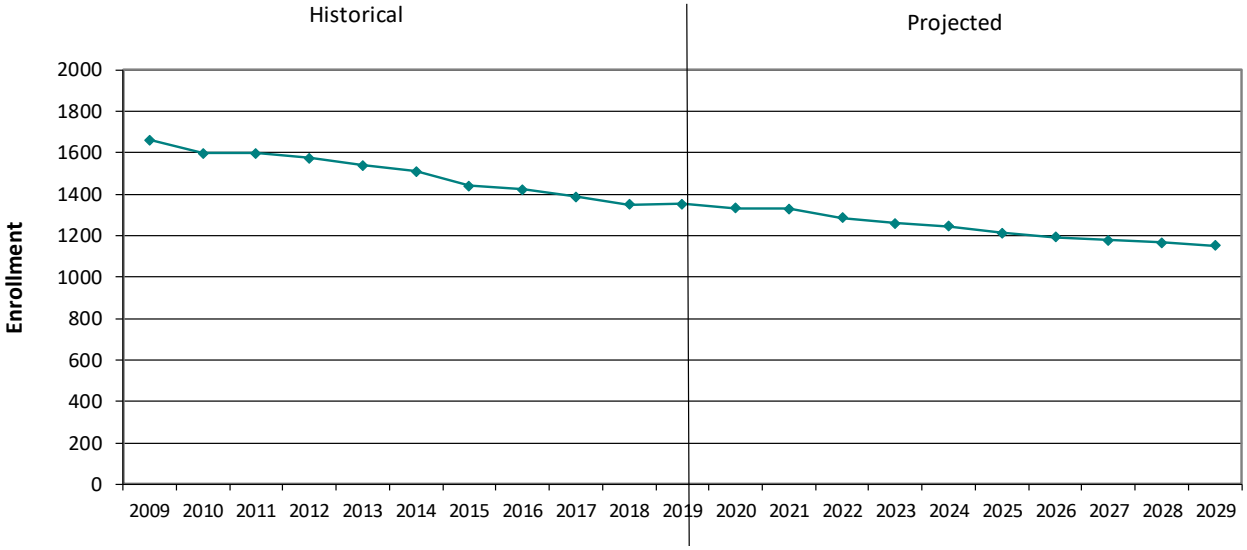


Figure 2. MAUSD Projected Enrollment for Kindergarten–12th Grade

	Grades K-12			Grades 7-12		
Year	**Enrollment**	**Difference**	**% Change**	**Enrollment**	**Difference**	**% Change**
2019-20	1354	-	-	646	-	-
2020-21	1331	-23	-1.7%	659	13	2.0%
2021-22	1328	-3	-0.2%	680	21	3.2%
2022-23	1286	-42	-3.2%	652	-28	-4.1%
2023-24	1260	-26	-2.0%	630	-22	-3.4%
2024-25	1245	-15	-1.2%	622	-8	-1.3%
2025-26	1213	-32	-2.6%	601	-21	-3.4%
2026-27	1192	-21	-1.7%	581	-20	-3.3%
2027-28	1177	-15	-1.3%	548	-33	-5.7%
2028-29	1165	-12	-1.0%	527	-21	-3.8%
2029-2030	1151	-14	-1.2%	517	-10	-1.9%
Total Change		**-203**	**-15.0%**		**-129**	**-20.0%**

If the projected reduction in student enrollment becomes reality, the current operations will become cost prohibitive. In July 2018 the Mount Abraham Unified School District (MAUSD) replaced the Addison Northeast Supervisory Union (ANESU), eliminating the individual school boards in each town. The MAUSD School Board is governed by a thirteen-member board. Bristol will be represented by five board members. The MAUSD (approved by voters) was the result of Act 46 (State of Vermont) that encouraged school districts to consolidate administrative functions in an effort to minimize educational costs while maintaining or increasing educational proficiencies. This approach may result in cost savings since fewer para-professionals, custodians, administrators, nurses and classroom teachers will be required, according to the plan, to operate the school system. These expected savings, according to administrators, may allow for the hiring of specialized teachers, e.g., licensed reading teachers. Many residents are concerned, however, that this centralized system may not equal the educational standards of the prior decentralized organization. Currently there is a very active and committed community group working to find solutions to the current educational situation.

Childcare

The expense of childcare and the limited number of facilities can be a significant challenge for parents in the Bristol area. The situation is particularly difficult for low-income families, single-parent families and those who work evenings. Because of the reliance on childcare for these residents, it is an important component of local infrastructure.

The Bristol Family Center at 18 Orchard Terrace is one of the region's three largest childcare centers. Its early childhood program is licensed by the Vermont Agency of Human Services Childcare Division and is also accredited through the National Association for the Education of Young Children. There are many small in-home childcare facilities in town. Providers in Vermont must be registered or licensed if caring for children from more than two families. Information on registration and licensing can be found at the VT Department of Children and Families.

Information regarding childcare options and financial aid may be found at the Addison County Child Care Services. This program is administered for the region by the Mary Johnson Children's Center, which is located at 81 Water Street in Middlebury. This program's mission is to work with families to:

- Find the best possible childcare placement for their child in the county
- Help eligible families receive the funding needed to pay for childcare
- Provide continuing education, training, support, and resources
- Coordinate the Addison County Early Childhood Council

Additional early education information and resources may also be found at Vermont Child Care Information Services from the state Department for Children and Families (www.brightfutures.dcf.state.vt.us).

Goals and Policies

Goal 1. Bristol will support the strategic goals of the MAUSD for students to become lifelong learners, responsible and informed citizens of their community and their personal best.

Policies

- Encourage MAUSD to inform the Bristol School community about significant proposed changes in curriculum and staff levels that directly affect the student's educational experience.
- Encourage MAUSD to continue to provide student access to current technological curricula, e.g., hardware and highspeed internet, to better prepare students for today's job market.
- Encourage MAUSD to work with Bristol residents in the school policy-setting process for both Bristol Elementary and Mt. Abe.
- Encourage Bristol residents to work as mentors to students in Bristol Elementary and Mt. Abe.
- Offer continuing and alternative educational opportunities to Bristol residents of all ages.
- Encourage efforts to improve Bristol's physical educational facilities to ensure a high functioning learning environment and space for community services such as adult education, preschool and senior citizen programs, recreational activities and public meeting space.
- Support educational programs in the schools that provide students with the skills needed by employers in the region.

Goal 2. Bristol will have a sufficient number of affordable facilities to meet its child care needs.

Policies:

- Support the provision of high-quality, safe and affordable childcare options to meet the needs of Bristol area residents.
- Ensure that town policies and ordinances do not impede the provision of high-quality, safe and affordable childcare services.

Recreation and Healthy Living

In planning for our town's future, the town must continue to create opportunities for its residents to promote their health and well-being through activity and play in the community.

Photo by Ian Albinson

Bristol Recreation Department

Bristol Recreation Department is committed to offering life-long learning opportunities through a wide range of quality recreational and arts activities to people of all ages. Our Recreation Department offers over 100 different classes each year with diverse programs such as: martial arts, swim lessons, gymnastics, dance, volleyball, mountain biking, art classes, summer camps, and more. There are three main program areas in town: 1) Holley Hall, 2) The Hub Teen Center and Recreation Park and 3) The Bristol Clay Studio, a fully equipped pottery studio, with classes for kids and adults. The department also sponsors special events including Summer Movies in the Park and Breakfast with Santa, Teddy Bear Picnic and a Town Wide Yard sale. The Recreation Department collaborates with the Lawrence Memorial Library, our local schools, the Bristol Recreation Club, RiseVT and others committed to activity, fitness, and fun in our community. www.bristolvt.myrec.com

Bristol Recreation Club, Inc. & Bristol Recreation Park

Founded in 1921, The Bristol Recreation Club is a non-profit (501(c)3), volunteer-run, membership organization, open to all in the community. The mission of the Bristol Recreation Club is to maintain outdoor recreation space for the amusement, enjoyment, and recreation of the residents of Bristol, Vermont. For nearly 100 years, the Bristol Recreation Club has owned and managed the Bristol Recreation Park (10 acres of fields and facilities off Airport Road). The site includes the "Big Red" grandstand, a snack shack, tennis courts, a skate park, a pump track bike course, the Bristol Hub youth center building, an ice rink and warming hut, as well as softball, baseball, football and soccer fields. The Recreation Club also hosts Bristol Youth Sports, a nonprofit group that facilitates youth soccer, basketball, and field hockey, and several other organizations including Sodbusters Horseshoe Club, Bristol Little League, Mt Abe Youth Football, and Addison United Soccer. www.bristolrecclub.org/

Bristol Trail Network

The Bristol Trail Network is a project of the Bristol Recreation Club. Launched in 2017, the mission of the Bristol Trail Network is to create and maintain trails around Bristol in order to promote access to and appreciation for natural, historical, and cultural resources in the vicinity, to support the recreation and education of residents and visitors alike, and to foster human connections within our community, tie us all more closely to our landscape, and enhance Bristol's potential as an all-seasons destination for recreation and tourism

Since 2017, BTN volunteers have been working to create a loop around the village with multiple points of access to the trail from the village center, creating easy walking connections from village sidewalks to woods and back again. The approximately 3 miles of current trails is about half of the future loop. BTN volunteers are also concurrently improving and expanding trails on other town-owned properties and are collaborating with other local non-profits and private landowners to help them develop and publicize trails as part of the Bristol Trail Network. www.bristolrecclub.org/bristol-trail-network

The Hub/Youth Center

Since its inception in 1998, The Hub has operated as a drop-in center for youths ages 12 to 19 years. Owned by the Bristol Recreation Club (BRC), the Hub is adjacent to Mt. Abraham High School and within walking distance to the village center. The location gives access to skate park, pump track, basketball courts, ice skating rink, and tennis courts at the Recreation Park. Inside, the Hub offers teens a laid-back living room-style environment where they can socialize, study, connect to the internet, hear music, explore interests like visual arts, videography, computers and more, while under the supervision of adults who respect the challenges of teens. The Hub also offers diverse programs at no charge ranging from guitar lessons to cooking to tracking animals. Aptly named, The Hub is not only a safe, substance-free gathering place for young people after school, but it is also a focal point of the greater community's care and concern for adolescents.

Services provided by The Hub are enhanced by numerous partnerships and collaborations. In 2018, we began working with WomenSafe VT to develop programs for teens regarding healthy and safe relationships. Our partnership with H.O.P.E. in Middlebury and Sweet Clover Market in Essex has enabled The Hub to offer fresh produce and healthy food alternatives. We are proud to be funded through the Town of Bristol, the United Way of Addison County, and the Vermont Department of Health. Our services are enriched by our collaboration with the Vermont Youth Development Corps AmeriCorps State Program, whose placement of AmeriCorps members bring refreshing perspectives and exciting new opportunities to the teens of Bristol.

The Hub's physical structure is in poor condition. Despite regular maintenance efforts, it is now difficult to keep the building up. A steering committee representing various interests in the community is exploring options for a new Recreation Community Center.

Town Parks & Natural Resource Areas

Recreational opportunities abound in Bristol's many town parks and other natural resource areas. There are playgrounds, picnic areas, bird watching opportunities, and walking/hiking trails. The New Haven River is a popular spot for fishing as well as whitewater boating in the spring high water season and some use inner tubes to float in the summer. Flat water canoeing/kayaking and other types of boating can be enjoyed on the mile-long Bristol Pond (Lake Winona) which is also a well-liked fishing destination. Bartlett Falls is considered one of the top 10 swimming holes in New England, with depths ranging from ankle deep to well over one's head. The Watershed Center provides public access to several parcels of healthy, beautiful, productive land including over 1000 acres on Plank Road and the Edith Stalk Community Forest in Bristol Village with outdoor classroom space across from The Bristol Elementary School. The 3,750 acres of the Bristol Cliffs Wilderness Area are managed by the US Forest Service as part of the National Wilderness Preservation System with fantastic views of the Champlain Valley; habitats for beavers, white-tailed deer, black bears, and grouse; and two secluded ponds. Additionally, the many fields and woods of Bristol offer miles of opportunities for recreation on unposted lands, including hunting, fishing, bicycling, cross country skiing, and riding of snowmobiles, ATVs and horses.

The following is a list of town-owned land available for recreation activities:

Bartlett Falls

- A famed swimming hole and falls on the New Haven River.
- 29 acres, former site of Bristol Manufacturing Co.
- Day-use recreation area.

Sycamore Park

- Picnic tables, excellent swimming & fishing areas, interpretive sites, information kiosk, wooded trails, mowed lawns, and a port-o-let in the summer months.
- Day-use recreation area (8.4 acres)
- Visitor guide (http://www.bristolvt.org/wp-content/uploads/2019/01/Sycamore_Park_brochure.pdf)

Eagle Park

- Eagle Park is home to the Chuck Baser Memorial American Disability Act (ADA)-compliant Universal Fishing Platform – one of the first in Vermont.
- Day-use recreation area (2.6 acres) with information kiosk and picnic tables.
- Access to the New Haven River for fishing, kayaking, and swimming/wading.
- Mowed area is ideal for bird-watching, picnicking, and recreating.

Memorial Park

- This beautiful, wooded park boasts picnic areas, paths, stairs, and a bridge across a chasm that features a roaring waterfall on Baldwin Creek.
- 19 acres surrounding Burnham Falls on Baldwin Creek
- A short hike and overlook exist today. An expanded trail is planned for the future.
- Due to safety concerns, Memorial Park is closed anytime ice or snow is present.

Bristol Town Green and Playground

- The Green offers a fountain, a lighted bandstand, an ADA-compliant children's playground and peace garden as well as three memorials to veterans.
- Town event venue including festivals, band concerts, chicken barbecues, and summer movies in the park.
- The Green is also home to the Bristol Band Concerts, which have taken place every Wednesday evening since the end of the Civil War.

Saunders River Access

- This site is owned and managed by the town to help alleviate bank erosion and reduce flooding of the New Haven River.
- This 40.1-acre site includes an access point to the Bristol Flats near an informational kiosk.

Goals and Policies

Goal 1. The town will continue to provide quality facilities, both public and private (with permission of the property owner), and programs to facilitate recreation and healthy life styles for citizens of Bristol.

Policies:

- Support the Bristol Recreation Department and the wide range of programs and activities they provide for the community.

- Support the work of the Bristol Recreation Club.

- Nurture community-mindedness and social interaction among town residents by promoting opportunities for residents, particularly the young and elderly, to gather for recreation, education and other activities.

- Promote arts, entertainment, evening activities, special events, and cultural and seasonal activities to benefit area residents and attract tourists.

- Support the improvement and/or development of facilities for cultural organizations, including program performance and exhibition space, workshops, teen center, and artists' studios.

Utilities

Water Supply Infrastructure

The Bristol Water System is classified and permitted as a groundwater system, operating under the State water system, ID#5002. Water is supplied by New Haven Spring, an approved groundwater source. Water is pumped from the source up to the reservoir tank located on Mountain Terrace Extension, the access road at the east end of roadway. Water is distributed to the households and businesses in the Bristol Water District via a gravity fed system. A contracted water operator manages this utility. On-going maintenance of the water system includes upgrade and replacement of fire hydrants, meter reading and repair, monitoring for leaks, main flushing, valve exercising and general facility maintenance. In 2018-19 the town upgraded the waterline along West Street to the new Fire Station and down Stoney Hill to Lovers Lane, connecting Woodland Apartments to the system. Meadow Lane and Devino Lane were also connected. A Source Protection Plan is available from the Town Offices that provides more information, such as the recharge area for the spring, potential sources of contamination, and procedures for monitoring the system's integrity. The Town has developed a capital fund and long-range plan for the water department.

Wastewater Infrastructure

The downtown block is the only area in town served by a public wastewater system, the Downtown Sewer District. The municipal sewer system, located at the foot of Basin Street, is limited in capacity and spatially, directly influencing the potential for growth of downtown services and future housing opportunities. The current system serves residential, commercial and municipal properties totaling approximately 30+ users. Pre-treatment scenarios have been researched that would provide additional wastewater capacity within the existing system and a Preliminary Engineering Report (PER) was completed in 2018. The Bristol Select Board has authorized moving forward on this effort and the town is looking at funding options for the implementation of this important project, the Bristol Wastewater Treatment Upgrade Project.

Stormwater Infrastructure

The stormwater system in Bristol Village collects run-off from streets, driveways, parking areas, roofs and other impervious surfaces and discharges this water into the New Haven River at multiple outfalls. This system is comprised of multiple, sub watersheds that span the village area. In large storms, however, water may run off the undeveloped adjacent hillsides, inundating culverts and flooding streets, escaping drainage system altogether. Nutrients, sediment and debris also flow through this system potentially altering habitat and polluting the New Haven River and Otter Creek, tributaries to Lake Champlain. In 2015, as part of a state wide program to supplement drainage data in municipalities, the Vermont Department of Environmental Conservation (VT DEC) developed a mapping report of Bristol's stormwater infrastructure. The drainage maps created show the paths that stormwater travels to the outfall points along the river

and locating infrastructure features like pipes, manholes, catch basins, and swales along those routes. The stormwater system from Maple Street to Airport Drive was updated during the recent waterline work in this location. In 2019, Watershed Consulting Associates (WCA) developed a stormwater master plan, identifying potential locations for best management practices (BMP) for retrofit projects. BMPs were prioritized based on criteria such as, size of the drainage area, pollutant load reduction (particularly phosphorus) and mitigation of stormwater volumes. In the Fall of 2019, Bristol began work on the first of these BMPs, a series of dry wells on West Street that will replace existing undersized culverts. Stormwater BMPs can be implemented at a small scale on individual parcels. Projects such as installing a rain garden or rain barrel, creating a planted swale or infiltration trench will keep run-off on site and filtering back into the ground water system.

Green Infrastructure and Stormwater Management

Green Infrastructure (GI) is beginning to revolutionize how we alleviate flooding and conserve our water resources by shifting how we approach land development and manage stormwater. Traditional stormwater management employs costly underground infrastructure to move stormwater off site as quickly as possible. In contrast, GI seeks to "slow it down, spread it out, and soak it in," thereby retaining water onsite to the extent possible, which can dramatically reduce flooding and its associated impact to public safety and infrastructure.

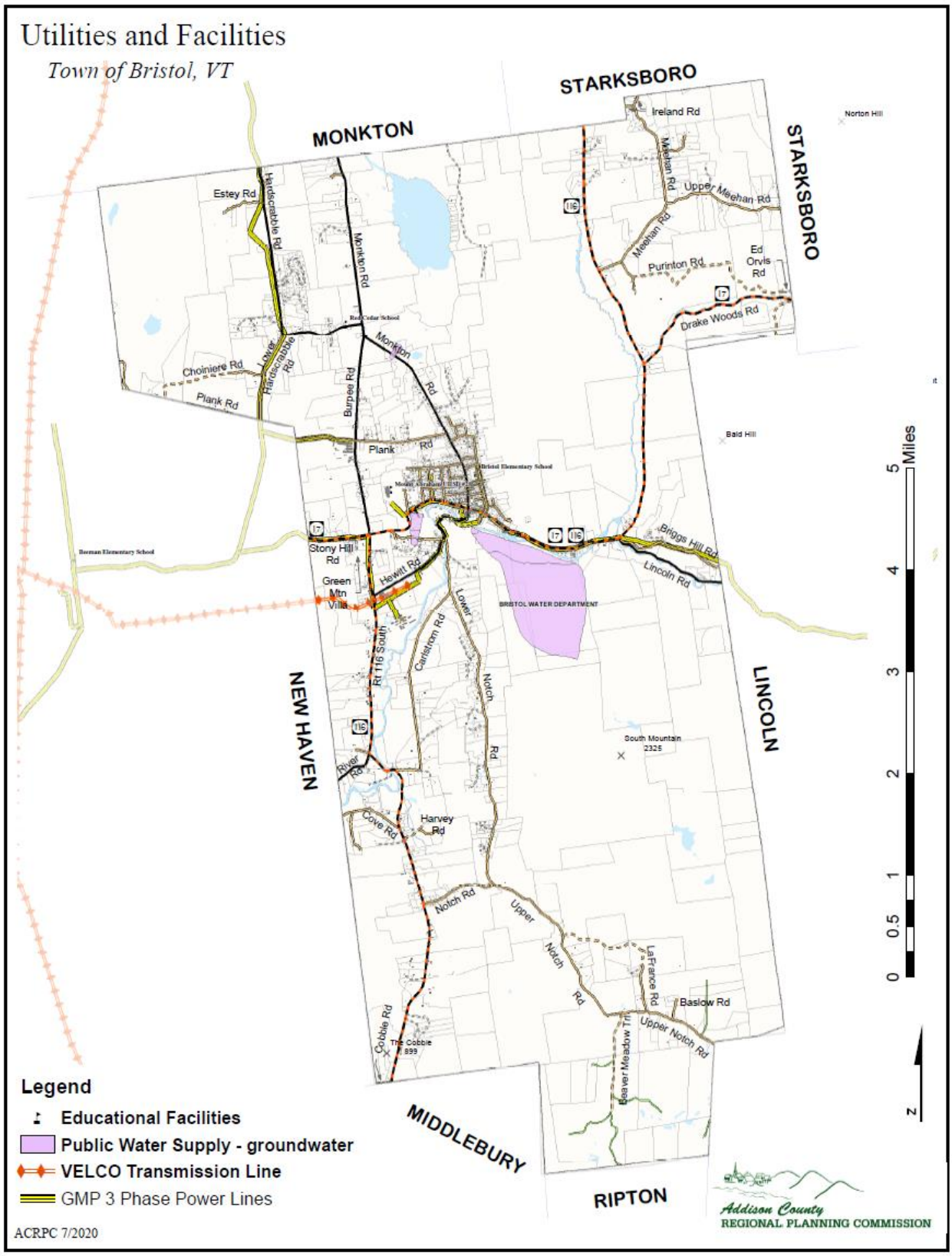
GI is a suite of design tools and structural techniques that help to maintain natural hydrologic processes. There are two broad approaches to GI: Low Impact Development, a planning and design approach that seeks to minimize land disturbance and avoid sensitive ecological areas and Green Stormwater Infrastructure, a set of on-the-ground management practices that capture stormwater where it originates and holds and infiltrates back into the ground water system.

Solid Waste

In 2015 the Town of Bristol closed its landfill and entered into an agreement to cover and cap the town's unlined landfill at the bottom of the hill below the high school. Town voters approved a measure to join the Addison County Solid Waste Management District (ACSWMD). A private company accepts residential trash and recycling, with rates per bag and weight, at the town garage on Saturday mornings and several licensed haulers operate within the town, most notably Pat Palmer and his horse drawn trash and recycling wagon. Trash and recycling not accepted by drop-off or haulers has to be taken to the transfer station on Route 7 South in Middlebury.

Communication Union District

A Communications Union District (CUD) is an organization of two or more towns that join together as a municipal entity to build communication infrastructure together. In 2020 the Bristol Selectboard approved the formation of the Addison County Communications Union District (CUD).


Utilities and Facilities
Town of Bristol, VT
STARKSBORO
MONKTON
STARKSBORO
NEW HAVEN
LINCOLN
MIDDLEBURY
RIPTON
Ireland Rd
Norton Hill
Meehan Rd
Upper Meehan Rd
Meehan Rd
Purinton Rd
Ed Orvis Rd
Drake Woods Rd
Estey Rd
Hardscrabble Rd
Monkton Rd
Red Cedar School
Choiniere Rd
Lower Hardscrabble Rd
Plank Rd
Burpee Rd
Monkton Rd
Plank Rd
Bristol Elementary School
Bald Hill
Briggs Hill Rd
Lincoln Rd
Stony Hill Rd
Green Mtn Villa
Hewitt Rd
Beeman Elementary School
BRISTOL WATER DEPARTMENT
Rt 116 South
Carlstrom Rd
Lower Notch Rd
South Mountain 2325
River Rd
Cove Rd
Harvey Rd
Notch Rd
Upper Notch Rd
LaFrance Rd
Baslow Rd
Upper Notch Rd
Beaver Meadow Trl
Cobble Rd
The Cobble 899
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N
Legend
Educational Facilities
Public Water Supply - groundwater
VELCO Transmission Line
GMP 3 Phase Power Lines
ACRPC 7/2020
Addison County
REGIONAL PLANNING COMMISSION

Utilities and Facilities- Village Area

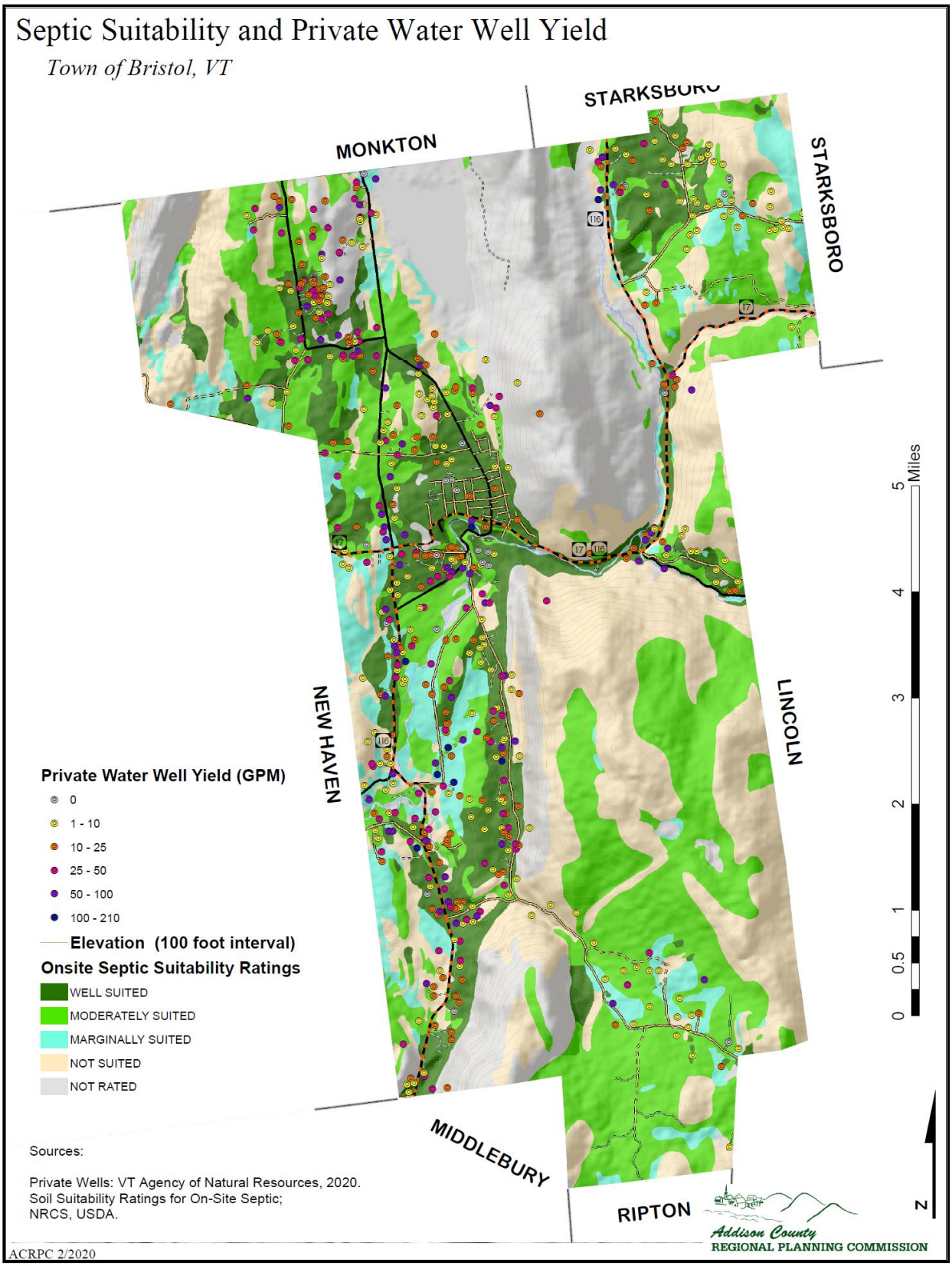
Town of Bristol, VT

Legend

- Public Water Supply - groundwater
- Septic Service Area
- GMP 3 Phase Power Lines

Addison County REGIONAL PLANNING COMMISSION

ACRPC 7/2020


Septic Suitability and Private Water Well Yield
Town of Bristol, VT
MONKTON
STARKSBORO
STARKSBORO
NEW HAVEN
LINCOLN
MIDDLEBURY
RIPTON
Private Water Well Yield (GPM)
0
1 - 10
10 - 25
25 - 50
50 - 100
100 - 210
Elevation (100 foot interval)
Onsite Septic Suitability Ratings
WELL SUITED
MODERATELY SUITED
MARGINALLY SUITED
NOT SUITED
NOT RATED
0 0.5 1 2 3 4 5 Miles
N
Sources:
Private Wells: VT Agency of Natural Resources, 2020.
Soil Suitability Ratings for On-Site Septic;
NRCS, USDA.
ACRPC 2/2020
Addison County
REGIONAL PLANNING COMMISSION

Goals and Policies

Goal 1. Invest in septic, stormwater and water utility systems to meet town needs in the future.

Policies:

- Encourage utility development projects to work with affected landowners and the Bristol Town government to mitigate aesthetics and other impacts.
- Reduce the visual impact of energy transmission and distribution lines, telephone lines, and other communication lines when economically practical (e.g. by placing underground or collocating in the same corridor and/or on the same infrastructure).
- Assure that new water and sewage uses meet state-approved safe water standards and sewage disposal standards.
- Review and propose ordinances that address mitigation of natural and human-caused disasters, ensuring that controls are in place to lessen as much as possible the results of such occurrences.
- Ensure that all public infrastructure meets standards for resilience.

Transportation

Roads and Highways

In total, Bristol has approximately 29 miles of paved roads and 13 miles of unpaved gravel roads. The major transportation routes include two state highways, Vt Route 116 and Vt Route 17. Route 116, a "minor arterial" runs north-south from South Burlington to East Middlebury, connecting with Vermont Route 7. Route 17, also a "minor arterial" runs east-west from Rt.100, over the Appalachian Gap and on to the Crown Point Bridge and New York State. These routes merge at the eastern and western edges of Bristol, running through the downtown block as East street, Main Street and West Street, a 1.225 mile stretch of Class One town highway. The Bristol-Monkton Road, to Route 116 via Burpee Road, is considered a "major collector" serving regional north/south traffic and connecting to Chittenden County.

Bridges

There are thirteen bridges in the VTrans state inventory for the Town of Bristol: four 6 to 20 foot "short structures" and nine 'long structures' over 20 feet long. In the 2012 version of the Town Plan, four long structure bridges were identified as structurally deficient. Three of those were rebuilt in 2014-15 and the fourth, Rte 116 Baldwin Creek Bridge, was reconstructed in 2019. To date only bridge #20, over Little Notch Brook, is identified as needing repairs. There are no covered bridges in Bristol.

Pedestrian and Bicycle Facilities

Bristol's intact traditional village street pattern supports efficient transportation by encouraging walking and bicycling. A walkable, bikeable village improves the quality of life for those who do not or choose not to use a motorized vehicle. Since the last plan update, many of Bristol's sidewalks have been repaired and improved. The town has created a sidewalk inventory in order to prioritize maintenance and construction projects. A sidewalk reserve fund has also been established. A paved walkway from Mount Abraham Union High School to Liberty Street now connects to a new sidewalk along Pleasant Street to complete a sidewalk system to the high school.

In the planning and design for new or upgraded sidewalks, it is recommended that the width, where possible, be five feet and accessible for all users. Allocating roadside space for trees and landscaping helps improve the aesthetics of the streetscape, provides a buffer between the roadway and sidewalk, improving pedestrian comfort. Features such as rain gardens and planted swales facilitate stormwater management through bioretention.

Residents of Bristol cycle for a variety of purposes, many choosing to commute via bike to jobs and/or school. Addressing shared road concepts, such as widening shoulders and bike lanes, should be considered in planning, design, construction and maintenance of existing roads to support this alternative means of transportation. A multi-town route, the Triangle Bike Loop, is currently being planned to link the towns of Bristol, Vergennes and Middlebury through New

Haven with a safe path for commuter and local use. Creating safe and easy ways for people to cycle or walk to their destinations is a goal of Bristol's transportation plan.

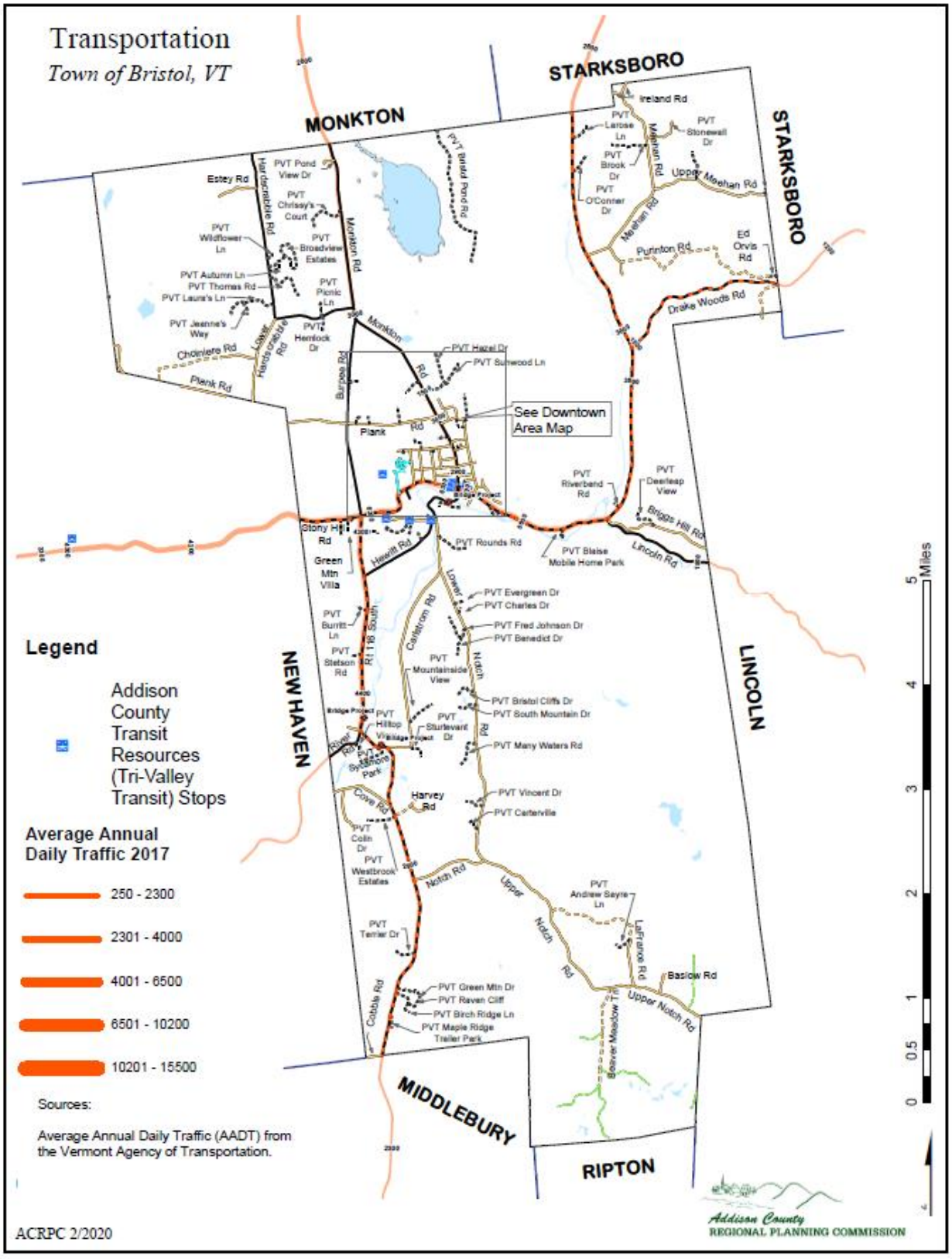
Travel Patterns

Traffic passes through the town of Bristol on Routes 116 and 17, both state highways, and on town roads such as the Burpee/Bristol-Monkton Road. The village and town location along the Route 17/116 corridor allow for efficient car and truck transportation between Addison and Chittenden Counties. Route116 is also a popular alternative to Route 7 for commuters travelling north-south. Route 17 connects the Crown Point Bridge from New York to the Green Mountains and the eastern part of the state via the Appalachian Gap. Most of this traffic, comprised of local residents coming and going to and from work, school and daily errands as well as commuter and regional tourists, funnels through Main Street, Bristol.

Due to projected population growth and future development along the transportation corridors into Bristol, the 2012 town plan suggested that the rate of traffic through Bristol would double by 2020, if volumes increased at the same rate seen the previous 20 years. This did not happen. The Average Annual Daily Traffic (AADT) on Main Street, Bristol in 2018 was 5800.

Traffic volumes in Bristol peaked around 2007-8 and then declined or remained steady. Traffic from within the village has varied little, most likely due to the lack of undeveloped land and the consistency of Bristol's population over the last fifteen years. The decline in AADT counts is seen, however, along the major transportation routes that travel through the town, suggesting that commuter traffic volumes have decreased. There are several factors that may have led to this change;

- the decrease in the number of students travelling to Mt Abraham Union High School from the surrounding towns,
- the relocation of Autumn Harp, a major employer in the village, to Essex, Vermont,
- economic effects of the 2007-2009, such as job loss and a stagnant economy.


Transportation
Town of Bristol, VT
MONKTON
STARKSBORO
STARKSBORO
NEW HAVEN
LINCOLN
MIDDLEBURY
RIPTON
See Downtown Area Map
Legend
Addison County Transit Resources (Tri-Valley Transit) Stops
Average Annual Daily Traffic 2017
250 - 2300
2301 - 4000
4001 - 6500
6501 - 10200
10201 - 15500
Sources:
Average Annual Daily Traffic (AADT) from the Vermont Agency of Transportation.
ACRPC 2/2020
Addison County REGIONAL PLANNING COMMISSION
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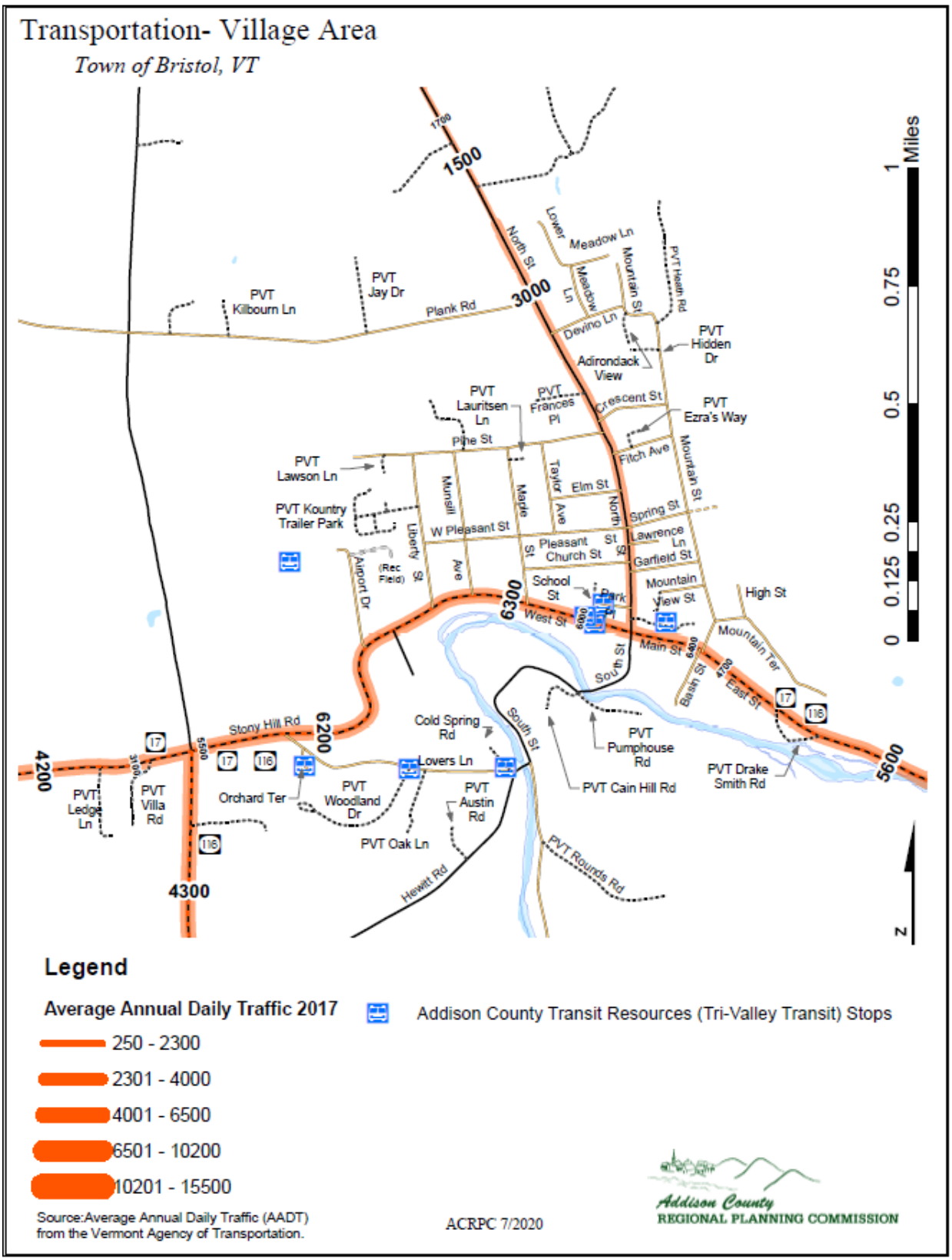

Transportation- Village Area
Town of Bristol, VT
1500
3000
6300
6200
4200
4300
5600
PVT Kilbourn Ln
PVT Jay Dr
Plank Rd
North St
Lower Meadow Ln
Meadow Ln
Mountain St
PVT Heath Rd
Devino Ln
PVT Hidden Dr
Adirondack View
PVT Lauritsen Ln
PVT Frances Pl
Crescent St
PVT Ezra's Way
Pine St
Fitch Ave
PVT Lawson Ln
Munsill
Maple
Taylor Ave
Elm St
North St
Spring St
Mountain St
PVT Kountry Trailer Park
W Pleasant St
Liberty St
Pleasant St
Church St
Lawrence Ln
Garfield St
Airport Dr
(Rec Field)
Ave
School St
Park
Mountain View St
High St
West St
Main St
Mountain Ter
South St
Basin St
East St
Stony Hill Rd
Cold Spring Rd
Lovers Ln
PVT Pumphouse Rd
PVT Cain Hill Rd
PVT Drake Smith Rd
PVT Ledge Ln
PVT Villa Rd
Orchard Ter
PVT Woodland Dr
PVT Austin Rd
PVT Oak Ln
Hewitt Rd
PVT Rounds Rd
17
116
Miles
0
0.125
0.25
0.5
0.75
1
N
Legend
Average Annual Daily Traffic 2017
250 - 2300
2301 - 4000
4001 - 6500
6501 - 10200
10201 - 15500
Addison County Transit Resources (Tri-Valley Transit) Stops
Source:Average Annual Daily Traffic (AADT) from the Vermont Agency of Transportation.
ACRPC 7/2020
Addison County
REGIONAL PLANNING COMMISSION

Public Transportation

Public transportation is an important part of Bristol's transportation infrastructure that links commuters to jobs, employers to new and existing workers and businesses to new customers. It also allows individuals and families to save money on transportation-related costs and gives vulnerable populations access to healthcare, nutrition, and social services.

Addison County Transit Resources (ACTR) provides various forms of public transportation to the Bristol community. The Tri-Town Shuttle Bus (TTSB) is a commuter bus that runs hourly on weekdays between Middlebury, Bristol and Vergennes. In addition to these intra-county services, ACTR provides services to Chittenden County via the Burlington Link Bus and the Route 116 Commuter, as well as to Rutland County via the Rutland Connector. In addition to its regular routes, ACTR has a Dial-A-Ride system, transports senior citizens to weekly meal-site programs and provides transportation for Medicaid patients. Elderly Services operates a transportation system throughout Addison County that includes 10 specialized vans and specially trained drivers to elders who use the Adult Day Center.

Bristol has no passenger train, inter-regional bus, or airline services. The closest services for these are available in Rutland, Burlington, and Essex Junction, Vermont or Port Henry, New York. An Amtrak line is expected to begin providing service between Burlington and New York City after bridge and track construction in 2020. There is no taxi service available in Bristol.

Maintenance

The town spends approximately $775,000 per year on town road maintenance and sidewalk plowing. These funds are used for culvert repair and upsizing, ditching, paving, grading and swale management. In mud season roads need to be posted, in the winter plowed, salted and sanded and in the summer gravel roads need chloride to manage dust. Gravel roads use about 5,000 cubic yards of gravel per year for maintenance. Currently, the Town is working on a Class 4 road maintenance priority plan and a winter maintenance plan, for all town roads, that will aid in the management of transportation projects.

As part of Act 64, legislation relating to improving water quality in the State, municipalities are now required to develop a multi-year plan to stabilize their road drainage systems by reducing erosion and run-off. All hydrologically connected roads need to be inventoried and their culverts, swales and ditches assessed, identifying problems or failed infrastructure. Currently, with funding from a Better Roads, Category A grant, and assistance from the Addison County Regional Planning Commission, Bristol completed this work. The goal of this project is to mitigate potential flood damage and in turn improve water quality.

Safety

Safety on our town roads, highways, sidewalks and paths is the number one priority for Bristol. The town's transportation system should be designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.

Access management, the planning, design and approval of curb cuts for driveways, private roads and business, is essential to achieve a safe and efficient flow of traffic along public roads. Too many driveways can result in a high number of turning movements, conflict points and an increased potential for accidents and in commercial areas, multiple curb cuts can contribute to 'strip" development. The Bristol Selectboard is responsible for reviewing all new curb cut applications in the town. These access management decisions are based on the town's sight line requirements for driveways, Vermont's Agency of Transportation (AOT) drawing 'Standard B-71 and AOT drawing 'Standard A76'. These standards are available at the Town Office and are also available on line at the AOT site. Good access management can accomplish the following:

- Reduce crashes and crash potential.
- Preserve roadway capacity and the useful life of roads.
- Decrease travel time and congestion.
- Improve access to properties.
- Coordinate land use and transportation decisions.

Traffic Calming is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver's behavior and improve conditions for non-motorized street users. Physical measures could be a narrowing of the travel route, speed bumps, roundabouts or raised and textured crosswalks. Certain signage, signaling and road markings are also considered methods of traffic calming. A recommendation of the 2003 Bristol Traffic and Parking Study (available at town office), was to develop traffic calming measures along the stretch of RT116/17 through the village, to reduce speeds and increase safety. In 2016 the town reconstructed the Main Street, North Street, South Street intersection incorporating bump-outs to slow traffic and shorten the crossing distance, textured crosswalks, a pedestrian crossing signal and accessible curbs.

Education and outreach organizations help build community acceptance around transportation safety issues. The Addison County Walk-Bike Council, a citizen-led advisory council, was formed in 2016 to mobilize citizen interest and ideas and channel them into local, regional and state projects. The Council includes residents and representatives from supporting organizations across the county who wish to support safe walking and biking in their community. The "Safe Routes to School" program, SRTS, has been active in Bristol, working with the school community and town leaders on specific projects to improve the pedestrian infrastructure.

Parking

Public parking within the Village is located beside the town green and along Main Street. A 2003 Traffic and Parking Study determined that Bristol had enough parking spaces, but these spaces are not well-managed. Currently there is a two- hour limit for parking on Main Street during the day, in order to provide spaces for customers. Business owners, employees and upper floor tenants park around the green during business hours. New business development must meet the parking space requirements set forth in the Bristol Unified Development Regulations. However, permit applicants may request a change in requirements based on the following; the existence or availability of employer "transit pass" and rideshare programs, public transit routes, and public parking spaces in the vicinity of development.

The need for better traffic flow and more parking will need to be continually weighed against the desire to retain the current quality, character and vitality of Bristol's downtown area.

Current Status and Concerns

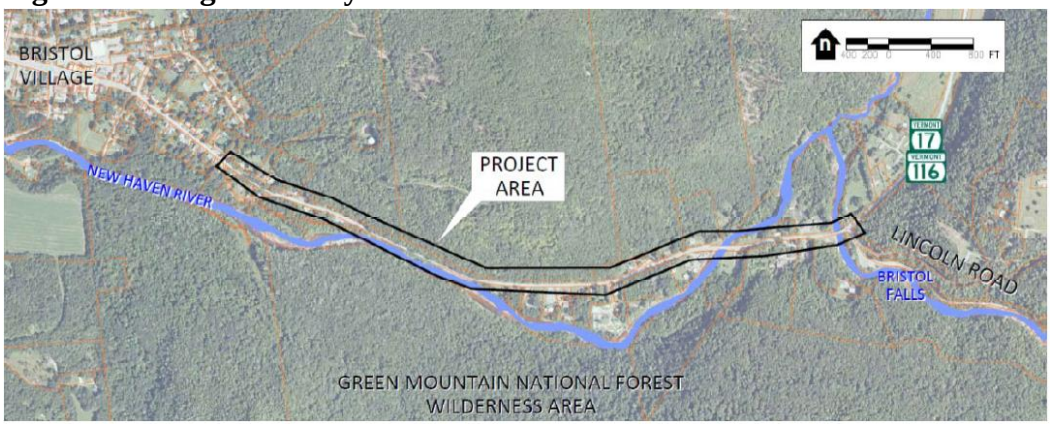
In recent years Bristol has completed a significant amount of transportation projects, improving the overall infrastructure of roads and bridges, investing in pedestrian and bike systems and ensuring that all new projects are designed for all users of the transportation system.

In Spring 2020, construction will begin on the Main Street lighting and Sidewalk Improvement Project. Bristol Downtown Sidewalk Project, replacing paving and lighting fixtures. This project will not only aesthetically enhance the downtown block but address issues of safety, accessibility and drainage.

An assessment of major travel corridors in the Addison County Regional Plan (2018), identifies several projects along Rt 116, that address safety and visibility issues for this roadway as it passes through Bristol.

- Improve approach to Bristol Village from Daniels four corners up Stoney Hill creating a 'gateway' into the village center.
- Improve bicycle and pedestrian access along Route 116/17 east of the Village to Rocky Dale intersection with Lincoln Rd. (2011 Pedestrian and Bicycle Feasibility Study)

Figure 1. Village to Rocky Dale/ Lincoln Rd. Intersection



The following is a list of transportation infrastructure concerns in the town of Bristol:

- **Burpee Road - Monkton Road Intersection.** These roads are part of a major north/south corridor and this intersection should be improved. The state advocates making this a T-intersection.
- **Basin Street - East Street Intersection.** The grade for Basin Street is unacceptably steep, and the street might be rebuilt in such a way that the steep portion of the street is set back further from the intersection. An engineering study on this area was completed in 2008. The steepness of Basin Street adversely impacts future upgrades to the town's wastewater system.
- **Ed Orvis Road** (Town Road No. 14). Since the 2004 storm there has been consistent bank erosion along the river.
- **Airport Road/West Street, High School Intersection**

Goals and Policies

Goal 1. Provide a safe, integrated, economical and environmentally friendly transportation system to move people and freight within and through the town.

Policies:

- Encourage shared driveways and feeder roads in order to discourage curb cuts on collector roads.
- Manage access to public roads in order to maintain safe use of those roads
- Assure that freight passage into and through town is as efficient as possible while taking into account the quality of life in the community.
- Provide transportation system maintenance and improvements that prioritize safety and hazard mitigation.

Goal 2. Reduce single-occupancy vehicle use in order to decrease environmental impacts.

Policies:

- Support the development of infrastructure that will promote and enable the use of the most efficient transportation means feasible.
- Provide designated public parking areas.
- Support public transportation and car-pooling.
- Coordinate further public transportation options with surrounding towns

Goal 3. Develop an infrastructure for alternatives to traditional motor transportation including, but not limited to, safe walking and bicycle routes.

Policies:

- Encourage bicycle use and walking by developing sidewalks, pedestrian and bicycle lanes, and wider shoulders within the rights-of-way where appropriate.
- Encourage accessible sidewalks, traffic calming elements, and traditional neighborhood design principles in new and existing developments.

Energy

The Town of Bristol recognizes the individual and collective responsibility to help reduce and conserve the energy its residents all use. This Town Plan creates a vision for the town to follow concerning energy consumption, conservation, and generation within town. **In 2019, a committee made up of members from the planning commission and energy committee created an Enhanced Energy Plan, attached as an appendix, to meet the municipal determination standards for enhanced energy planning enabled in 24 V.S.A. 4352.** See the Enhanced Energy Plan for detailed data, analysis, and pathways for achieving goals.

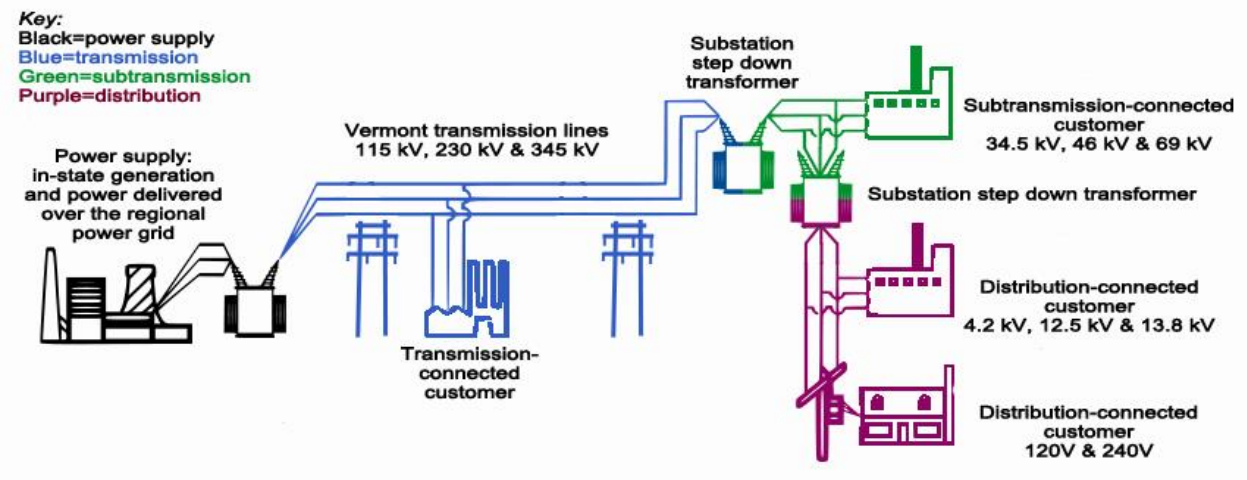
Current Energy Use and Sources

The major uses of energy for Bristol residents are for thermal space heating, transportation, and electricity for equipment and facilities. Residential thermal energy is primarily sourced from fuel oil, propane, and wood, with an increasing amount from electricity for heat pumps. Electricity consumption has remained relatively stable over the last decade, with recent annual increases, especially in the Commercial and Industrial use sector. Due to the relative rural nature of the Town and surrounding area, Bristol's citizens average almost two cars per household and the average miles travelled per vehicle annually have increased. The number of registrations for All-Electric and Plug-in Hybrid vehicles has increased over the last several years.

Energy Infrastructure

Electricity is provided to Bristol by the Green Mountain Power Corporation (GMP), which has a local substation off Hewitt Road that services Bristol and surrounding towns with 12.47 kV overhead power lines. This substation is connected to the Vermont Electric Power Company (VELCO) transmission line that runs from North to South through New Haven. The substation provides electricity through a network of 3-Phase Power lines (map in Enhanced Energy Plan).

Figure 1. Diagram of Energy Infrastructure



GMP has a wide range of programs available to electricity users, including the option to purchase "cow power" generated by burning methane gas from a digester that converts cow manure to methane gas from Vermont dairy farms.

Vermont Gas Systems has extended a natural gas pipeline through Addison County, with the option to expand service to the most densely populated areas of the region, including Bristol, with town approval. Nonrenewable natural gas is expected to serve as a short-term fuel for the Region as it replaces other fossil fuel sources. Vermont Gas is required to develop an aggressive energy efficiency program, utilize the infrastructure it offers to promote economic development for manufacturing and to provide renewable natural gas options.

Efficiency

The implementation of conservation measures to increase efficiency is the most important way to reduce energy costs and total use. Efficiency and conservation measures such as improved insulation and weatherization of new and existing structures can have a profound impact on energy use, and are encouraged in the town.

Many homeowners in Bristol with older larger homes, particularly in the Village Area, face the challenge of working in finished and confined spaces that drive up weatherization costs. A wide variety of state and federal subsidies and rebates are currently available for Vermont residents to conserve energy. Efficiency Vermont, the nation's only efficiency utility, has an informative webpage at www.Efficiencyvermont.com with information about their current programs, including energy audits, incentives for Home Performance with Energy Star, information on appliances and compact fluorescent and LED bulbs, building an Energy Star home, home heating help, rebate information, and Efficiency Vermont's reference library.

For Act 250 approval, the District Environmental Commissions routinely require implementation of measures that incorporate the best available technology for efficient use or recovery of energy. Some of the most common are the installation of water- conserving plumbing fixtures such as low-flow toilets, aerator-type faucets, insulation for domestic hot water lines, and specification insulation of the R-values in all heated buildings. The Vermont Public Utility Commission also has established an option for eligible Vermont business customers to self-administer energy efficiency through the use of an Energy Savings Account (ESA).

Energy Generation

An increasing number of residents produce net metered renewable energy from wind and solar. As of 2019, there are more than a hundred photovoltaic (PV) facilities, including roof-mounted and ground-mounted systems. These have more than 1.2 MW electric capacity, producing more than 3,200 MWh at the beginning of 2017.

In 2006, Mt. Abraham Union High School in Bristol installed a woodchip heating system with a heating capacity of 1.8MW (6 MMBtu/hr). The fuel is obtained from two local producers-located within a mile of the school. The $1.5 million system reduced annual fuel oil usage by almost 40,000 gallons. In 2012, Four Hills Farm began electricity production from an anaerobic methane digester. It has a total electricity capacity of 450 kW and provides a model for future energy production on dairy farms.

The state of Vermont and Addison County Regional Planning Commission have set renewable generation targets that all municipalities need to meet in the context of the State meeting its goal of producing 90% of its energy from renewable sources and increased efficiency. Those goals for Bristol, shown in Table 1 below, are based upon a combination of Bristol's population and the amount of area potentially available for solar and wind energy production available in Bristol.

Table 1. Bristol Renewable Energy Generation Targets

	2025	2035	2050
Additional Renewable Generation Target (MWh)*	4,463	8,926	13,525
Total Renewable Generation Target (MWh)	7,665	12,128	16,727

*In addition to the 3,202 MWh being produced in Bristol at the beginning of 2017.

There are a number of different types of renewable generation potentially available for Bristol's residents that they might harness to meet statewide generation targets for the community. The primary sources of this energy are solar, biomass, and wind generation.

A Preferred Siting Area for energy facility siting of approximately 3,910 acres within the Rural/Agricultural Land Use Planning Area on the western side of town was identified in the Enhanced Energy Plan. This excludes the areas with Known Constraints, which are primarily river and stream corridors as well as State Significant Natural Communities and Rare, Threatened, and Endangered Species locations. Additionally, the preferred area excludes those areas identified as Highest Priority Forest Blocks, as well as existing protected lands. This preferred location is the largest contiguous piece of unconstrained land in Bristol and is in close proximity to the existing transmission line and 3-phase power infrastructure. Using existing solar facility footprints as a model, this area has the potential solar energy capacity of more than 230 MW or production of 281,000 MWh each year, well in excess of Bristol's 2050 generation targets.

Goals and Policies

Goal 1. The Town of Bristol will be committed to energy efficiencies and conservation, in order to save town financial resources, to provide for a more sustainable and self-reliant future, and meet Vermont's 90 by 50 goals (having 90% of the energy used in Vermont obtained through renewable sources by 2050).

Goal 2. Work towards achieving goals for Thermal Energy, Electrical Use, Transportation, and Renewable Energy Generation as outlined in the Enhanced Energy Plan

See Statements of Policy and Implementation Actions in the Enhanced Energy Plan, an appendix to the Town Plan.

Public Health and Safety

Public health and safety services in Bristol are provided by a number of dedicated individuals and organizations.

Fire Department

In Bristol, coverage for fires and other emergency events is provided by the 30+ member all-volunteer Bristol Fire Department. The department regularly answers over 130 calls each year- these calls include many different types of active fires, as well as responses to a variety of other hazardous conditions, motor vehicle crashes, assistance to EMS, smoke or carbon monoxide detector activations, hazardous materials spills, search and rescues, and many other service and good intent calls. The original fire department, founded as the N.H. Munsill Hose, Hook & Ladder Company in 1894, was housed in a station on North Street from 1897 to 2016. The fire department now uses a spacious energy-efficient facility on West Street across from Airport Road.

Police Department

Bristol has a locally funded Police District that primarily serves the village area. The State Police respond to calls outside the district, but often calls on the Bristol Police for mutual aid. In the

fall of 2019, the Selectboard researched the option of a town-wide expansion of the police department. Survey responses strongly indicated that the residents of Bristol were happy with the system in place and did not favor a town-wide department as presented.

Emergency Medical Services

The Bristol Rescue Squad, an independent volunteer group, provides 9-1-1 advanced life support ambulance transport services to the towns of Bristol, Lincoln, Monkton, New Haven, and Starksboro. They also provide mutual-aid to Charlotte, Middlebury, Vergennes, and other Addison County communities. Bristol Rescue is dispatched by the Shelburne Police Department, with a volume of roughly 800 calls a year. The nearest hospital services are provided by Porter Medical Center, a satellite of the UVM Health Network, which is a 45-bed community hospital located 10 miles away in Middlebury. The nearest Level I Trauma center is located 25 miles north in Burlington.

Emergency Management

A variety of human and environmental hazards can affect the town's infrastructure, private property and natural features. Emergency management is mostly the responsibility of the Selectboard, including appointment of an Emergency Management Director [20 VSA 6(a)][12]. In Bristol, the Town Administrator serves as Emergency Management Director, assisted by a Deputy Emergency Management Director. Planning and development of emergency services, including an "All-Hazards Mitigation Plan," is coordinated and assisted by the Vermont Emergency Management Division, Department of Public Safety. Bristol's Local Hazard Mitigation Plan was approved on 1/23/2019 and is available at the Town Office.

The Town uses a Local Emergency Management Plan (LEMP) to guide its response to larger incidents and the plan identifies several high hazard/vulnerable sites that are associated with flooding, fire and transportation accidents. Additionally, the LEMP designates the Holley Hall the Bristol Police Department and the Rescue Garage as potential emergency operations centers. Mount Abraham Union High School, Bristol Elementary School and Holley Hall are designated community shelters. The high school parking lot has been identified as a potential point of distribution (POD) in the event Federal supplies need to be distributed in the area.

Several existing state and federal programs directly support hazard mitigation: The National Flood Insurance Program (NFIP), the Flood Mitigation Assistance Program (FMAP), for NFIP insured property, the Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation Program (PDM). The state contact for Vermont Emergency Management is the State Watch Officer at 800-347-0488 or via their website at vem.vermont.gov. Residents can also sign up for emergency alerts from VT-Alert for direct notifications concerning local emergencies.

[12] An inclusive outline of what emergency management entails may be found in the Vermont League of Cities and Towns' "Handbook for Vermont Selectboards" (2007).

Public Health

By law, the local board of health consists of the town health officer and town select board (or city council) with duties and responsibilities established by state statute. Town health officers are responsible for:

- Investigating possible public health hazards and risks within the town or city
- Taking action to prevent, remove, or destroy any public health hazards
- Taking action to lessen significant public health risks
- Enforcing health laws, rules and permit conditions, and taking the steps necessary to enforce orders

The Vermont Department of Health has staff trained and ready to respond to public health emergencies. They work with local officials, as well as state and federal partners to distribute medicine, supplies and information to residents in a health emergency. The Local Health Office is located in Middlebury.

Healthcare, Wellness and Human Services

Bristol has a variety of healthcare providers located in the village, many walking distance for residents. At Bristol Works! business park on Pine Street, there is one primary care practice and a dental practice. There are several other practices located in town and many options in Middlebury and Vergennes. UVM Health Network's Porter Hospital in Middlebury and Fletcher Allen Hospital in Burlington are the closest large-scale medical centers.

Bristol is also home to several other wellness practitioners offering a range of services for the community. These include **Elderly Services, Inc. which** sponsors Project Independence Adult Day Health Center, Daybreak Alzheimer's Care Program, Family Caregiver Support Group, and the Aging Education Center, and **Living Well**, a community care home that provides senior care services and amenities for their elderly residents, including memory care and assisted living facilities

Every March on Town Meeting day, voters approve funding to support a variety of agencies and organizations that provide healthcare and human services to the town and its residents. The following is a list of the organizations funded in 2019:

- Addison County Parent Child Center;
- Addison County Home Health and Hospice;
- Addison County Humane Society;
- Addison County Readers;
- Addison County Restorative Justice;
- Addison County Transit Resources;
- Age Well;
- Bristol After-School Kids Program;
- Bristol Family Center;

- Bristol Rescue Squad;
- Community Health Services Open Door Clinic;
- Counseling Service of Addison County (CSAC);
- Elderly Services, Inc.;
- Habitat for Humanity;
- Helping Overcome Poverty's Effects (HOPE);
- Hospice Volunteer Services;
- John Graham Emergency Shelter;
- Open Door Clinic;
- Retired Senior Volunteer program and Green Mountain Foster grandparents;
- Turning Point of Addison County;
- Vermont Adult Learning; and Womensafe, Inc.

COVID-19

During the update to this plan, the novel Coronavirus COVID-19 emerged and spread into a global pandemic. While Bristol, Addison County, and the state of Vermont have had a relatively low number of identified cases thus far, the nature of the infectious disease has disrupted the local economy, school system, and many other aspects of everyday life. The emergency responders and healthcare providers of Bristol, as well as regional organizations like Addison County United Way and Addison County Mutual Aid, have all been actively involved in the response and have provided for the welfare of Bristol's citizens.

Goals and Policies

Goal 1. Bristol will facilitate quality public health access for all town residents.

Policies

- Support agencies and organizations that provide healthcare and human services to the town and its residents.
- Support the development of safe and affordable childcare and eldercare facilities.
- Provide access to accurate and updated health information.

Goal 2. Bristol will provide high-quality fire, police, and rescue service for town residents.

Policies

- Support maintenance of public safety equipment and infrastructure.

Goal 3. Bristol will prepare for and lessen the impact of natural and anthropogenic disasters.

Policies

- Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters.
- Reduce the damage to public infrastructure resulting from all hazards.
- Maintain updated emergency management and hazard mitigation plans.

THE ENVIRONMENT

Natural Resources

Natural resources are an integral part of Bristol, offering many benefits that enhance the quality of life in the community. The diversity and abundance of natural resources has historically supported the quality of life that is so important to residents and helps to distinguish Bristol as an inviting and healthy community. Excellent agricultural soils and fertile farmland, bodies of surface water, established ground water sources, varied soils, wildlife, and tracts of contiguous, forest blocks and undeveloped land make up some of the community's natural resources.

Ecosystems

Bristol is home to a variety of ecosystems, including rivers, ponds, bogs, vernal pools, mountain ridges, cliffs, talus slopes, and many varieties of forest communities. A Vermont Fish and Wildlife database of significant biological areas shows 15 types of natural communities (9 of which are forest community types) in Bristol. Currently, there is no comprehensive compilation of Bristol mammal or bird populations. However, the VT Reptile and Amphibian Atlas database shows 24 species, including 3 species of turtle, 6 of snake, 6 of salamanders, 8 of frogs and toads, within Bristol. Four of these species are rare or uncommon in Vermont: Timber Rattler, Black Rat Snake, Northern Watersnake, and Jefferson Salamander (no recent sightings). Fish species include brook, rainbow and brown trout (with some native populations of all three), found chiefly in the New Haven River and its tributaries.

Topography

The landscape of Bristol originated approximately 450 million years ago when the forces of plate tectonics created the foundations of the Green Mountains and the Champlain Valley. The carvings of glacial ice masses up to 13,000 years ago and more recent physical and chemical erosion has refined our topography and created the current Bristol landscape. The terrain of Bristol is generally recognized as mountains and narrow river valleys in the east and gently rolling knolls and fields flanking broad river valleys in the west, both instrumental in the development of the community as it exists today.

The fertile farmland found in the low-lying portions of Bristol has supported the local dairy industry for generations. Located predominantly in the western third of the town, lacustrine silts and clays deposited from the ancient Lake Vermont have provided excellent agricultural soils from which Bristol and surrounding towns have benefited. The pore structure of these materials enables enhanced retention of nutrients and water, enhancing crop growth. Bedrock in these low-lying areas is predominantly dolomite, which is mildly susceptible to physical and chemical weathering.

The prominent ridgeline running from the north to the south of the town is composed of the Hogback Mountain in the north and South and Elephant Mountains in the south. In many places, receding glaciers have exposed the Cheshire quartzite bedrock, which is largely resistant to

erosion. This is most apparent on the western side of South Mountain and on the western and southern sides of the Hogback Mountains, known as the Bristol Ledges and Deer Leap, respectively. In many locations, this rock face rising out of the Champlain Valley is so steep that vegetation cannot maintain a foothold, and occasional rock slides occur. These are readily visible as a different color to the cliff surface, with huge mounds of talus at the toes of the cliffs. Quartzite foothills are also found in the northwest section of Bristol around the former Vergennes Waterworks. The highest point in Bristol is atop South Mountain, with an elevation of 2,325 feet. The lowest point in Bristol is where the New Haven River enters the Town of New Haven to the west at approximately 328 feet.

The New Haven River carves one of the several valleys that run through the mountainous eastern section of Bristol. The other major river valleys are Baldwin Creek along the State Route 17 corridor toward South Starksboro, and the Notch Brook flowing out of the Green Mountain National Forest through the gap between South and Elephant Mountains. Much of the town's historic development has occurred along the New Haven River and in the relatively level terrain on the western side of Bristol. This was due to the primacy that mills and agriculture once had in the economic vitality of Bristol.

As Bristol's steeper terrain becomes more easily accessible for development, careful decision-making of development is warranted. One example is the prominent and steep ridgeline running from the north to the south of the town. Because steep terrain such as this is not best suited for development, development should be carefully handled.

Soils

Bristol's soil is valuable as an agricultural asset, as a natural filter for rainwater, runoff, and wastewater systems, and as a base for local flora. The soils of Bristol are quite varied due to both the wide differences in terrain and the effects of glaciation. As the glaciers receded approximately 13,000 years ago, bedrock on the ridgelines was left exposed and a vast amount of till was deposited in their wake, with post-glacial lakes and flooding responsible for the deposition of various silts and clays.

Approximately half of Bristol consists of soil types of "Rock", "Very Rocky Complex" and "Extremely Stony Loams". Much of this area is set aside as conservation land to maintain water quality or is part of the Green Mountain National Forest.

Much of the area adjacent to Bristol Pond and the area immediately east of Hogback and west of Vermont Route 116 and north of Vermont Route 17 have soils that consist of muck and peat. State and federal regulations protect hydric areas that are designated Class II wetlands.

Bristol's soils are varied in nature. Some areas are prime for agricultural uses, other areas with gravelly, sandy loams are best suited for development, and other areas that are stony and silt loams are marginally suited for development.

The following mixture of soil types can be found along the main north-south corridor on the western side of the town, more or less bordering Monkton Road, Hardscrabble Road, Burpee Road, North Street and Vermont Route 116, and including the village area:

- Gravelly, sandy loams and loamy fine sands;
- Stony, very fine sandy, and fine sandy loams;
- Other stony and silt loams; and
- Heavy clays.

It is important to note that this area has the most productive farmland and the highest concentration of important farmland soils identified with ratings as prime, statewide and local by the USDA National Resource Conservation Service.

The northwestern section of the town west of Lower Hardscrabble Road has some scattered areas with loamy fine sand, sandy loams and stony loams. The northeast section of the town east of Vermont Route 116 and north of Vermont Route 17 has a large mixture of loamy, gravelly and sandy soils. There are also areas with steep slopes having stony loams, rocky complex and rocky soils. The northeast section of the town east of Vermont Route 116, south of Vermont Route 17, and north of the New Haven River has mostly rock complex and stony loams. There are some areas along Briggs Hill Road with gravelly sandy loams.

Mineral Resources

Kame terrace deposits, comprised of sand, cobble and gravel, were deposited along the western edge of the Green Mountains during the retreat of glaciers over some 10,000 years ago; 225 years ago, the Bristol village was established on this level plain of the delta/kame deposits.

Gravel is the main subsoil component throughout the Bristol village. This type of subsoil offers excellent drainage qualities and creates soils with high percolation rates that village residents are able to benefit from. Resources of gravel are also valued for use in construction and road maintenance.

There are both active and inactive gravel extraction areas sited in the town of Bristol, as well as soil, sand, and rock sites. As the town decides on extraction of these resources, it will need to balance that resource with maintenance of other natural resources in an area.

Groundwater

Groundwater can be found almost anywhere in Bristol in both shallow and deep aquifers consisting of fractured or porous rock and various sediments. The vast majority of Bristol residents obtain their potable water from groundwater aquifers, including the residents of the village area, where water from the municipal distribution system is ultimately drawn from a groundwater source on the north slope of South Mountain.

In addition to supplying potable water to residents of the town, groundwater is often responsible for adding water to our ponds and rivers; especially in times of drought. In this capacity, groundwater aids in supporting the ecosystems and biodiversity of the town and helps maintain

the natural beauty of Bristol.

There are several bands of moderate to good groundwater potential. These areas include the Route 116 corridor, the Bristol village, the valley formed by Beaver Brook and Baldwin Creek, the New Haven River and its floodplain, and the valley area at the southwestern extent of Vermont Route 116 through Bristol. These areas could potentially have groundwater yields sufficient for municipal or industrial uses due to the thick deposits of coarse grained, stratified glacial drift such as kame terrace and stream alluvium. As surficial material becomes thinner or more finely grained, ground water potential decreases. The majority of the town has groundwater potential suitable only for residential use due to the deposition of more fine-grained glacial drift (silts and clays), swamp deposits, or exposed hardpan till or bedrock ledge.

Lakes, Ponds, Rivers, and Creeks

The most prominent bodies of surface water in Bristol are Bristol Pond (aka Lake Winona) and the New Haven River. Bristol Pond is widely known for its fishery including northern pike (up to at least 30 inches), pickerel, smallmouth bass, perch, panfish, catfish and crappie. Its high-density fish population attracts local as well as out of state anglers to the Vermont Fish and Wildlife access at the north end.

Bristol surface waters enter three watersheds contained within the larger Lake Champlain Basin: New Haven River (draining to Otter Creek), Little Otter Creek, and Lewis Creek. Each of these watersheds has established non-profit local groups dedicated to conservation and water quality, including the New Haven River Anglers Association, Lewis Creek Association, The Watershed Center and the Addison County River Watch Collaborative. The New Haven River and Bristol's groundwater are closely linked. Hydrogeologic studies have shown the volume of flow to diminish above the village area to be re-established by the springs from above and below South Street Bridge. Natural filtering and cooling of the water results from the thick gravel deposits on both sides of the river. Good wild trout habitat has been well documented repeatedly by the Vermont Department of Fish and Wildlife.

There are two class A2 (drinking water) designated flows located on small tributaries; one is located in the Little Otter watershed, near the old Vergennes Waterworks; a second is located on an upper reach of Notch Brook draining to the New Haven River. They are not currently used for drinking water.

Wetlands

Wetlands serve a variety of functions and values beneficial to the general public and to the environment. The identification and regulation of wetlands are defined by the 2018 Vermont Wetland Rules.

There is one Class I wetland area in Bristol- the 66-acre Beaver Meadow wetland complex within the Green Mountain National Forest (GMNF) on the boundary with Ripton and

Middlebury. Beaver Meadows is a high elevation wetland complex that drains into both the New Haven and Middlebury Rivers and has been identified as an Ecological Special Area by the US Forest Service. It has a 400' buffer, in comparison to the standard 100' buffer for Class I wetlands.

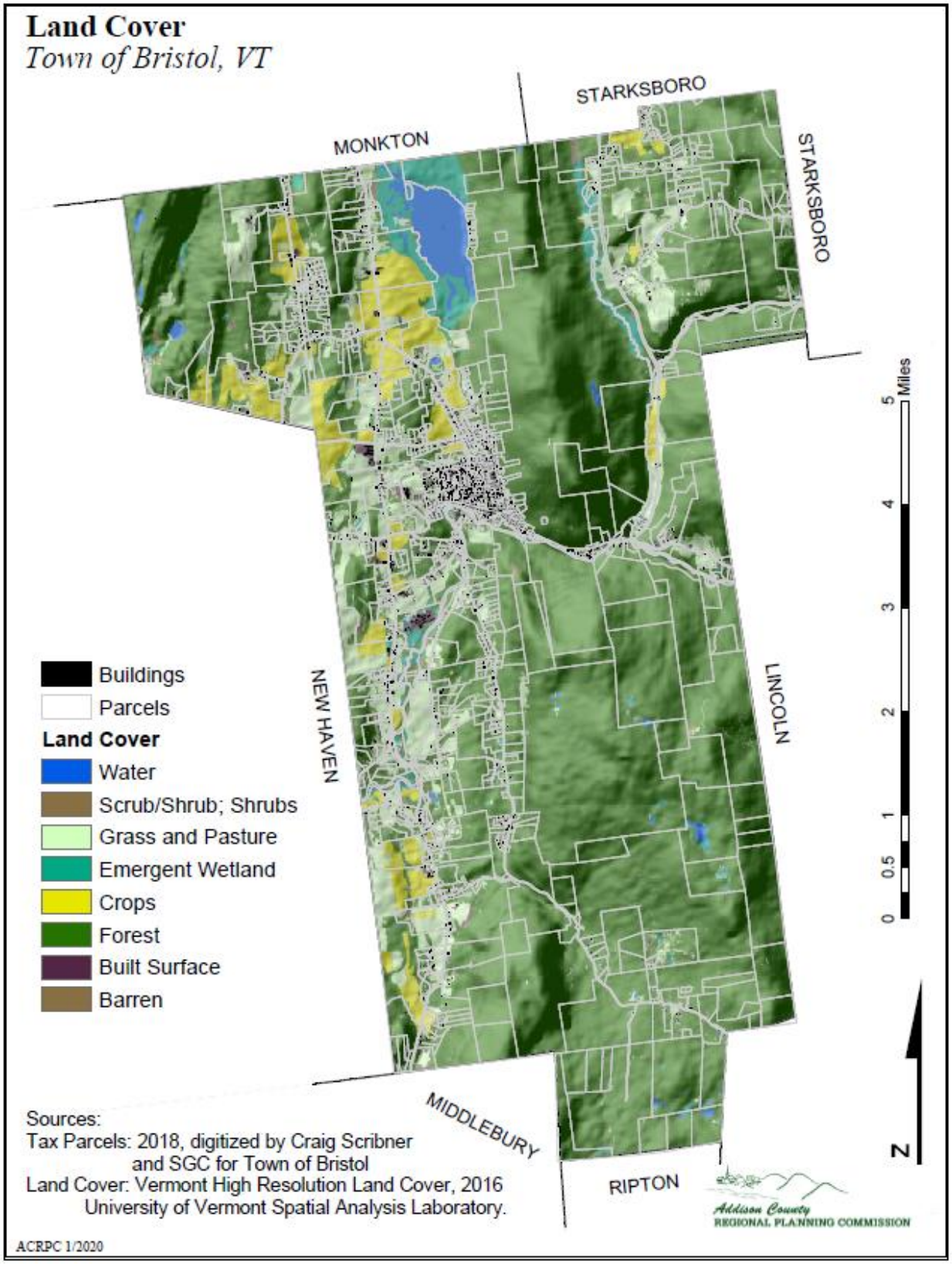
Several significant Class II wetlands, as identified in the Vermont Significant Wetlands Inventory, can be found across Bristol:

- Marshes surrounding Bristol Pond (aka Lake Winona). Bristol's largest wetland area includes a significant Northern White Cedar Swamp and a Black Spruce Woodland Bog that harbor many diverse species of plants and animals, including several threatened and endangered species, including a unique breeding population of Sandhill Cranes as well as Ospreys that have nested there since 1992.
- Dwarf shrub bog communities surrounding North Gilmore Ponds, East and Southeast of Bristol Cliffs.
- Marshland with some Northern White Cedar Swamp and Bog along northern Vermont Route 116, east of Hogback Mountain and north of Vermont Route 17. The lower part drains into Baldwin Creek and the New Haven River, and the far northern part flows north in Lewis Creek.
- The Watershed Center where the Norton Brook flows into the Little Otter Creek in the northwest part of the town, including the Old Vergennes Watershed pond and the marshes flowing out from it.
- Marshlands including a rare Sugar Maple-Ostrich Fern Riverine Floodplain Forest, and River Gravel Shore in Sycamore Park where Notch Brook joins the New Haven River near the junctions of Route 116, New Haven River Road and Carlstrom Road.

There are many other small wetland areas and vernal pools throughout the town. While few vernal pools in the county have been verified on the ground, some have been noted on Hogback Mountain and there are several potential vernal pool sites in the Bristol Cliffs Wilderness, Hardscrabble Hills, and Waterworks areas.

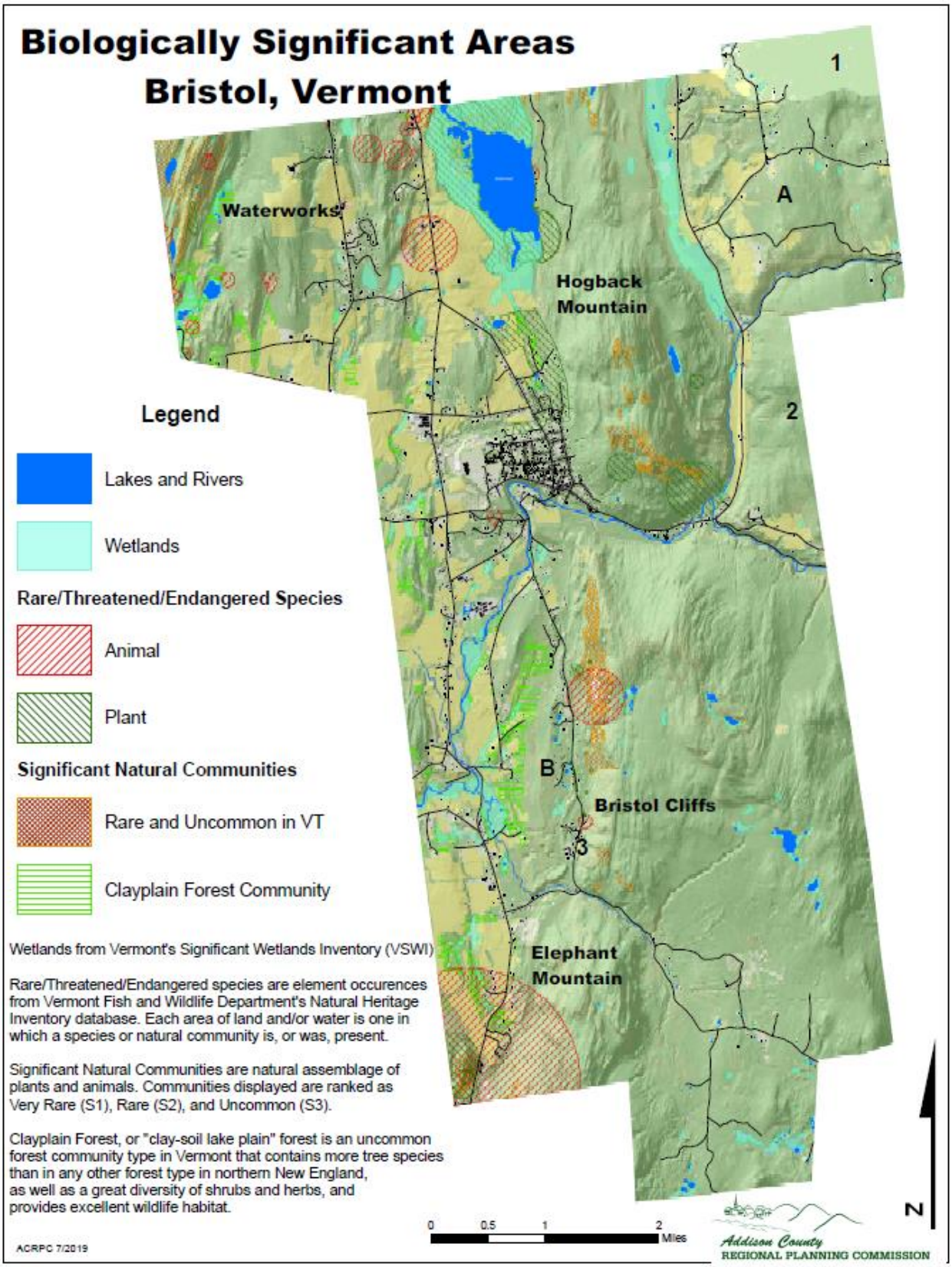
Agricultural Lands

Bristol agricultural land is located in the western and northern areas of the town. While the number of farms has declined over the past century, several dairy farms are still in operation, and a number of smaller farms produce organic vegetables and beef, pork, poultry, maple products, goat cheese and other products. The land in use for agricultural production is important in maintaining the rural nature and open, undeveloped space of the town.


Land Cover
Town of Bristol, VT
STARKSBORO
MONKTON
STARKSBORO
NEW HAVEN
LINCOLN
MIDDLEBURY
RIPTON
Buildings
Parcels
Land Cover
Water
Scrub/Shrub; Shrubs
Grass and Pasture
Emergent Wetland
Crops
Forest
Built Surface
Barren
0 0.5 1 2 3 4 5 Miles
N
Sources:
Tax Parcels: 2018, digitized by Craig Scribner and SGC for Town of Bristol
Land Cover: Vermont High Resolution Land Cover, 2016 University of Vermont Spatial Analysis Laboratory.
ACRPC 1/2020
Addison County REGIONAL PLANNING COMMISSION

Forestlands

Three-quarters (75.7%) of the town of Bristol is covered in forest and its location on the edge of the Champlain Valley and the Green Mountains results in a diversity of forest community types. These range from clay-soil lake plain or "Clayplain" forests remaining in the fertile, but poorly drained calcium-rich clay soils of the Valley in the western half of the town, to larger areas of Northern Hardwood and Conifers in the steeper and higher elevation areas of the eastern half. The largest area of forest is part of the Green Mountain National Forest, which includes the 3,738-acre Bristol Cliffs Wilderness in the southeastern part of the town. Most of the other forested lands are privately-owned with modest acreage owned by non-profit conservation organizations, enrolled in permanent conservation easements and/or enrolled in the state's Current Use (Use Value Assessment) tax program. Wood production from these forests has been an important industry in Bristol for many years, and the largest privately-owned properties are controlled by wood-production companies located in town.


Biologically Significant Areas
Bristol, Vermont
Waterworks
Hogback Mountain
Bristol Cliffs
Elephant Mountain
1
2
3
A
B
Legend
Lakes and Rivers
Wetlands
Rare/Threatened/Endangered Species
Animal
Plant
Significant Natural Communities
Rare and Uncommon in VT
Clayplain Forest Community
Wetlands from Vermont's Significant Wetlands Inventory (VSWI)
Rare/Threatened/Endangered species are element occurences from Vermont Fish and Wildlife Department's Natural Heritage Inventory database. Each area of land and/or water is one in which a species or natural community is, or was, present.
Significant Natural Communities are natural assemblage of plants and animals. Communities displayed are ranked as Very Rare (S1), Rare (S2), and Uncommon (S3).
Clayplain Forest, or "clay-soil lake plain" forest is an uncommon forest community type in Vermont that contains more tree species than in any other forest type in northern New England, as well as a great diversity of shrubs and herbs, and provides excellent wildlife habitat.
ACRPC 7/2019
0 0.5 1 2 Miles
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Forest Blocks and Connectors

Definitions

"Forest Block" means a contiguous area of forest in any stage of succession, not currently developed for nonforest use. These may include recreational trails wetlands, and agricultural and silvicultural uses currently exempt from municipal land use regulation.

Habitat Connector" means land or water that links wildlife habitat within a landscape, allowing the movement and migration of animals and plants and the functioning of ecological processes. These may include recreational trails wetlands, and agricultural and silvicultural uses currently exempt from municipal land use regulation.

"Forest Fragmentation" means the division or conversion of a forest block by land development other than by a recreational trail or use exempt from municipal land use regulation.

Highest Priority Forest Blocks

The town of Bristol contains several large areas of contiguous forestland that have been identified as "Highest Priority" and "Priority" Forest Blocks with a range of ecological and ownership characteristics described below. Forest fragmentation is one of the most significant threats to Vermont's natural heritage, so maintaining large habitat blocks and connections between blocks is one of the best ways to ensure conservation of forest-reliant species.

Hogback Mountain Forest Block

The highly visible ridge East and North of Bristol Village is known as Hogback Mountain, topped by Deer Leap, a series of impressive south-facing cliffs that overlook the town from 1,825-foot elevation. It is part of the Hogback Anticline, a convex fold in the earth's surface where older layers of bedrock are breaking through the newer rock above.

This area is part of a continuous forested habitat block 8,834 acres in size extending into Monkton and Starksboro to the North. Hemlock and red oak-Northern Hardwood Forests are common, with patches of Red Oak-White Pine forest and Red Spruce-Heath forest (Uncommon), and punctuated by Red Pine woodlands (Rare), rocky outcrops and a Pitch Pine-Oak-Heath Rocky Summit (Very Rare in Vermont). The area contains a number of rare and uncommon species, including several vascular plants and vertebrate animals like the Peregrine Falcons which nest along Deer Leap, and provides north-south and east-west corridors for bear, deer (including deer wintering areas), and smaller mammals.

The ownership of Hogback Mountain is entirely private, with most properties enrolled in the Current Use (or Use Value Appraisal) program which taxes land based on its continuing use for forest production and requires a forest management plan. The A. Johnson Lumber Company owns about 2,000 acres along the west and northeastern sides of the ridge, while international non-profit The Nature Conservancy (TNC) owns about 100 acres. Several properties on the southeast side have conservation easements held by the Vermont Land Trust (VLT) as part of the Fuller R and Roleau properties protected in 2014. At the Bristol-Monkton town line the Middlebury College-owned Clapp Lot rises from mid-slope to the ridgeline and straddles the Lewis Creek and New Haven River watersheds. While this property is only a small part of the ridge, it has been intensively inventoried as part of the college lands and includes patches of uncommon Dry Oak Forest and woodland community types within a matrix of Temperate Hemlock Forest. A secluded natural pond and two Vernal Pools add species and habitat diversity to the otherwise dry landscape, including hay sedge (*Carex argyrantha*) which is on the Vermont Threatened and Endangered Species List as rare statewide, rank S2. (See Lapin et al. 2015 report, An Ecological Perspective of the Middlebury College Mountain Lands)

Bristol Cliffs Forest Block

The Bristol Cliffs Wilderness makes up the core of an 8,733-acre forested habitat block extending east into Lincoln. The Wilderness takes its name from the overhanging cliffs on the rocky slopes of the western portion of the area, dominated by a bulge of quartzite called Devil's Pulpit. The forested area provides habitat for beavers, white-tailed deer, black bears, and grouse, as well as peregrine falcons nesting on the cliffs. The area is identified as a birding hotspot, with almost 50 bird species identified and recorded. Two ponds, North Pond and Gilmore Pond, are located in the middle of the Wilderness Area, and are surrounded by areas of natural fen communities that are rare in Vermont (S2).

The Bristol Cliffs area includes northern hardwoods talus forest, dry oak-hickory-hop hornbeam forest, red spruce-white pine forest, hemlock forest, and red pine forest. Other notable features of Bristol Cliffs are its open talus slope (largest in Vermont), unique cold-air plant community at the base of the slope, and Cheshire quartzite cliffs.

The largest portion of this forest block in contiguous ownership is the 3,750-acre Bristol Cliffs Wilderness, owned and managed by the US Forest Service as part of the Green Mountain National Forest. The Forest Service also owns some adjacent forested areas which it manages as Green Mountain Escarpment, and another portion managed for Diverse Forest Use to maintain a diversity of forest stand ages and recreational trails. These parcels are separated by a number of privately-owned properties enrolled in the state Current Use (or Use Value Appraisal) program, including a 1200-acre property owned and managed by the A. Johnson Lumber Company. The area along Upper Notch and LaFrance Roads contains about two dozen privately-owned parcels and residential structures.

Elephant Mountain Forest Block

The area south of Notch and Upper Notch Roads is part of a forest habitat block 12,326 acres in size extending south into Middlebury, Ripton, and Lincoln. It includes portions owned by the US Forest Service managed as an Ecological Special Area, managed for natural communities along the steep slopes of the escarpment and the Beaver Meadows wetland, as well as an area of Diverse Forest Use with intensive management to maintain a diversity of forest stand ages and recreational trails.

The US Forest Service and the A. Johnson Company are the largest landowners in this forest block, with about a third of the remaining acreage held by other private owners. Approximately half of the privately-owned land is enrolled in the Current Use/UVA program. There are a half dozen residential structures south of Upper Notch Road at the edge of the forest block.

Waterworks Forest Block

In the northwest corner of Bristol, The Watershed Center (TWC) owns 950-acres within a 2,300-acre forested habitat block that extends north into Monkton and slightly into New Haven to the west. TWC allows public access so visitors can hike, cross-country ski, snowshoe, and fish on five parcels of diverse, undeveloped land– the Waterworks, Lost Pond Forest, and Middle Forest properties in Bristol, and two smaller adjoining properties in New Haven. The Waterworks property, contains two reservoirs near the center, which served as the water supply for the City of Vergennes from the 1930s through the early 1970s. There are approximately 6 miles of actively-used trails throughout the property, including an interpretive loop trail travels through many different forest types, past an impressive, lichen-covered cliff face, and along the old reservoirs.

The Waterworks property is exceptionally diverse biologically, containing eleven soil types and eight natural community forest types. A comprehensive inventory was conducted between 2008 and 2010 (see the Forest Conservation Plan for the Waterworks Property by David Brynn). It includes many wetlands and streams, most of which are buffered with forested riparian zones, as well as spring seeps throughout the property and at least one vernal pool. Numerous animal species have been observed on the property including deer, moose, coyote, porcupine, beaver, garter snakes, green frog, bull frog, bluebird, turkey, ruffed grouse, and pileated woodpecker (UVM Field Naturalist Program, 1995 and 1996), bobcat, red fox, weasel, otter, raccoon, and mink (Susan Morse of Keeping Track, Inc.), wood and pickerel frogs, American toad, eastern newt, red-backed and northern two-lined salamanders, brown snakes and black rat snakes (Jim Andrews, 1997). Other professional naturalists have identified 22 species of native tree species, 3 shrub species, 4 fern species, 22 wildflower species and 4 sedge species (Marc Lapin 1999), 44 species of herbaceous plants (Elizabeth Thompson, 2010), and 38 different bird species (Mike Winslow, 2010 Warbler Warmup). The area is identified as a birding hotspot, with more than 120 species identified and recorded.

Most of the forest block is owned by The Watershed Center (TWC), a 501(c)(3) conservation organization, with a conservation easement for the property held by the Vermont Housing and Conservation Board and the Vermont Land Trust. The entire Waterworks property has been enrolled in the state Current Use (or Use Value Appraisal) program since 1997, with most actively managed for timber and other products and uses, and a small portion enrolled as "Conservation Lands" and reserved from timber management, while a portion of the property is leased to a local sugar maker. The Waterworks property has a management plan which should be updated every 10 years as required by the UVA program. Adjoining forest properties are also privately owned and enrolled in the UVA program.

Important Forest Blocks

Meehan Forest Block (Area #1)

This area of Bristol between Meehan Rd and upper Meehan Rd in the north east corner of town is part of a large forest habitat block (10000-50000 acres) extending into Starksboro. It is classified as Upper elevation acidic steep hills/mountains.

Drake Woods Forest Block (Area #2)

This area of Bristol along VT Route 116 south of Drake Woods Rd and north of Briggs Hill Rd is part of a medium-sized forest habitat block (500-5000 acres) extending into Lincoln and Starksboro. It contains known deer wintering areas and was identified as a preferred Black bear travel corridor in 2003 (see Report: Contiguous Wildlife Habitat – Lewis Creek and LaPlatte River Watershed Region). It is classified as Mid-elevation acidic steep hills/mountains

Valley Forest Blocks (Area #3)

These small forest blocks are located along the western edge of Bristol, from Hardscrabble Road in the north to Cobble Road at the south end, and the area between Lower Notch Road and Carlstrom Road. These areas contain fragments of clay-soil lake plain or "Clayplain" forest, a type common in the Champlain Valley but few other places in the state. Clayplain forests are home to a diversity of trees, shrubs and herbs due to the soil's high fertility, the moderate climate, and a patchy mosaic of scattered wet depressions. The tree species include shagbark hickory, white, bur, swamp, and red oaks, sugar, red, and silver maples, white, black, and green ash, American elm, basswood and American beech. These species, and the large nut crops they produce, provide great habitat for wildlife including bobcat, wild turkey, white-tailed deer, and gray squirrels. Due to the fertile soil's suitability for agriculture, much of the original extent of this forest type has been cleared, leaving these fragments. These areas are important "stepping stones" from the larger mountain forest blocks to the east and the Watershed priority forest block and forested areas continuing to New Haven to Snake Mountain in the west.

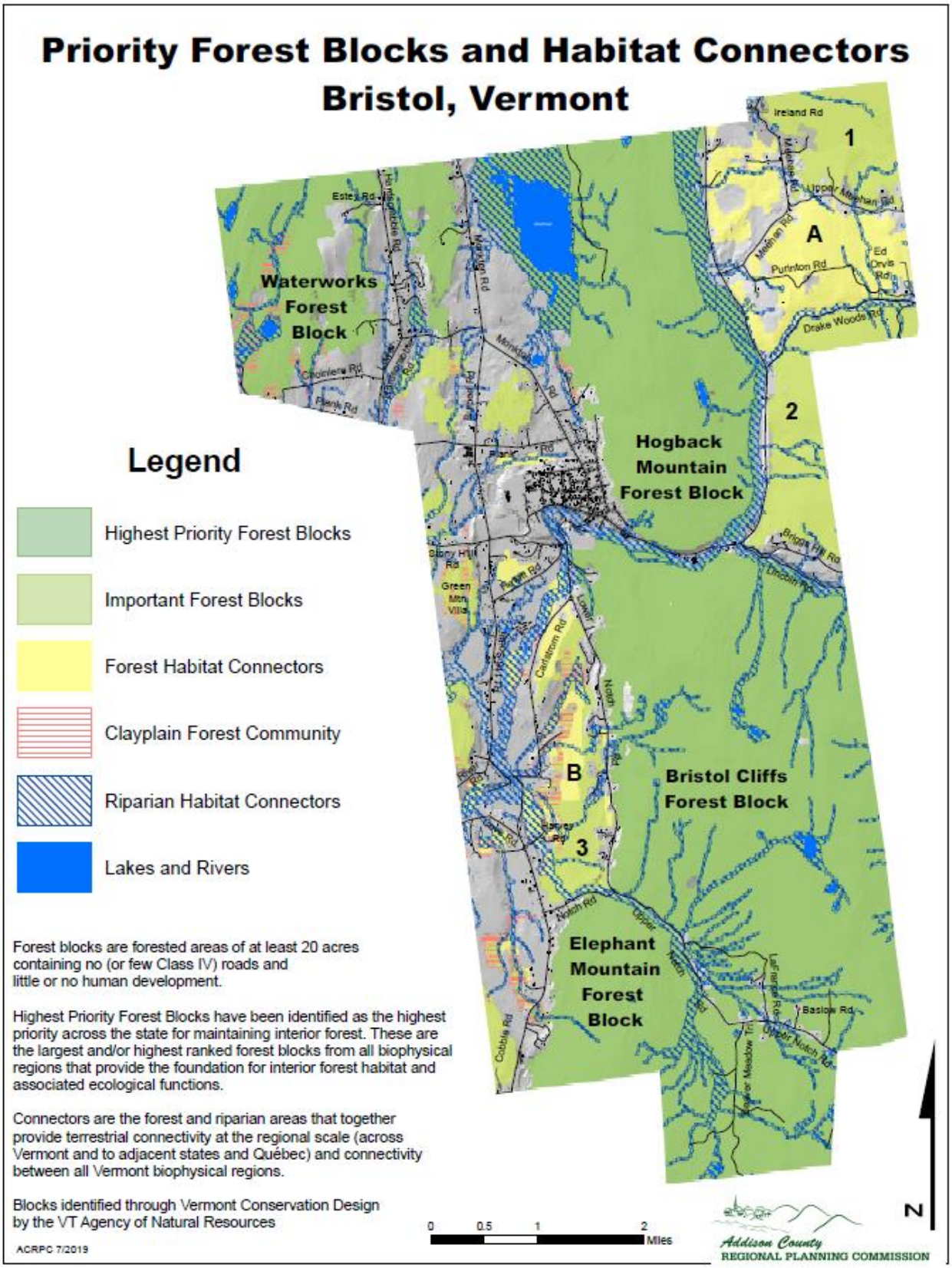
Habitat Connectors

Purinton Connector (Area A)

This area is a mix of woodlands, farm fields, and residences between Meehan/Upper Meehan Road and Drake Woods Road (Between Hogback Mountain and priority forest block areas 1 and 2). It was identified as part of a preferred bobcat travel corridor in 2003.

Valley Connectors (Area B)

These habitat connectors are multiple smaller areas around to forest block Area 3, between Carlstrom Road and Lower Notch Road. These areas a mix of woodlands, farm fields, and residences and may also be important "stepping stones" of habitat between the larger forest blocks.


Priority Forest Blocks and Habitat Connectors
Bristol, Vermont
Waterworks Forest Block
Hogback Mountain Forest Block
Bristol Cliffs Forest Block
Elephant Mountain Forest Block
1
2
3
A
B
Legend
Highest Priority Forest Blocks
Important Forest Blocks
Forest Habitat Connectors
Clayplain Forest Community
Riparian Habitat Connectors
Lakes and Rivers
Forest blocks are forested areas of at least 20 acres containing no (or few Class IV) roads and little or no human development.
Highest Priority Forest Blocks have been identified as the highest priority across the state for maintaining interior forest. These are the largest and/or highest ranked forest blocks from all biophysical regions that provide the foundation for interior forest habitat and associated ecological functions.
Connectors are the forest and riparian areas that together provide terrestrial connectivity at the regional scale (across Vermont and to adjacent states and Québec) and connectivity between all Vermont biophysical regions.
Blocks identified through Vermont Conservation Design by the VT Agency of Natural Resources
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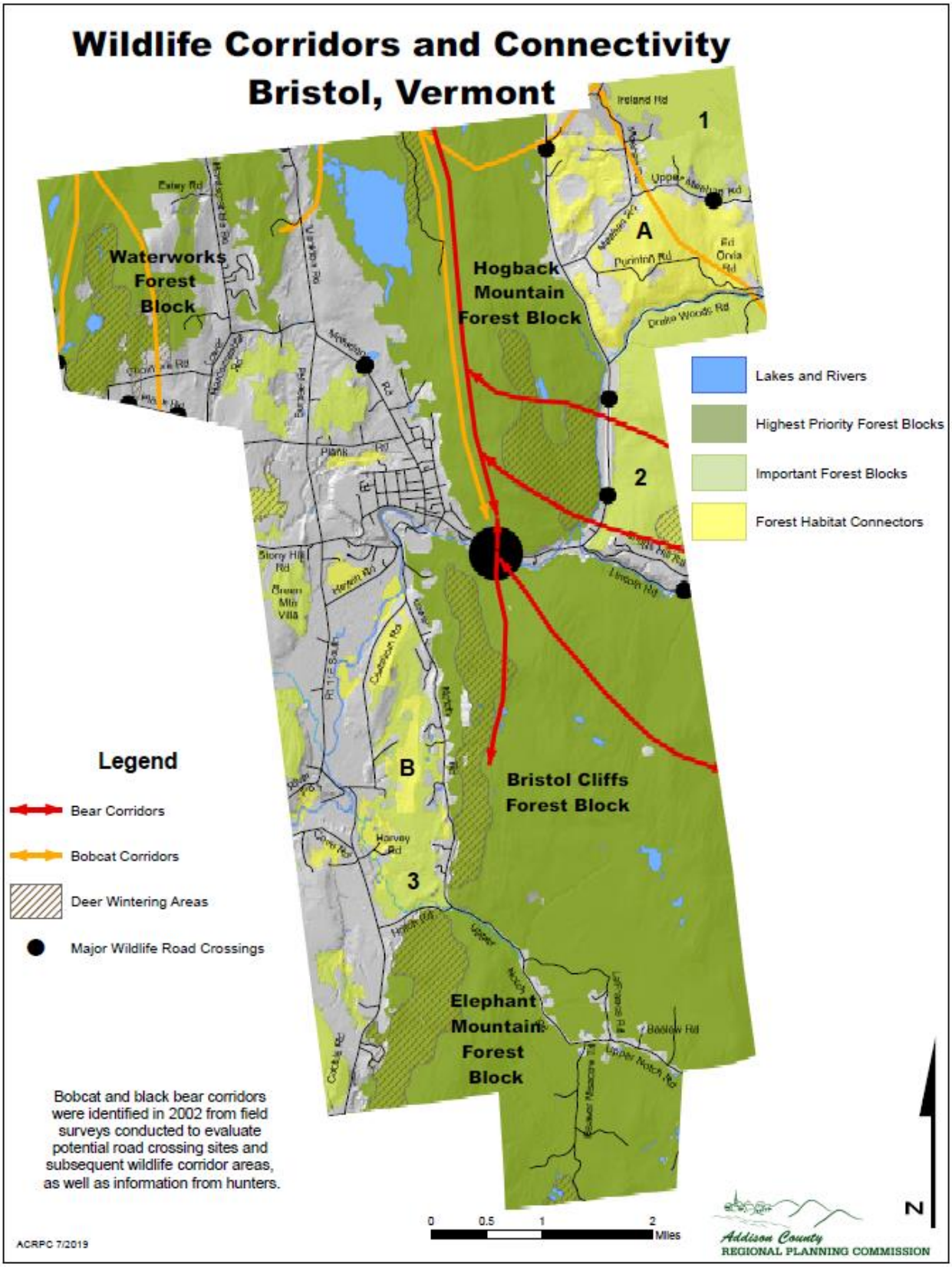
Wildlife-Road Crossings

A 2006 analysis identified the areas of Route 116 north of Lincoln Road, especially along the intersections with Drake Rd and Meehan Road as most significant for wildlife crossing value.

Areas along Route 116 between Notch Road and River Road were also identified as having moderate value for wildlife crossings.

A 2003 study ("Contiguous Wildlife Habitat – Lewis Creek and LaPlatte River Watershed Region") conducted field surveys and information from bobcat and black bear trappers and hunters to identify and evaluate potential road crossing sites and wildlife corridor areas.

The study identified the area between Prayer Rock and Rockydale Gardens across the New Haven River and Rte. 116 as an Active Crossing location, along with several other locations with observed species, including three along Rte 116 east of Hogback Mountain, four along Plank Road, and one on Monkton Road.


Wildlife Corridors and Connectivity
Bristol, Vermont
Waterworks Forest Block
Hogback Mountain Forest Block
Bristol Cliffs Forest Block
Elephant Mountain Forest Block
1
2
3
A
B
Lakes and Rivers
Highest Priority Forest Blocks
Important Forest Blocks
Forest Habitat Connectors
Legend
Bear Corridors
Bobcat Corridors
Deer Wintering Areas
Major Wildlife Road Crossings
Bobcat and black bear corridors were identified in 2002 from field surveys conducted to evaluate potential road crossing sites and subsequent wildlife corridor areas, as well as information from hunters.
0 0.5 1 2 Miles
N
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Goals and Policies

Goal 1. Conserve the natural features and resources that provide a significant benefit to the general public and protect rare, threatened, and endangered species, significant natural communities, and existing wilderness areas.

Policies:

- Encourage management of natural resources for the benefit and enrichment of the entire community.
- Consult with and support the efforts of the Bristol Conservation Commission.

Goal 2. Maintain healthy, contiguous forest blocks for public recreation, sustainable forestry production, and the movement of wildlife.

Policies:

- Discourage fragmentation when development occurs within highest priority forest blocks.

Goal 3. Support agriculture capable of producing a variety of food, pasture, and livestock, while providing open landscapes and wildlife connectivity.

Policies:

- Promote and support the activities of public and private organizations to develop long-term sustainable options for agriculture and forestry.

Goal 4. Protect water quality, both in surface water and groundwater.

Policies:

- Identify, manage, and protect the quality of public surface water, groundwater, and wetland resources, and encourage private property owners to adopt compatible practices.
- Support the activities of public and private organizations to monitor water quality in the town's surface waters and groundwater to ensure protection of public health and support ecosystems.

Goal 5. Increase education and community awareness of the value of Bristol's natural resources and diverse native ecosystems.

Policies:

- Support the outreach efforts of the Bristol Conservation Commission and other town and local volunteer groups.

Goal 6. Strive to respect and honor private property rights, recognizing that many of our natural resources are located on private property.

Policies:

- Encourage landowners to enroll in the state's Current Use/Use Value Assessment (UVA) program to support agricultural and forest production on privately-owned lands.

Flood Resilience

Historically, many Vermont communities and infrastructure have often been located in valleys and near water bodies. Flooding is the most common recurring hazard event in Vermont. In recent years, flood intensity and severity appear to be increasing. Flood damages are associated with inundation flooding (rise of riverine or lake water levels) and fluvial erosion (streambed and streambank erosion associated with physical adjustment of stream channel). Today, with climate change models predicting increased precipitation and stronger storms, many communities now find themselves and their infrastructure increasingly vulnerable to natural disasters like flooding. It is understood that rivers and water bodies naturally adjust and change course, threatening much of the infrastructure that lies in their path. Wetlands, flood plains, farm and forest land provide capacity for slowing and storing floodwaters.

In the town of Bristol, surface waters enter three watersheds: Otter Creek via the New Haven River, Little Otter Creek, and Lewis Creek. The New Haven River is the largest surface water body, with Baldwin Creek and Notch Brook being major tributaries. Lands east of the Hogback Mountains and all the area south of the village area drain into Otter Creek via the New Haven. Much of this watershed, including most of Notch Brook, is in the Green Mountain National Forest. Lewis Creek receives the water from the north central part of town between the Hogback ridge to the east and the hills west of Monkton Road. Little Otter Creek drainage extends into the northwest corner of Bristol. These waterways flow through a number of other towns before they reach Lake Champlain.

The Town of Bristol is a member of the National Flood Insurance Program (NFIP)since entering on 08/05/1986, and as such has adopted zoning regulations designating Flood Hazard Areas including associated regulations for administering those areas. Within the town there are 31 structures in the Special Flood Hazard Area (SFHA) and 3 (10%) of structures within that area that currently have flood insurance policies. There are no critical or public structures in mapped flood hazard areas. The Flood Insurance Rate Maps (FIRMs) identifying these flood hazard areas were produced by FEMA in 1985, and are currently being updated by FEMA and the US Geological Survey (USGS).

The town of Bristol last conducted a planning process focusing on resiliency in 2018 which resulted in the adoption of a Hazard Mitigation Plan (12/17/2018) that received FEMA approval (1/23/2019). During that process the hazard mitigation committee identified and reviewed Flash Floods, and Landslides as some of the hazards that pose the greatest threat to the Town. In terms of potential property damage and overall concern, the committee indicated that the highest risks to the community are Flash Floods and Landslides.

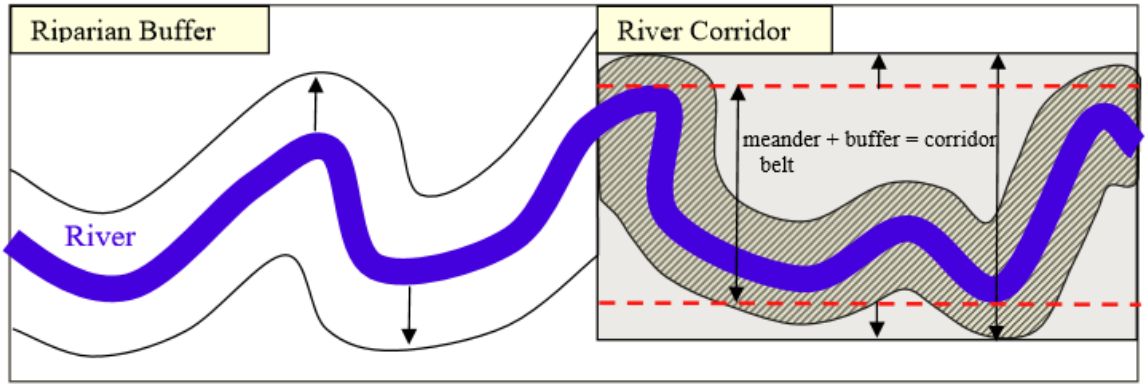
Fluvial Erosion Hazard Areas

Fluvial (or river-related) erosion hazards refer to major streambed and streambank erosion associated with the physical adjustment of stream channel dimensions (width and depth) and location that can occur during flooding. The width of the fluvial erosion hazard area is based on the stream meander belt, which is derived from fluvial geomorphic assessments, and extends to a width necessary to capture the outside bends of the naturally stable stream under equilibrium conditions. The State of Vermont has established geomorphic assessment procedures for defining

Fluvial Erosion Hazard Areas and has data available to assist the town in establishing those areas. Bristol will continue to review fluvial erosion hazards along major waterways, which may help identify a need to regulate development, land alterations and other activities to avoid and minimize losses in the hazard areas.

River Corridors

River Corridors identify the area that a stream or river needs to maintain fluvial geomorphic equilibrium, that is, the space in which streams and rivers will move. River Corridors include the width of the meander belt of a river and an additional 50' buffer to allow for a stable bank. The Vermont Rivers Program has developed the Statewide River Corridor, using map-based data on watershed catchments, stream gradient, reference channel width, meander belt widths, valley walls, and major transportation features, to identify corridors of all rivers and streams with watersheds over two square miles across the state. For small streams, with watersheds less than two square miles, the state has set a default width measured on the ground as fifty (50) feet from the top of the stream bank as the corridor. Communities may conduct their own geomorphic assessment, a field-based study of the physical condition of local rivers and major tributary streams, to determine River Corridors more accurately.



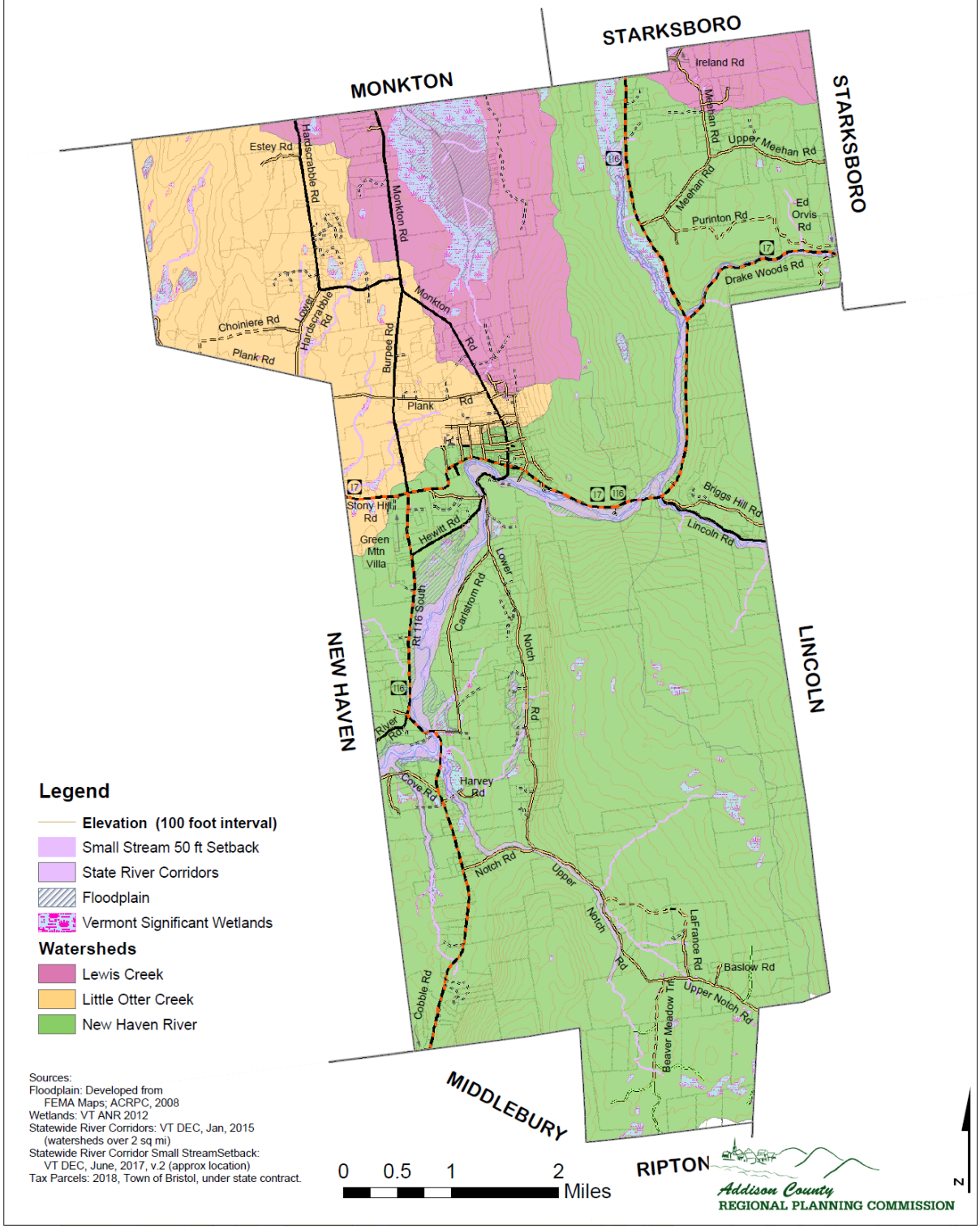
Comparing a buffer setback to a river corridor. Adapted from Ohio DNR, Rainwater and Land Development Manual, 2006 Ed., Ch 2. Post Construction Stormwater Management Practices, p. 21.

River Corridor Maps **do not** indicate any required action on the part of municipalities. They are developed to facilitate ANR's responsibilities in Act 250 to protect public safety from fluvial erosion hazards and to regulate activities exempt from municipal regulation under the Flood Hazard Area and River Corridor Rules. Regulations that reference river corridors include:

- State regulation of berms as described in the Stream Alteration Rule;
- Act 250 regulated land use in floodways;
- ANR floodway determinations; and
  State regulation of developments that are exempt of municipal regulation;

A municipality may regulate land uses within River Corridors by adopting those areas as part of its zoning regulations. The town of Bristol has not adopted the state River Corridors but may consider doing so.

Watersheds



ACRPC 2/2020

Flash Flood Vulnerability
The community vulnerability to a Flooding incident is high based on the likely occurrence of an incident with the potential for moderate geographic impact to homes and infrastructure.

Bristol's moderate to steep terrain, when combined with heavy rainfall are conditions conducive to flash flooding throughout town. The New Haven River transitions from a steep fast flowing stream north and east of town to a much lesser gradient just south of the village. It is prone to flash flooding all along this route depending on the amount of rainfall, upstream in Lincoln. The ~~only~~ area of town where inundation flooding may be more common than flash flooding is along the north-south valley of the New Haven River on the flats south of town along Rte. 116.

Flash flood and related erosive failure risks are associated almost entirely with the instability of the New Haven River along its entire route through town. Flash floods identified as a primary risk in Bristol generally also produce major erosion events as river banks and road bases along the river are destabilized. Infrastructure at risk to erosive damage is located along the entirety of the New Haven river, including portions of River Road and VT Route 116 east of the village, both of which have experienced major damages over the past 20 years.

Over the last two decades there have been several storms in Bristol where damage was great enough to warrant federal assistance. In late June of 1998, Bristol was the recipient of a chain of successive rainstorms. Once the ground was saturated, the remainder flowed into streams in torrents. Bristol had major damages and the nearby Town of Lincoln was entirely cut off from the rest of the state. The storm caused over $2 million in damages in Addison County alone and resulted in FEMA Major Disaster Declaration (DR1228). This same storm flooded several mobile homes that had slowly creeped into a floodplain and resulted in one of the first major mitigation buyouts in the state. Geomorphic assessments conducted since the 1998 flood of record have identified multiple locations where infrastructure and private homes are at risk due to channel migration and flooding.

In 2004, a stalled summer storm dropped large amounts of rain onto South Mountain and Deer Leap causing flooding to residences and businesses in the downtown area as well as inflicting damage to town and state highways. The 2004 storm caused over $70,000 in damage to the Town of Bristol, much of which was reimbursed through State and Federal sources.

In 2008 a single storm concentrated its rain on the towns of Bristol and nearby New Haven, causing localized flash flooding resulting in DR1790. 2011 saw another banner year for flooding/flash flooding in Bristol. Tropical Storm Irene DR-4022 alone contributed to damages of over $44,000 in town. Since 2012 there has been one other severe storm and flash flooding event large enough to warrant federal assistance in Bristol (DR4356 in 2017).

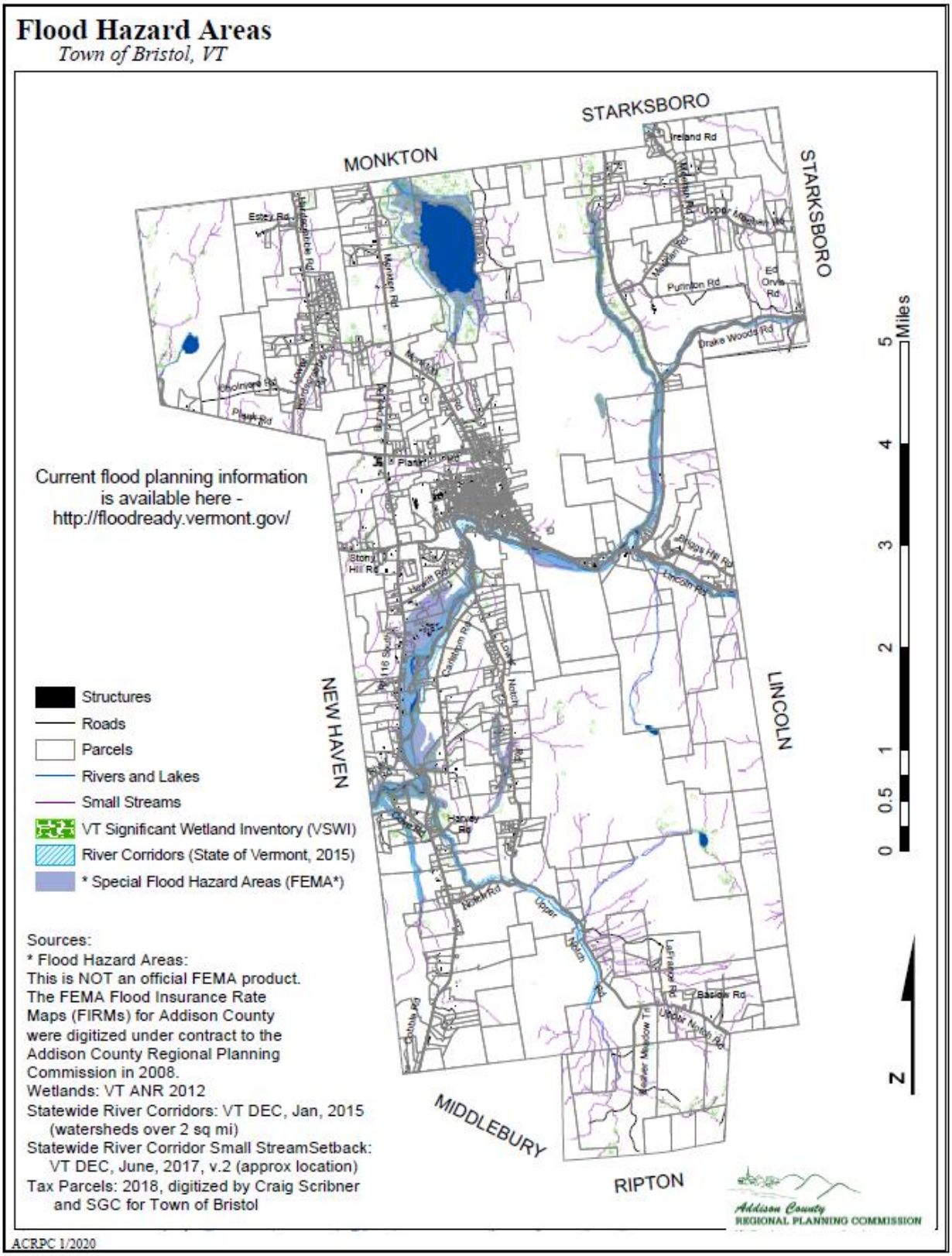
Landslide Vulnerability

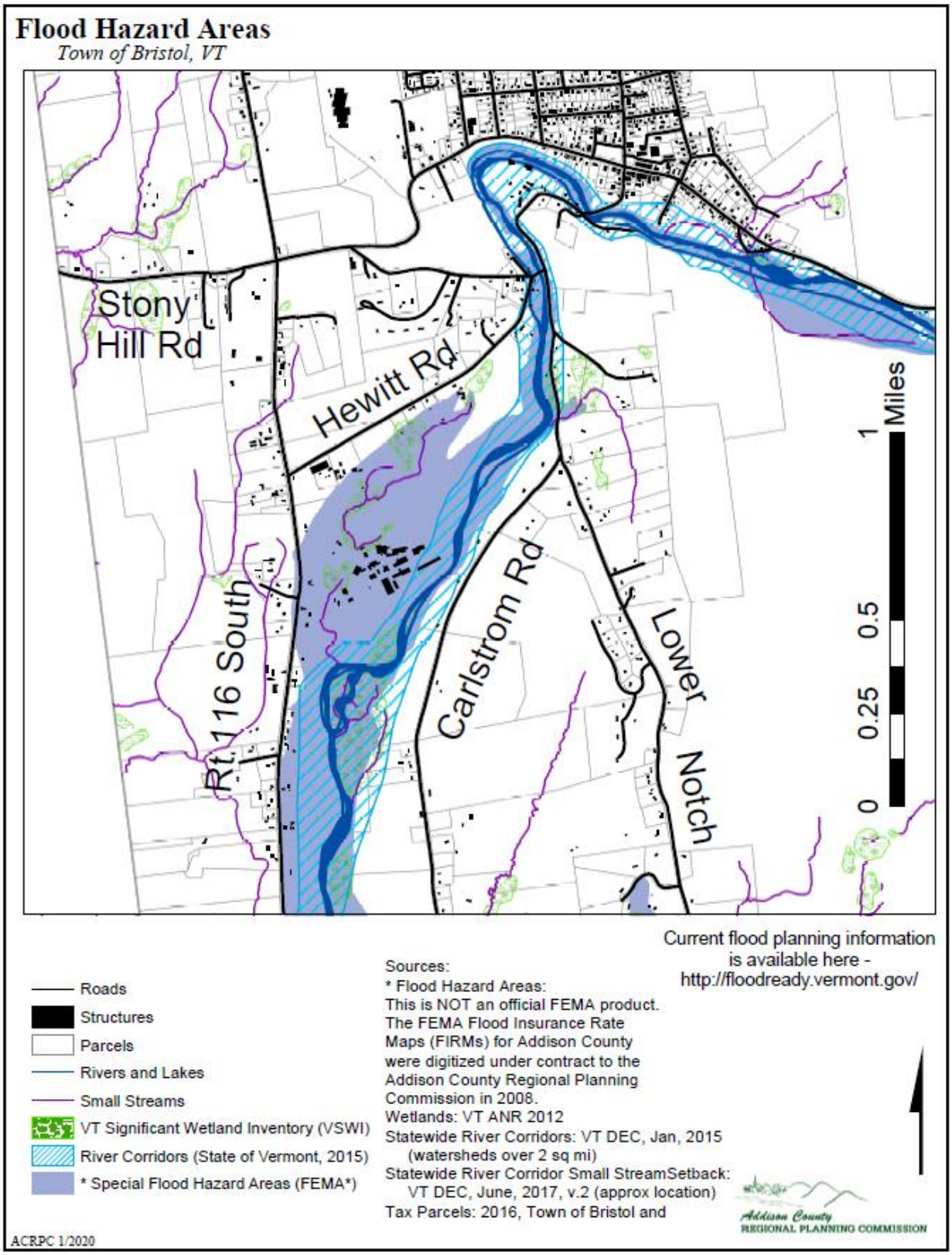
The community vulnerability to a landslide is high based on the likely occurrence of an incident with the potential for limited geographic impact to homes and infrastructure. Landslide or rockslide hazards occur in the Town of Bristol as the result of glacial deposits and how both roads and rivers interact with these deposits. The Town is located at the transition between the steep sloped Green Mountains and the flatter Champlain Valley. This transition area contains large gravel deposits which are easily erodible and subject to mass failure. The more densely settled village portion of the Town of Bristol is located on the surface of one such deposit.

A 2016 study of landslide potential conducted by the Vermont Geological Survey, indicates 6 major areas where there is a moderate to high risk. Four of these areas coincide with the fluvial erosion risk encountered along streams flowing out of the higher elevations in town. Three of these streams are also bordered by town roads, Drake Woods Rd. (Rte. 17), Lincoln Rd., and the Lower Notch Rd., all known locally as areas at risk. An additional at-risk area follows along West St (Rte. 116) east of town below Deer Leap which was washed away by the force of the river in 1998. In each of these examples the risks also include land sliding into the road from above. In the village of Bristol, perched on top of an alluvial fan, landslide/erosion risks associated with nearby river can equally be the result of waterlogged soils breaking away from the escarpment and erosion from the river below.

The remaining two moderate to high risk areas exist at the outer edges of the village to the south and west. The most visible area is the steep bank above the New Haven River south of West Street behind the several residential and business buildings including the Village Creeme stand. The built environment is currently perched at the top of what could be a 90ft drop should there be a mass failure. The Halloween rainstorm of Oct 31-Nov 1 2019 created a small slide of rock and debris in one part of this slope. The Town of Bristol has worked with the USDA Natural Resources Conservation Service Emergency Watershed Program to design a repair and stabilization of that part of the slope and have applied for a grant that would cover a substantial portion of those project costs, with the remainder provided by adjoining property owners. Award of the grant does not commit the Town or the property owners to move forward if the overall costs are found to be too high. The western risk area is located behind the high school where gravel mining operations have helped to create a steep gravel bank which is at risk for a failure.

Each flood event of the past 20 years has resulted in erosion of river banks, some more than others. As previously identified, the landmark flooding of 1998 was the worst in recent memory. Bristol's location at the transition of the New Haven River from steep topography to gradual slope has resulted in 4 disaster declarations in the past 20 years. Each of these, while considered mainly flood events, have also had a component of erosion associated with them. DR1228 in 1998, DR1559 in 2004, DR1790 in 2008 an DR4022 in 2011 have each impacted the community. Several locations in town show clear historic landslide activity. Deer Leap along Route 116 east of town shows what is likely a continuing slide. Researchers also note scars from past mass failures on the slope that follows West St.


Flood Hazard Areas
Town of Bristol, VT
STARKSBORO
MONKTON
STARKSBORO
NEW HAVEN
LINCOLN
MIDDLEBURY
RIPTON
Current flood planning information is available here - http://floodready.vermont.gov/
Structures
Roads
Parcels
Rivers and Lakes
Small Streams
VT Significant Wetland Inventory (VSWI)
River Corridors (State of Vermont, 2015)
* Special Flood Hazard Areas (FEMA*)
Sources:
* Flood Hazard Areas:
This is NOT an official FEMA product.
The FEMA Flood Insurance Rate Maps (FIRMs) for Addison County were digitized under contract to the Addison County Regional Planning Commission in 2008.
Wetlands: VT ANR 2012
Statewide River Corridors: VT DEC, Jan, 2015 (watersheds over 2 sq mi)
Statewide River Corridor Small StreamSetback: VT DEC, June, 2017, v.2 (approx location)
Tax Parcels: 2018, digitized by Craig Scribner and SGC for Town of Bristol
0 0.5 1 2 3 4 5 Miles
N
Addison County REGIONAL PLANNING COMMISSION
ACRPC 1/2020


Flood Hazard Areas
Town of Bristol, VT
Stony Hill Rd
Hewitt Rd
Rt.116 South
Carlstrom Rd
Lower Notch
0
0.25
0.5
1
Miles
Roads
Structures
Parcels
Rivers and Lakes
Small Streams
VT Significant Wetland Inventory (VSWI)
River Corridors (State of Vermont, 2015)
* Special Flood Hazard Areas (FEMA*)
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Tax Parcels: 2016, Town of Bristol and
Current flood planning information is available here - http://floodready.vermont.gov/
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Goals and Policies

Goal 1. Bristol will protect identified and designated areas to reduce the risk of flood damage to infrastructure and improved property.

Policies:

- Provide restrictions and setbacks in an effort to protect waterways and watersheds through Unified Development Regulations.
- Prohibit, limit and/or discourage new residential development in known Flood Hazard Areas and Class II Wetlands through Unified Development Regulations.
- Maintain and protect water resources to limit and mitigate flood-related damage by limiting development in floodplains, river corridors, land adjacent to streams, and wetlands.
- Develop a uniform and simplified approach to defining zoning districts that interface with water resources and river corridors.
- Evaluate the effect of River Corridor Protection guidelines on existing homeowners and businesses as part of updates to land use and development regulations.
- Regularly review and update land use and development regulations in order to improve regulation of development flood hazard and potential river corridor areas.

Goal 2. Bristol will mitigate risks to public safety, critical infrastructure, structures, and municipal investments.

Policies:

- Maintain and consider upgrading Town road infrastructure to withstand potential flood events.
- Continue maintenance of road infrastructure in compliance with Vermont Agency of Transportation Town Road and Bridge Standards.
- Update and implement steps outlined in Local Hazard Mitigation Plan.
- Evaluate the necessary steps to qualify for maximum State funding (17.5%) from the Emergency Relief and Assistance Fund.

Goal 3. Bristol will provide resources for residents and businesses to understand and mitigate flood risk.

Policies:

- Encourage participation by townspeople in flood-preparation events and discussions.
- Make available maps that include Property boundaries, Wetlands, River Corridors, Flood Hazard Areas, Zoning Districts, and other features related to flood risk and mitigation.

LAND USE AND PLANNING

Land Use and Planning

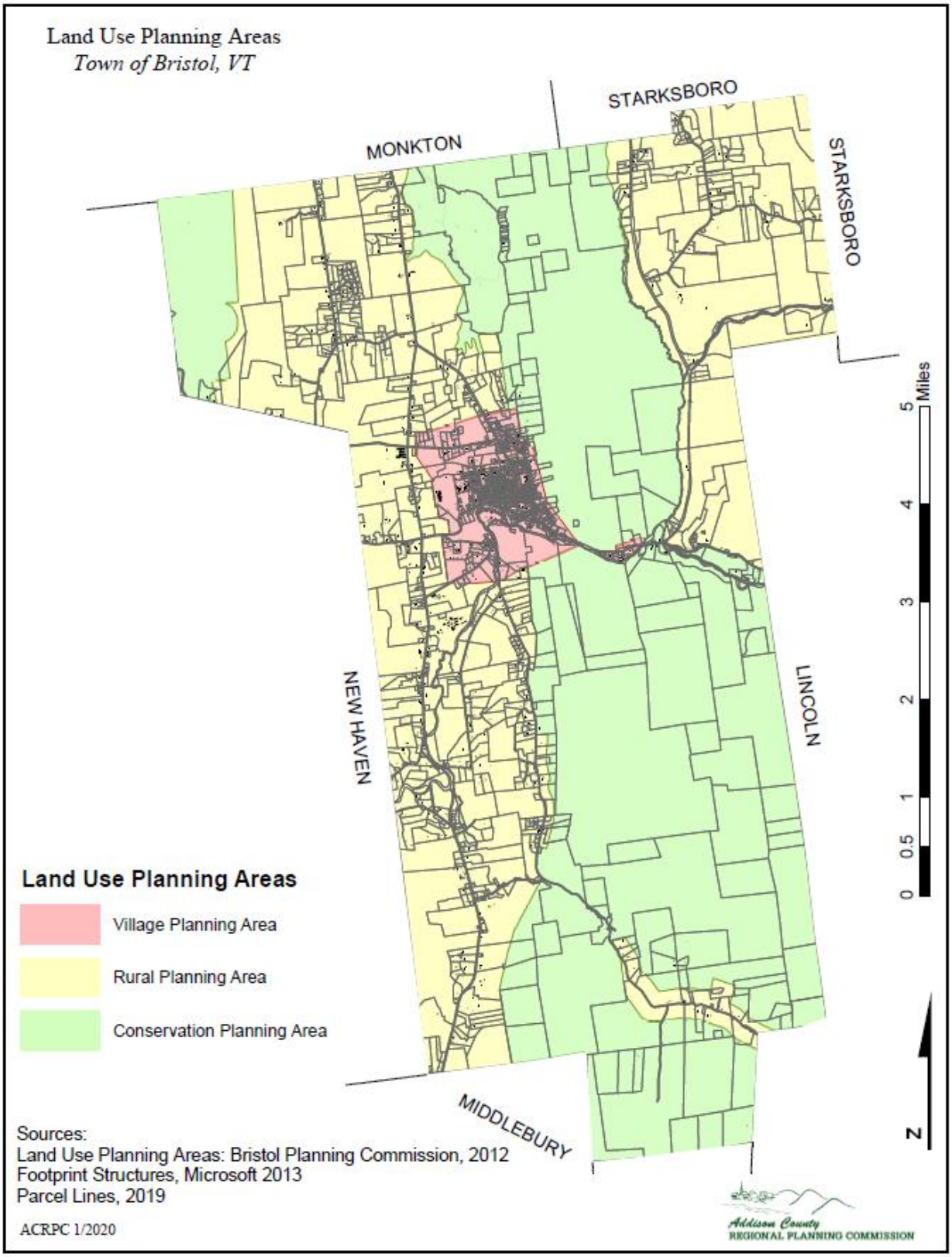
Overview

Natural growth and historic economic patterns have determined Bristol's land use settlement. Bristol is anchored by a village area that includes most of the high-density residential development and most of the commercial development within the town. Major east/west and north/ south state roads, Routes 17 and 116, respectively, run through town. Several areas of residential concentration and small areas of limited commercial development have formed along these roads outside the village area. Bristol's forestry and wood products industries continue to contribute significantly to statewide forest product use, and Bristol's agricultural industry remains a vital sector of the local economy. Bristol also has several ongoing extraction operations that help to meet local road and drainage needs for gravel.

For consideration of current and future land uses, Bristol has been divided into three Planning Areas as shown on the Land Use Planning Areas Map.

- **Village Planning Area.** The Village Planning Area is largely made up of the Village of Bristol. It includes 5% of the town's land area.
- **Rural Planning Area.** The Village Planning Area is surrounded by rural land, which has seen limited low-density residential development. The lower elevation lands in this category are either (1) presently used for agriculture, (2) suitable, but not presently used, for agriculture but still not forested or (3) relatively small tracts of second-growth forest stands or brushy land. The Rural Planning Area includes 44% of the town's land area.
- **Conservation Planning Area.** The Conservation Planning Area, includes mountains, steep slopes and some environmentally sensitive areas. Conservation, forestry, and recreation are three especially valuable uses of this area. The Conservation Planning Area accounts for 51% of the town's land area. Public lands within the area account for approximately half, and most all forms of development or extraction would never be likely to occur on these lands. Private lands within this area are and will be subject to town planning and Development Regulations. Commercial extraction is not allowed on such private lands. In addition, some of them may be subject to additional restrictions through easements or covenants that have been entered into by past or present owners.

While there are many issues discussed in this section, the ultimate recommendation is to reinforce and continue the settlement patterns that have already developed. As this Town Plan anticipates additional housing needs, despite little or no population change, the Village Planning Area requires continued attention in order to encourage a compact village pattern while balancing interests in appropriate size and type of economic growth along with residential growth. It is also recognized that economic pressures on farmers and other users of the land resources located outside the Village Planning Area, will continue to create pressure for less restrictive zoning in those areas.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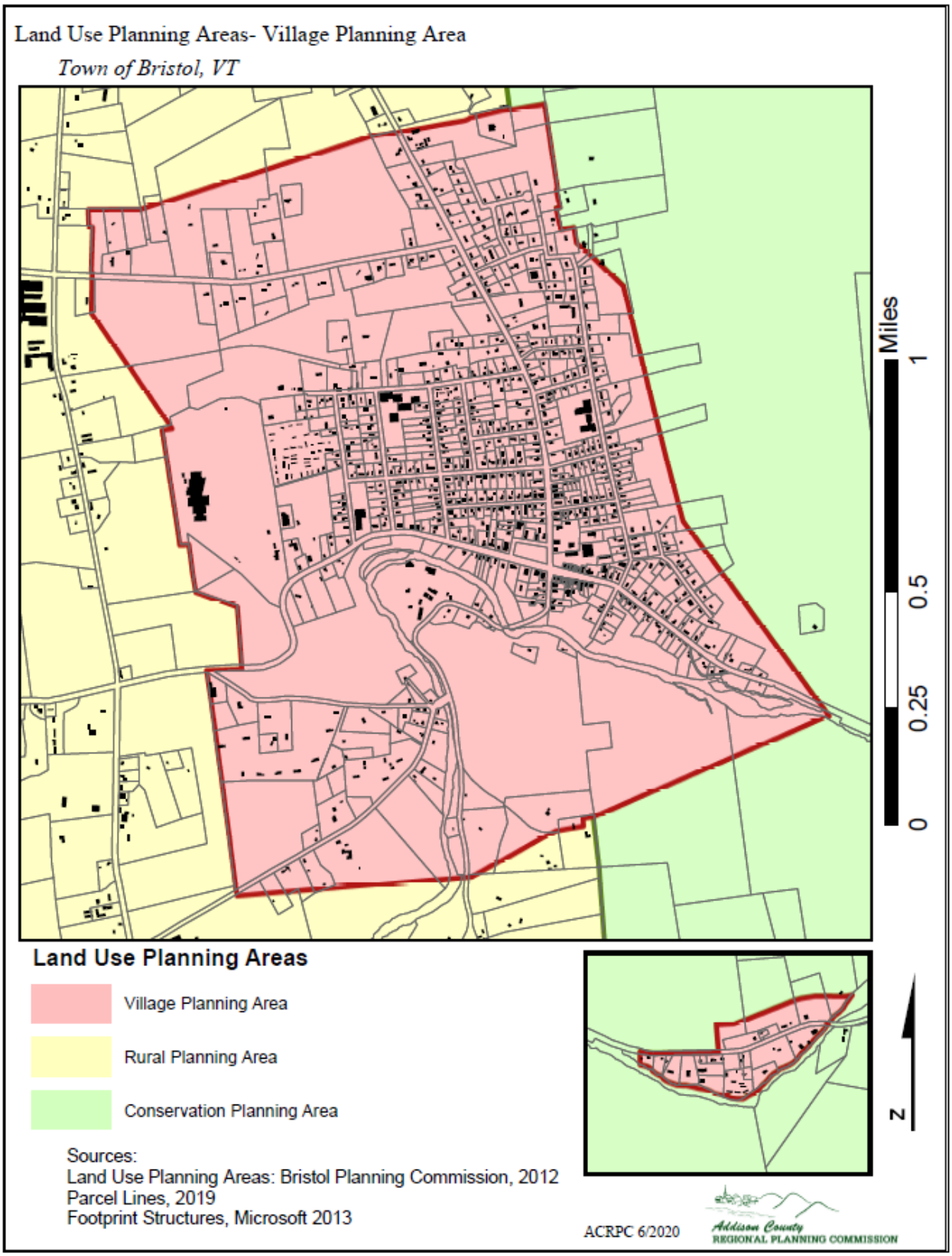
MONKTON
STARKSBORO
NEW HAVEN
LINCOLN
MIDDLEBURY
0 0.5 1 2 3 4 5 Miles
N
Land Use Planning Areas
Village Planning Area
Rural Planning Area
Conservation Planning Area
Sources:
Land Use Planning Areas: Bristol Planning Commission, 2012
Footprint Structures, Microsoft 2013
Parcel Lines, 2019
ACRPC 1/2020
Addison County
REGIONAL PLANNING COMMISSION


Land Use Planning Areas- Village Planning Area
Town of Bristol, VT
Miles
0
0.25
0.5
1
Land Use Planning Areas
Village Planning Area
Rural Planning Area
Conservation Planning Area
Sources:
Land Use Planning Areas: Bristol Planning Commission, 2012
Parcel Lines, 2019
Footprint Structures, Microsoft 2013
N
ACRPC 6/2020
Addison County
REGIONAL PLANNING COMMISSION

Current and Future Land Use and Settlement Patterns

Bristol from its inception has enjoyed a full range of uses of its land: agricultural, residential, commercial (retail and office), manufacturing, timber harvesting and the extraction of sand, soil, gravel and rock. A number of areas in Bristol are unsuitable for development or resource extraction, including mountains and steep slopes, rivers and streams, and a large pond, which lie primarily in the conservation area, but are extremely important for recreation and wildlife. Sand, soil, gravel, and rock deposits sometimes closely adjoin pockets of substantial residential development.

Village Planning Area

The concentration of commercial facilities and some manufacturing has traditionally been in and around the Village Planning Area. This is also where the largest concentration of residential development has occurred. The Village Planning Area is accessible via two major transportation routes: Route 17, a major east-west route and Route 116, a major north-south route. These coincide through the downtown area to form East and West Main Street.

The development pattern of increased density in proximity to the Village Planning Area has been supported by the Town Plan and Unified Development Regulations. Due to geographical limitations, the logical growth patterns for the Village Planning Area are to the north and to the south. Population density in and around the Village Planning Area has increased over the years and represents the largest concentration of residential growth in Bristol. Future growth in the village is most likely to occur to the north and south. Although growth of the village is, in many respects, beneficial, residents have expressed a desire that light industrial use be compatible with surrounding uses. As the town grows and evolves, it will be important to maintain the town's walkability for both residents and visitors.

One of the goals of the Town Plan is to continue to concentrate retail, light industrial and residential growth in and around the Village Planning Area (VPA). By concentrating growth in the VPA certain benefits accrue such as less auto dependency (lower fuel consumption and air pollution). In addition, VPA growth enhances the notion that this area is Bristol's center and that encourages a sense of place and community. Continued VPA growth may entail some minor zoning modifications. Given this entire plan's emphasis on protecting the downtown, as well as the importance of providing for Bristol's long-term needs, extraction will not be allowed in the Village Planning Area.

An area of several of the blocks around the Main St-North/South Street intersection of Bristol received a "Downtown Designation" from the State of Vermont in 2006. As a result of this property owners within this area are eligible for various governmental support and grants. As a requirement of the designation, a group of area business people, property owners and community members organized were organized as a non-profit 501(c)(3) organization known as Bristol CORE. Bristol CORE actively supports efforts to enhance the economic vitality of the downtown area and to organize and promote community events for Bristol citizens. In order to assure that

development within the area is in the best interests of business and residents the Downtown Design Review Commission reviews development in the downtown district.

Rural Planning Area

It is widely recognized and appreciated that the open land that lies on three sides of the Village Planning Area contributes substantially to the aesthetics and quality of life for all our citizens. Bristol's Rural Planning Area, some 11,639 acres or approximately 44% of the town, encompasses working farms, open meadows and fields, most of the New Haven River as well as many other streams, forests, low density housing, and several long-standing industrial and commercial sites. This planning area also includes a number of Important Forest Blocks and Forest Habitat Connectors which are critical for wildlife populations. It also includes the area identified as preferred for renewable energy production.

It is recognized that those who own this land may bear a disproportionate responsibility for maintaining these community benefits. As such, continued efforts to support programs including use-value appraisal and dedication of development rights that help ease this burden will be supported. Zoning/Development Regulations approaches to maintain this open space will be carefully considered. While we continue to support the existence of farming, we recognize that alteration of open field and crop land to forested land or renewable energy production, while at times less aesthetically pleasing, may, in the long run, be the best alternative to development, for purposes of protection of water resources, for reduction of erosion and flooding, and the reduction of atmospheric carbon. Because of this, nothing in this plan shall be construed as preventing such alteration.

While trying to maintain our open areas, we also need to recognize the need for commercial and light industrial growth in portions of the Rural Planning Area. To balance the residential growth in the Village Planning Area and the rural nature of the surrounding land, we will need to zone in such a way as to allow for commercial and light industrial growth centers. Among the locations to be considered for such growth centers could be portions of Route 116 South and Burpee Road. The current mix of uses, proximity to the Village, and access to major truck and commuter routes make these the logical areas for growth.

Conservation Planning Area

The mountains, forests, and rugged terrain of Bristol make the aesthetic and cultural characteristics of the community unique. A large portion of these mountainous areas is designated as the Conservation Planning Area, which includes the western edge of the Green Mountains, Hogback Mountain extending to the east side of the Village Planning Area, and the northwestern Waterworks forest.

This planning area roughly aligns with the Highest Priority Forest Blocks as identified in the Natural Resources section. These contiguous forest blocks provide the foundation for interior forest habitat and associated ecological functions. This plan discourages fragmentation when development is proposed within areas identified as highest priority forest blocks and promote the health, viability, and ecological function of these forests.

This planning area is split nearly evenly between federally-owned National Forest and private ownership, a portion of which is protected by conservation easements and other conservation programs. Land within the Conservation Planning Area provides significant public benefits and recreational use, as well as a source of forest products for area manufacturers and employers.

The lands in the Conservation Planning Area are currently protected by the most restrictive municipal zoning in Bristol, which discourages dense development and promotes only uses that are compatible with the limitations or special features of this area. Residential development is permitted at a much lower density than other planning areas, presently at 1 unit per 25 acres, or at a higher density, only as part of a planned unit development. It should be recognized, however, that the Conservation Planning Area, while an area where development should be limited, is not a "Preservation Area" nor are all parts of it environmentally sensitive.

Specific Land Use Issues

Resource Extraction

The extraction of soil, sand, gravel and rock has been a contentious issue for the community of Bristol (see Appendix 2). The extraction of these resources should be permitted at least in limited areas in Bristol, but only when it can be done in a manner that takes into account public health, safety and welfare, to include such matters as aesthetics, visual and sound impacts, air quality, water quality, size of the excavation area, hours of operation, reclamation plans, traffic and erosion. Extraction may be necessary in connection with preparing a site for other types of development that have received any necessary permits, and that material extracted for this reason can be sold commercially. This provision shall not be construed as permitting the extraction and processing of soil, sand, gravel or rock solely for resale. On-site processing of such material is permitted only when the primary use of such material will be for on-site development and is undertaken in compliance with any regulations applicable to extraction as a principal use of land.

Due to the nature of the land uses in the Village Planning Area, extraction is not allowed anywhere in this area. Quarrying will continue to be prohibited in all zoning districts.

Industrial Uses

In addition to its agricultural heritage and its successful commercial downtown, Bristol also has a substantial history of industrial ventures. As Bristol has evolved, however, residential and downtown business uses have increasingly made light industry development preferable to further heavy industrial development.

The distinction between light and heavy industry is made on the basis of the activity's nature and scope, and the degree of off-site impacts. Light industry should result in no substantial off-site impacts and its primary processing, assembly, packaging, and storage activity should take place indoors. Where light industry activities abut residential or downtown properties, activities should be attractively screened from abutting properties and public rights-of-way.

The town recognizes that some industry, such as lumber mills and manufacturers of forestry products, although commonly regarded as heavy industry, can be situated and operated with no substantial off-site impact. As with mineral extraction and quarrying, which are prohibited in the Village Planning area, these historically important uses would not be prohibited in all cases, even where some of their primary activities take place outdoors.

Flood Hazard Areas

The Town of Bristol has established a Flood Hazard Area overlay district within its zoning ordinance. The purpose of that district is to promote the health, safety and welfare of the residents of Bristol and to prevent increased flood damage due to excess development. The Flood Hazard Area includes all special flood hazard areas and floodway areas designated by the Federal Emergency Management Agency (FEMA) on the Flood Insurance Rate Maps (FIRM) for the Town of Bristol as currently exist or as are revised in the future. (**See Flood Hazard Areas Map**). FEMA has contracted with the U.S. Geological Survey (USGS) to update digital FIRMs by 2025.

Any development in this overlay district is required to meet minimum flood proofing standards and conform to flood hazard regulations. No public sewer facilities should be extended to these areas. Any extension or additions to transportation or public water facilities in these areas should be carried out only after careful consideration of whether the infrastructure will facilitate further development within the flood hazard area.

At any time when either a landowner or FEMA finds, through an approved field analysis and Letter of Map Amendment (LOMA), that there are differences on the ground from areas shown on the FIRM maps, such alterations should be made known to Town of Bristol and made a part of any permit or permitting process under the town's ordinances.

Design Review District

The Design Review District was created by ordinance in 2006 in connection with the Downtown Designation process. The Downtown Design Review Overlay includes the entire area that is part of Bristol's designated downtown (the current Block Commercial zoning district and portions of the Municipal and Neighborhood Commercial zoning districts).

Virtually all development in the overlay district, whether new or modification of existing buildings or sites, must be reviewed by the Design Review Commission, whether or not a variance is sought in connection with the application or whether or not a building permit is required. The review, which is not intended to be onerous, is aimed at maintaining the design character consistent with the historic mix of commercial and residential buildings in the Design Review District. (See Downtown District map)

Flexibility in Zoning Densities

In order to promote the most appropriate use of land, to bring about the maximum preservation of undeveloped land, and in order to protect and enhance the qualities of open land such as scenery, aesthetics, the ability to carry out agricultural and forest practices, and conservation of wildlife habitat and recreational use, Bristol shall seek to incorporate the following concepts into its Unified Development Regulations:

- **Lot Size Averaging / Density-Based Zoning.** In zoning districts where the maximum density would be less than one home for every two acres of land, Bristol should consider using lot size averaging or density-based zoning. This zoning technique allows landowners to create smaller house lots (typically one acre or smaller in size) while keeping the overall density of the district low (ex. 1 home per 5, 10 or 25 acres). This is accomplished by revising the zoning district standards to include both a minimum lot size and a maximum density. This technique provides maximum flexibility for landowners to develop their land in a way that works best for them. Owners can create house lots for family members or to sell when income is needed, while retaining more of their acreage. This approach works well for landowners who from time-to-time want to create a lot, but who do not want to develop their entire property.

- **Cluster Development / Planned Unit Development.** The Town of Bristol's zoning ordinance already incorporates provisions for cluster development, or as it is referred to in-state law, Planned Unit Development (PUD) into most of the town's zoning districts. Typically, within a PUD development will be "clustered" onto a smaller portion of land than would otherwise be allowed under the zoning with the remaining land set aside as permanent open space or working land. The PUD provisions of the town's zoning regulations have not been frequently used and the re-zoning process should seek opportunities to encourage greater use of PUDs.

Goals and Policies

Goal 1. Bristol will plan and manage land development in a manner that takes into account the important cultural and natural resources of the community.

Policies:

- Seek to preserve rural character while encouraging business and light industry growth.
- Support current-use programs and other programs that minimize taxes for those keeping property in its undeveloped state for agricultural or forestry use
- Approach land use and development patterns proactively through regular updates of the Town Plan and Unified Development Regulations with public input.
- Encourage the use of renewable natural resources for agriculture, forestry and compatible small businesses and light industries, particularly those that add value to local resources.
- Prohibit quarrying (which includes mining) and maintain reasonable land-use regulations that consider the on-going excavation of soil, sand, gravel and rock.

Goal 2. Bristol will maintain and enhance a Village Planning Area, defined by the historic village settlement, the commercial and social center of the town, comprised of high-density residential, business, light industry and municipal services, surrounded by rural countryside.

Policies:

- Encourage infill development of a variety of housing types to meet the current housing needs.
- Maintain a pedestrian-friendly compact downtown with pedestrian and road traffic patterns that encourage the use of the downtown area as the focus for business and municipal activities.
- Maintain the Downtown Designation status in order to receive federal and state grant money and other government assistance for making improvements in the Village Area.
- Support Bristol CORE's work of enhancing the downtown by increasing pedestrian safety, organizing seasonal events, improving streetscape aesthetics and strengthening local businesses.
- Identify and develop one or more areas where light industry can be appropriately located within the Village Planning Area.
- Preserve the Town Green as an important recreational and social open space for town residents and visitors.
- Continue to support traffic calming, an increase in parking spaces, mixed-use development and public transportation.
- Prohibit extraction within the Village Planning Area.

Goal 3. Bristol will maintain and enhance a Rural Planning Area, primarily for agricultural, industrial, and renewable energy production along with moderate-density residential development.

Policies:

- Encourage greater use of density-based residential zoning tools (for example, Planned Unit Developments) in the Rural Agricultural Planning Area.
- Encourage renewable energy development that meets siting guidelines in the Rural Agricultural Planning Area.
- Avoid zoning requirements that place onerous restriction on farming side-effects.
- Prohibit the development of a large grocery store, supermarket, or any mall-like or strip-retail facilities.
- Support current-use and other programs that minimize taxes for those landowners keeping property in its undeveloped state for agricultural use.

Goal 4. Bristol will maintain and enhance its Conservation Planning Area primarily for environmental conservation, forestry, recreation and low-density residential development.

Policies:

- Discourage fragmentation when development occurs within highest priority forest blocks.
- Support current-use and other programs that minimize taxes for those landowners keeping property in its undeveloped state for forestry use.
- Prohibit the development of a large grocery store, supermarket, or any mall-like or strip-retail facilities.

Goal 5. Land use planning will be made through a process that is fair, transparent, and maintains a reasonable balance between community-imposed limitations on land use and the rights of individual land owners.

Polices:

- Property owners will be protected from a government taking for the use of the public without fair compensation.
- The town will seek a reasonable balance between the needs of residents who live within the Village Planning Area and those who live in other planning areas.
- Bristol will invite and encourage participation of all residents into the planning process.
- Bristol will administer land use regulations in a fair and consistent manner in accordance with applicable development land use policies of the town plan and Unified Development Regulations (combined zoning and subdivision regulations).
- Affected property owners will be notified if land-use regulation changes are being considered that will in any way impact possible uses of their property.
- Public officials will not enter private property without prior permission from the owner of that property, or sanctioned agent of the owner, unless specifically authorized by statute.

COMPATIBILITY AND IMPLEMENTATION

Compatibility

Bristol shares its borders with Lincoln, New Haven, Starksboro, Monkton and to a lesser extent, Middlebury, and Ripton. Most of these towns also contain village areas surrounded by agricultural land or forest, creating border areas that consist primarily of areas that are sparsely developed. There are a few exceptions to this, principally where state highways or other major roads cross from one town to the other. The two state roads which intersect and combine in the Bristol downtown, Route 17 and Route 116, present potential for additional development as they cross into other towns: Route 116 and Route 17 to the north and east into Starksboro, and Route 116 and Route 17 to the west in New Haven. However, even at these points, no substantial development is presently planned either by Bristol or by our neighbors.

In virtually all cases, the areas at the borders of Bristol, and the six adjoining municipalities, are in Bristol's current Conservation zoning district (CON-25), which allows density of only 1 unit per 25 acres, or the Rural Agricultural 5 (RA5) zoning district, which establishes a 5-acre minimum lot size. In two very small areas abutting the town line, one each on the Monkton and Starksboro borders, the current Rural Agricultural 2 (RA-2) zoning district establishes a 2-acre minimum lot size.

Similar zoning exists in the adjoining areas of each of the neighboring municipalities:

- **Ripton** (2018 UDR)
  - Conservation District – construction of buildings discouraged and allowed only if approved after conditional use review.
- **Monkton** (2018 UDR)
  - Conservation District – 25-acre minimum lot size
  - Low Density Rural Agricultural District – average density of one dwelling per 5 acres but maximum residential density based upon overall dwellings per number of acres, not on minimum lot sizes
- **New Haven** (2012 Zoning)
  - Rural Agricultural – 10-acre minimum lot size.
  - Flood Hazard District – 25-acre minimum lot size
- **Starksboro** (2020 Zoning)
  - Forest and Conservation – 25-acre minimum lot size.
  - Agriculture, Scenic, Rural Residential – 10-acre minimum lot size
- **Middlebury** (2018 Zoning)
  - Forest District – 25-acre minimum lot size
  - Agricultural Rural Residential District – 1- or 2-acre minimum lot size
- **Lincoln** (2011 Zoning)
  - Transitional – 2-acre minimum lot size
  - Outlying District – 5-acre minimum lot size.

The uses and densities zoned in Bristol are generally compatible with those zoned at the points where Bristol borders its neighbors. The principal exceptions to this are the limited areas of 2-acre zoning, on the Bristol side in the case of Starksboro and Monkton, and along the Lincoln border at River Road. Actual development has historically been consistent.

Implementation

This plan is designed to serve as a primary reference when making community decisions, and to provide guidance to local officials when setting public policy. Each section of this plan has policies for the town to follow in order to reach the goals stated in those sections. In addition to those policies and goals provided throughout the plan, the Town Plan will be implemented through the review and revision of Unified Development Regulations to support the goals, policies and actions of this plan.

This chapter summarizes many of the mechanisms that are available to make sure the plan remains current and relevant. When reviewing this chapter, it is important for the reader to understand the distinction between goals, policies and implementation actions. For the purposes of the Bristol Town Plan:

- **Goals.** Expresses the long-range community vision relative to one or more issues or topics. This is a statement of achievement to which the town aspires.
- **Policies.** Expresses the town's intent, or position, with regard to specific issues or topics. In certain settings, such as during Board of Adjustment hearings or Act 250 proceedings, policy statements should serve as the basis for determining a projects' conformance with the town plan. While other sections of the plan, in particular the narrative sections and goal statements, provide useful context for understanding the policies, it is the policies alone that serve as the final statement regarding the town's position.
- **Actions.** Describes a specific action to be taken to support one or more policies and achieve the community's long-term goals.

Implementation actions are assigned to either the Planning Commission or the Select Board. In some cases, further assistance may be sought by one of these Boards from another committee, agency or employee, as for example, the Conservation Commission, the Energy Committee or the Town Administrator.

A priority schedule (1-year, 3-year, 5-years, or ongoing) was set for each task, thus establishing a time frame for the action to be completed.

Implementation Actions

Section	Action	Responsibility	Schedule
The People			
POPULATION & HOUSING	1. Conduct a Housing Study to identify the housing needs of the Bristol community and review the impacts of short-term rentals on current housing stock.	Planning Commission	3 years
	2. Update Zoning/Unified Development Regulations to allow a variety of housing types to accommodate all segments of the community.	Planning Commission	5 years
The Community			
SCENIC, HISTORIC, & CULTURAL RESOURCES	1. Maintain inventory of significant historic structures, sites and districts.	Planning Commission	Ongoing
	2. Identify significant public scenic resources.	Planning Commission, Conservation Commission	5 years
MUNICIPAL FACILITIES & LANDS	1. Review and inspect all town facilities and buildings periodically, ensuring that insurance and maintenance protects the town's investments.	Selectboard	ongoing
	2. Develop long-term plan for major renovation (if needed) of all the town-owned buildings including the schedule and possible funding sources.	Selectboard	5 years
ECONOMIC DEVELOPMENT	1. Assess the needs of small to mid-size commercial and light-industrial businesses that are compatible with the character of the town.	Planning Commission	1-5 years
	2. Maintain and promote the Downtown Designation to enhance the economic vitality of the downtown area.	Selectboard	Ongoing
	3. Use the Bristol Revolving Loan Fund (RLF) to attract new businesses and support existing businesses.	Selectboard	Ongoing
EDUCATION & CHILDCARE	1. Support the Mt Abe Unified School District (MAUSD) in determining the 5-town future school structure.	Selectboard	ongoing
	2. Nominate representatives to actively participate on Mt Abe Unified School District (MAUSD) School Board	Selectboard	ongoing
	2. Identify steps that can be taken to meet the child care needs of Bristol.	Planning Commission	1-3 years

Section	Action	Responsibility	Schedule
RECREATION & HEALTHY LIVING	1. Continue work planning for a new or renovated recreation center to replace the aging Hub.	Recreation Department/ Selectboard	1 year
	2. Maintain existing public facilities and outdoor spaces that encourage social and leisure-time activities among town residents.	Selectboard/ Recreation Dept., Conservation Commission	ongoing
UTILITIES	1. Explore alternative sewage treatment options to accommodate new development.	Selectboard	3 years
	2. Maintain current Operation and Maintenance Manuals for the town's service departments (i.e. Public Works, Water and Sewer Departments) that address technical standards and requirements and ensure continuity in their operations when there are staffing changes.	Selectboard	on-going
TRANSPORTATION	1. Continue efforts to make the town and village pedestrian and bicycle-friendly and accessible to people with disabilities.	PC, Selectboard	ongoing
	2. Nominate a Bristol 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 single occupancy vehicles.	Selectboard, Energy Committee	1 year
ENERGY	1. Work toward implementing the goals and policies as described in the Enhanced Energy Plan to help meet the State's 2016 Comprehensive Energy Plan targets.	Selectboard, Planning Commission, Energy Committee	ongoing
	2. Maintain current energy resources and information on the town website.	Energy Committee	ongoing
PUBLIC HEALTH & SAFETY	1. Update and implement Local Emergency Management Plan and Local Hazard Mitigation Plan.	Selectboard and Town Manager/EMD	Annually
	2. Re-examine the purpose of our police force and how best to achieve that purpose.	Selectboard	ongoing
	3. Conduct feasibility study for protecting the village spring from contamination due to flooding.	Town Administrator and Water Dept	3 years

Section	Action	Responsibility	Schedule
NATURAL RESOURCES & FOREST BLOCKS	1. Strive to maintain and improve public access to the New Haven River, Baldwin Creek and Bristol Pond.	Planning Commission, Conservation Commission	ongoing
	2. Develop a management plan to minimize introduction of invasive species into Bristol's natural communities on town properties.	Conservation Commission	5 years
	3. Develop education and outreach materials for landowners about Rare/Threatened/Endangered species and how to develop a management plan for these sites.	Conservation Commission	ongoing
	4. Work with adjacent towns, local groups, state agencies and willing land owners to develop low environmental impact biking and hiking trails that promote access to natural resource areas.	Planning Commission, Conservation Commission	ongoing
	5. Evaluate opportunities to conserve lands with high natural resource value, especially those adjacent to town-owned or already conserved properties, through purchase in fee simple or funding of conservation easements.	Planning Commission, Conservation Commission	ongoing
	6. Develop individual management plans for town parks	Conservation Commission, Bristol Recreation Department	3 years
FLOOD RESILIENCE	1. Improve storm water capacity on Mountain Terrace and East Street.	Selectboard, Town Administrator	5 years
	2. Expand storm water capacity in the Mountain Street/ Crescent Street area to meet a minimum 10-year flooding event.	Selectboard, Town Administrator	5 years
	3. Replace and upgrade storm water system along Spring Street and North Street to prevent flooding damage to the elementary school during heavy rain events.	Selectboard, Town Administrator	5 years
	4. Participate in National Flood Insurance Program training when offered by State/FEMA.	Zoning Administrator	ongoing
	5. Explore options to stabilize intersection of Basin Street where it meets East St./Rte. 17	Selectboard	ongoing
	6. Stabilize bank/ditch along Upper Notch Road.	Selectboard	
	7. Maintain adequate stream bank buffers and existing setbacks that recognize the dynamic nature of the New Haven River	Planning Commission	3 years
	8. Consider river corridor conservation and protection measures to decrease flood erosion losses and increase flood resiliency and discourage additional infrastructure in the river corridor area.	Planning Commission, Conservation Commission, Selectboard	5 years

Section	Action	Responsibility	Schedule
Land Use and Planning			
	1. Review all existing zones and conform zoning changes to the adopted Town Plan.	Planning Commission	3 years
	2. Promote incentives and programs to encourage business and light industry investment and growth	Selectboard, Town Administrator	Ongoing

Appendix 1. Enhanced Energy Plan

TOWN OF BRISTOL- ENHANCED ENERGY PLAN

Approved by Bristol Planning Commission, 4 February 2020

Introduction

Intent of this Energy Plan

The Town of Bristol recognizes our individual and collective responsibility to use energy efficiently and reduce the impacts of that energy use. Bristol believes it serves its citizens' interests by conserving energy, reducing our consumption of non-renewable energy and shifting our usage to carbon free or carbon neutral renewable energy sources. It also believes the Bristol Town Plan must create a vision and clear policy statements for the town to follow concerning energy conservation renewable energy choices and energy generation. With this Plan, the Town of Bristol intends to demonstrate its commitment to achieving energy standards in both policies and implementation measures in clear, action-oriented language.

One way for Bristol to affect energy policies is to meet the municipal determination standards for enhanced energy planning enabled in 24 V.S.A. 4352. By pursuing enhanced energy planning Bristol agrees that its energy plan will further regional and state energy goals, including the target of having 90% of the energy used in Vermont obtained through renewable sources by 2050 ("90 x 50") and the following statutory requirements:

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

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

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

A positive determination of compliance with the requirements of enhanced energy planning will enable Bristol's Plan to achieve "substantial deference" from the Public Utilities Commission in Section 248 applications for energy generation facilities (ex. wind facilities, solar facilities, hydro facilities, etc.) under Criteria (b)(1)-Orderly Development of the criteria the Public Utilities Commission uses to evaluate generation and transmission projects seeking Certificates of Public Good authorizing the proposed construction of the proposed project. Substantial deference increases the respect the Public Utilities Commission will need to provide to clearly articulated policies in this plan (The current standard is "due consideration").

This enhanced energy plan includes required background data and analysis, targets, and associated mapping. Topics covered include energy conservation and efficiency as it relates to thermal and electrical energy usage, transportation and land use planning. The plan also includes energy generation and siting standards. In addition to satisfying the required criteria, this plan also contains a number of policies and statement proclaiming the type, size and locations in which Bristol will support energy generation and the goals, policies and actions Bristol will undertake to help implement conservation and efficiency policies to help meet the State's 2016 Comprehensive Energy Plan targets:

- **Reduce total energy consumption per capita by 15% by 2025, and by more than one third by 2050.**
- **Meet 25% of the remaining energy need from renewable sources by 2025, 40% by 2035, and 90% by 2050.**
- **Three end-use sector goals for 2025: 10% renewable transportation, 30% renewable buildings, and 67% renewable electric power.**

In accordance with the Addison County Regional Plan, the use of fossil fuels, including fuel oil, propane gas and non-renewable natural gas, will need to be significantly reduced by 2050. Over the last several years, the Vermont Gas company has extended a natural gas pipeline through Addison County, with the option to expand residential, commercial, and industrial service to the most densely populated areas of the region, including Bristol. As a result, the consumption of natural gas is projected to rise slightly in use as it becomes available in the Region. Nonrenewable natural gas is expected to serve as a short-term fuel for the Region as it replaces other fossil fuel sources and has been incorporated into the Long Range Energy Alternatives Planning (LEAP) 90x50 model conducted by the Vermont Energy Investment Corporation (VEIC). Vermont Gas is expected to utilize the infrastructure it offers to promote economic development for manufacturing, administer an aggressive weatherization program, and to incorporate renewable natural gas, made from composting agricultural waste from local farmers and food manufacturers, mainly cow manure and/or food waste. Whether consumers and businesses choose to convert to natural gas will be their own choice.

Bristol Energy Committee

The Bristol Energy Committee was established in 2007 by the Select Board with the mission to review the energy use in the Town of Bristol and make recommendations based on energy conservation and efficiency; consulting with and advising the town about energy related issues in zoning and alternative energy; assisting residents and businesses in understanding and reducing their energy use; working with the municipality in exploring energy conservation and efficiency; and exploring energy conservation and efficiency in transportation.

Outline of this Plan

This plan breaks Bristol's energy demand and usage into the following four chapters:

1. **Section I**, Introduction: Introduction and Summary of Bristol's Enhanced Energy Plan;
2. **Section II**, Thermal Use: This Chapter focuses on Energy used for space heating.
3. **Section III**, Electrical Use: This Chapter focuses mostly on energy used for operating equipment and facilities, but electrical use is predicted to expand significantly to include transportation and heating equipment as indicated in the first and fourth chapters.
4. **Section IV**, Transportation Use: This Chapter focuses on energy used for Transportation, and,
5. **Section V**, Land Use, Generation and Transmission: This Chapter focuses on planning land uses to reduce vehicle trips and to site energy generation and transmission resources.

Each chapter noted above will be broken into three subsections:

1) The first subsection, entitled, "Use Analysis" will analyze current usage data in Bristol for each of the four energy sectors. It includes charts of usage and a discussion concerning the usage data.
2) The second subsection will look at future projections. This subsection, entitled "Targets" contains projections of usage targets. In 2016 Addison County Regional Planning Commission worked with the Vermont Energy Investment Corporation (VEIC) and the Vermont Department of Public Service to develop regional targets for future energy use and generation. The intent of these targets is to meet the State of Vermont's 90 x 50 target. The targets in this plan represent one scenario of what meeting this target may look like. However, there could be numerous different ways for Bristol to achieve the 90 x 50 target. For more information about the regional targets, please see the Addison County Regional Energy Plan (http://acrpc.org/programs-services/energy/).
3) The third subsection in each chapter provides goals, policies and recommended actions to implement this plan. Additionally, the Land Use, Generation and Transmission chapter will include a mapping analysis of Bristol's energy resources and constraints and a siting policy for new generation.

Thermal Energy

Goals

1. **Reduce energy needs for heating structures.**
2. **Transition from non-renewable energy sources to renewable energy sources.**
3. **Maximize weatherization of residential households, commercial establishments and municipal facilities.**

Thermal Use Analysis

An estimate of current residential thermal energy demand in Bristol, based on data from the American Community Survey (2011-2015), is shown in Table 1. The data shows that the largest number of residences in Bristol currently heat with fuel oil (about 55.9%), followed by propane (24.9%) and wood (18.2%). Together these three heating sources account for nearly all (over 99%) of residential thermal heating fuel usage in Bristol.

Table 1. Current Municipal Residential Heating Energy Use

Fuel Source	# Households Using (ACS 2017)	Municipal % of Households	Residential Square Footage Heated	BTU's used (in Billions)
Utility Gas (Natural Gas)[1]	10	0.6%	31,900	1.914
Propane	408	24.9%	507,596	30.456
Electricity	8	0.5%	18,432	1.106
Fuel Oil	917	55.9%	1,535,620	92.137
Coal	0	0.0%	0	0.000
Wood	299	18.2%	536,576	32.195
Solar	0	0.0%	0	0.000
Other	0	2.5%	60,912	3.655
No Fuel	0	0.0%	0	0.000
Total	**1642**	**100.0%**	**2,691,036**	**161.462**

[1] The survey shows that 0.6% of households' heat with natural gas. However, since that fuel source is not currently available in Bristol, this data is likely an error in response and those respondents likely heat with propane.

Both fuel oil and propane gas constitute fossil fuels. In order to meet the 90 x 50 goal, their use will need to be significantly reduced by 2050. Making homes more thermally efficient is one way to reduce fossil fuel use. Another is to improve the technology to make it work more efficiently. A final option is to replace fossil fuel sources with renewable energy sources; Wood constitutes a renewable resource that can be carbon-neutral when forests are managed to allow the recapture of released carbon. Productive forestland is abundant in much of Bristol and locally produced firewood is an important source of thermal energy. Electricity produced from renewable sources can also provide efficient thermal heat through heat pumps and other devices. The cost of these changes and limited financial programs, both for capital investment in new equipment and the price of the fuels being used, constitute the major barrier to transition. While the Town of Bristol has little control over the costs of energy production, it can work to encourage energy conservation, energy efficiency and lower local generation costs.

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

Table 2. Current Town Commercial Energy Use

	# Commercial Establishments*	Estimated Thermal Energy used per Commercial Establishment ** (in Billions of BTUs)	Estimated Thermal Energy used by Commercial Establishments (in Billions of BTUs)
In Town of Bristol	109	0.725	79.03

* (VT Dept. of Labor data) **(VT Dept. of Public Service data)

As the table immediately above shows. Bristol has a limited number of commercial establishments. Further analysis of electrical use in the next Section and depicted in Table 3, below calculates that in total, residential structures consume twice as much electrical energy as the commercial entities within town. Accordingly, most of the thermal energy changes that will need to take place in Bristol to meet the targets will need to be done by individual homeowners.

Energy conservation is an important way to reduce energy use and costs in Vermont. Many homeowners in Bristol with older larger homes, particularly in the Village Area, face the challenge of working in finished and confined spaces that drive up weatherization costs. A wide variety of state and federal subsidies and rebates are currently available for Vermont residents to conserve energy. Efficiency Vermont, the nation's only efficiency utility, has an informative home page at www.Efficiencyvermont.com. Visit it to learn about their current programs, including energy audits, incentives for Home Performance with Energy Star, information on appliances and compact fluorescent and LED bulbs, building an Energy Star home, home heating help, rebate information, and Efficiency Vermont's reference library.

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

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

Thermal Targets

Thermal targets for Bristol include increasing weatherization of homes, increasing use of efficient wood heat systems and switching to efficient heat pump systems. See tables below for calculations of changes necessary to meet the 90 X 50 State target.

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

Table 3B. Commercial Thermal Efficiency Targets	**2025**	**2035**	**2050**
Commercial - Increased Efficiency and Conservation (% of commercial establishments to be weatherized)	17%	25%	47%

Table 3C. Thermal Fuel Switching Targets (Residential and Commercial) - Wood Systems	**2025**	**2035**	**2050**
New Efficient Wood Heat Systems (in units)	6	11	69

Table 3D Thermal Fuel Switching Targets (Residential and Commercial) - Heat Pumps	**2025**	**2035**	**2050**
New Heat Pumps (in units)	160	386	761

To illustrate the magnitude of change necessary to meet the target of 90% renewable energy use in Bristol, targets have been calculated for each of the three major strategies to reduce or change the type of fuel used for residential and commercial space-heating. In order to hit the targets, by 2050 many property owners in Bristol will need to have made significant improvements to their homes and businesses. Almost half of the houses and businesses in Bristol will need to have been weatherized to conserve energy by using it more efficiently to heat those spaces. Additionally, at least a quarter of homes currently using wood as a heating source will need to invest in new technology to burn wood more efficiently.

Thermal Pathways to Implementation

Given the significant changes noted in the previous section, Bristol will need to promote the conservation of energy and switch fuels in order to meet statewide targets, the Town has identified the following statements of policy and implementation actions:

Statements of Policy

1. Support energy conservation efforts and the efficient use of energy by individuals and organizations.

2. Promote energy efficiency and increased use of renewable energy in all buildings.

3. Demonstrate the municipality's leadership by increasing the energy efficiency of municipal buildings.

4. Support the conversion of non-renewable energy sources.

5. Utilize wood as a renewable energy resource, balanced with support for conservation of forestland to assure regenerative growth to recapture carbon.

Implementation Actions

1. Coordinate with Efficiency Vermont and other weatherization service providers to encourage Bristol residents to participate in weatherization programs.

2. Promote the use of the residential and commercial building energy standards by asking the Zoning Administrator to distribute information about Vermont's Energy Codes to permit applicants and explaining options for energy efficiency.

3. Conduct an energy audit of municipal buildings to identify weatherization retrofits and consider the recommendations for incorporation into the municipal capital budget.

4. Explore opportunities and pursue funding to upgrade efficiencies in all municipal buildings. and encourage efficiency measures in private residential and commercial buildings

5. Pursue external funding to support the conversion of municipal buildings to efficient, and renewable heat sources.

Electrical Use

Goals

1. Conserve renewable and nonrenewable energy resources.

2. Reduce reliance on nonrenewable energy sources, and shift reliance to renewable electric energy sources.

3. Work with local electric and efficiency utilities to plan for increased electric demand.

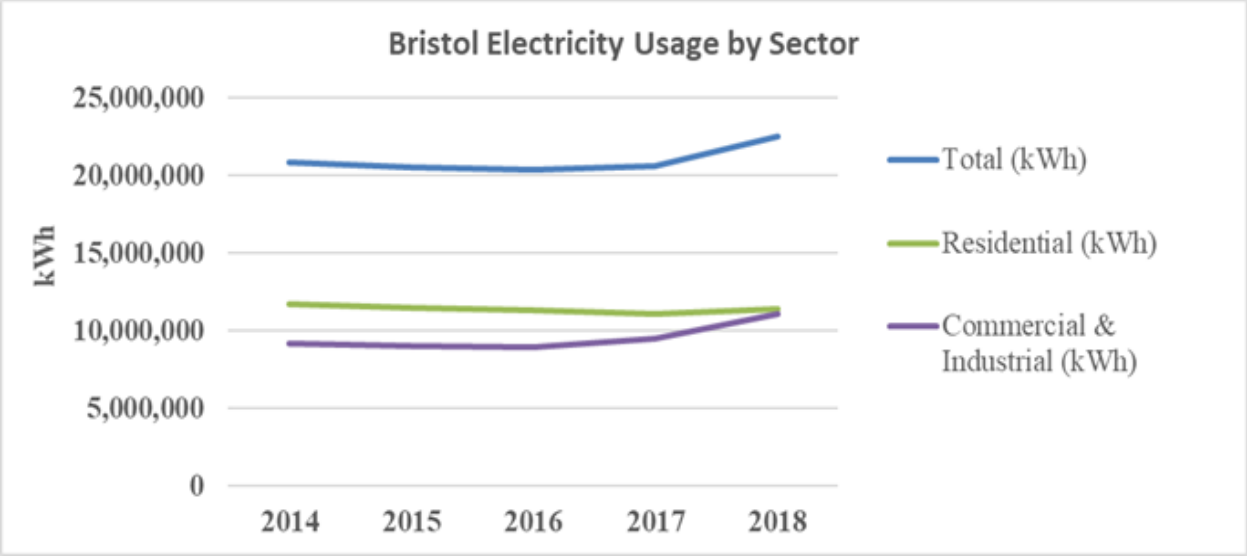
Electrical Use Analysis

Electricity in the town of Bristol is provided by Green Mountain Power Corporation. Electricity use reported by the utility for Bristol is shown in Table 4 and the accompanying figure.

Table 4. Electricity Use

Use Sector	2014	2015	2016	2017	2018
Commercial and Industrial (kWh)	9,151,385	9,011,409	8,966,766	9,527,660	11,082,129
Residential (kWh)	11,693,336	11,477,958	11,359,288	11,066,677	11,431,724
Total (kWh)	20,844,721	20,489,367	20,326,054	20,594,337	22,513,853

(Data from Efficiency Vermont and Green Mountain Power)



Electrical Targets

In order to reach state targets, Bristol will need to promote efficiency and conservation to impact the amount of electricity that it uses. Electrical consumption in Bristol is nearly evenly split by commercial and residential customers, so achieving the targets will require both individual home owners and businesses to increase the efficiency of the electrical fixtures, motors, bulbs, and appliances used in their homes and facilities.

However, even with significant efficiency steps taken by businesses and residents, Bristol's electrical usage may increase, in part because many of the new technologies needed to reduce fossil fuel consumption, like heat pumps and electric cars. This strategy only works to reduce greenhouse gases if the electricity is derived from renewable generation. Table 5, below, shows that Bristol must increase its efficiency and conservation by nearly 60% by 2050 to meet the proposed targets. Technological advances, like better fuel or motor efficiency may produce some of this efficiency. However, this plan recognizes that Bristol and its residents would need to make significant improvements to meet the targets.

Table 5. Electricity Efficiency Targets	**2025**	**2035**	**2050**
Increase Efficiency and Conservation	10.8%	37.2%	59.2%

Electricity Pathways to Implementation

Given the significant changes, noted above, Bristol will need to promote the conservation of energy and increase efficiency in order to meet statewide targets. The town has identified the following statements of policy and implementation actions:

Statements of Policy

1. Support energy conservation efforts and the most productive use of energy by promoting the installation of efficient electrical appliances and equipment.

2. Promote energy efficiency in all buildings, especially new and renovated structures.

3. Support the use of electric heat pump systems for heating and cooling.

4. Encourage LED lighting and the most current technology for lighting.

5. Encourage monitoring to evaluate and improve electricity use.

Implementation Actions

1. Promote the use of the residential and commercial building energy standards by asking the Zoning Administrator to distribute information about Vermont's Energy Codes to permit applicants and explaining options for energy efficiency.

2. Plan for and encourage electric vehicle charging infrastructure in the community.

3. Investigate the installation of municipal solar and/or wind net-metering facilities to offset municipal electric use.

4. Support installation of community-based renewable energy project(s) to allow Bristol's citizens to participate in the economic benefits of local energy production.

5. Explore opportunities and pursue funding to upgrade efficiencies in all municipal buildings.

6. Encourage the incorporation of electric vehicle ready standards into building code.

Transportation

Goals

1. Reduce reliance on nonrenewable energy sources such as oil and gas, and shift reliance to renewable energy sources.

2. Reduce vehicle miles traveled per capita through promotion of rideshare, vanpooling, and car-sharing initiatives.

3. Encourage safe and convenient walking and biking.

5. Encourage use of public transportation to increase public transit ridership.

Transportation Use Analysis

The largest portion of energy used in Addison County is for transportation. As a result, transportation simultaneously presents a great challenge and opportunity to affect energy use.

In Vermont more than one-third of all energy consumed is for transportation, and 75% of that energy is consumed by passenger vehicles alone. Based on the number of registered vehicles in Bristol, assuming average vehicle miles travelled, gas mileage per vehicle and assumed gas prices at their current level, Bristol residents spend over $1.4 million dollars per year on residential vehicle trips. Adapting local infrastructure to provide for choices other than single family vehicles can reduce vehicle miles and increase efficiency savings for individuals. In addition, converting vehicles to renewable fuels like biodiesel produced locally could help reinvest some that money in the community. Table 6, below, estimates Bristol's fuel usage for passenger vehicles (not including heavy trucks or farm vehicles).

6. Current Municipal Transportation Energy Use

Variable	Quantity	Information Source
Total # of Vehicles	2,972	American Community Survey 2016
Average Annual Miles per Vehicle	11,356	VTrans 2017 Energy Profile
Approximate Total Miles Traveled	33,750,032	
Average Realized MPG	18.6	VTrans 2017 Energy Profile
Total Gallons Use per Year	1,814,518	
Transportation BTUs (Billion)	218	
Average Cost per Gallon Gasoline	$2.78	VTrans Fuel Prices 2018
Total Gasoline Cost per Year	$5,044,359	

On average, Bristol's citizens average almost two cars per household due to the relative rural nature of the Town and surrounding area. If we divide the total amount spent on gasoline by the number of households, it shows the average household spends approximately $3,000 per year on just gasoline.

Transportation Targets

As the Tables below show, to meet the proposed targets, by 2050, more than 4 out of 5 residential vehicles in Bristol will need to run on renewable energy. Additionally, most commercial vehicles and farm equipment will need to switch to renewable energy as well.

Table 7A. Use of Renewables - Transportation	**2025**	**2035**	**2050**
Renewable Energy Use - Transportation	2.7%	18.2%	83.5%

Table 7B. Transportation Fuel Switching Target - Electric Vehicles	**2025**	**2035**	**2050**
Electric Vehicles	265	1804	3,518

Table 7C. Transportation Fuel Switching Target - Biodiesel Vehicles	**2025**	**2035**	**2050**
Biodiesel Vehicles	58	99	142

However, converting fuels, but primarily relying on single family vehicles can only produce limited reductions in energy use. In order to reduce vehicles miles travelled, Bristol should consider actions that support personal choices to reduce driving, including supporting local high-paying jobs, building alternative transportation infrastructure and promoting more compact building options in specific areas close to necessary services.

More than half of Bristol's employed residents travelled to work outside of town – many to Middlebury (~20%), Vergennes (~5%), and Burlington or South Burlington (~14%)- a pattern that is expected to continue. Carpooling would be beneficial for these residents not only in fuel conservation, but also in reduced wear and tear and maintenance on vehicles. ACTR offers a Rideshare program that allows area residents to match their commuting needs with neighbors interested in carpooling. Based on 2011 survey results of 84 residents, 50 residents never carpool, and 33 said they wouldn't consider it, even if it were an option. Giving up flexibility, having small children, and having a varying schedule were reasons why residents would not consider this option.

Offering increased public transportation options is an important way for residents and the whole region to cut down on transportation costs and energy consumption. Bristol is serviced by Addison County Transit Resources (ACTR) and more recently by ACTR's 116 Commuter and Tri-Town Shuttle bus routes operating Monday through Friday.

Maintaining and enhancing a village center with services and shopping opportunities for Bristol's residents is an additional way to reduce the community's reliance on single occupancy vehicular travel. Providing infrastructure that promotes biking and walking can also reduce a limited number of driving trips for some local commuters, shoppers, and recreationists.

Transportation Pathways to Implementation

Given the significant changes necessary to meet statewide targets, noted above, Bristol will support fuel switching to non-carbon and renewable energy sources. The Town has identified the following statements of policy and implementation actions:

Statements of Policy

1. Support the reduction of transportation energy demand, reduction of single-occupancy vehicle use, and the transition to renewable and lower-emission energy sources for transportation.

2. Support regional efforts to increase access to safe every day walking and cycling within and across municipal borders, including route 116 N to Lincoln Rd in Rockydale and Plank Rd to New Haven's North Street.

3. Promote walking and biking paths in the village and town, especially in any new developments.

4. Support state and regional public transportation programs serving Bristol and encourage major employers wishing to construct or expand businesses in the region to promote energy efficient commuting.

5. Support a Park and Ride in Bristol and encourage residents to consider using ride-sharing programs in order to reduce the use of fossil fuels.

Implementation Actions

1. Work with ACTR to understand the ways in which service to Bristol could be improved.

2. Encourage the installation of electric vehicle charging infrastructure.

3. Review municipal road standards to ensure that they reflect all “complete streets” principles applicable to our village and rural roads in order to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.

4. Nominate a Bristol 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 single occupancy vehicles.

5. Support and educate citizens about Vermont’s motor idling law (23 V.S.A. § 1110)

Land Use, Generation and Transmission

Goal

Produce renewable energy while maintaining the working and open landscapes, habitat protection measures, and scenic rural views important to Bristol's quality of life.

Land Use, Generation and Transmission Analyses

Land Use

The town of Bristol is made up of a compact village area surrounded by forested mountain areas and rolling farmland. Because of its existing settlement patterns and lack of a significant number of commercial or industrial facilities, Bristol residents are as dependent on their cars, and the energy they use, as many Vermont towns. While Bristol desires to retain its rural feel, it can adopt land use policies that encourage more densely settled areas that have the capacity to allow for more transportation alternatives within those areas, potentially saving energy and promoting healthier options, like walking or biking. As with other conservation goals, conserving energy by reducing the overall need for car transportation can be more cost effective for Bristol's citizens than fuel-switching to electric vehicles discussed in the previous chapter. Therefore, the Land Use Section of this Plan promotes greater density and housing options in Bristol's downtown village area. Other Land Use policies to guide energy use are listed in the Policy Section below.

Current Energy Generation

Although Bristol's energy supply is largely consistent with statewide patterns, Bristol does have a number of alternative energy installations that tap local energy resources (Table 8). A growing number of homes have photovoltaic systems that supply a portion of their electrical energy. Due 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.

As Table 8A illustrates, 114 different sites create most of the documented renewable solar power within Bristol.

Table 8A. Existing Renewable Generation					
Type	**Sites**	**Total Generation (kW)**	**Total Generation (kWh/year)**	**Capacity installed since 2016 (kW)**	**Additional Generation since 2016 (MWh/year)**
Solar	112	1,222.56	1,499,347	154.21	189,123.1
Wind	0	0	0	0	0
Hydro	0	0	0	0	0
Biomass	2	450	1,840,914	0	0
Total Existing Generation	114	1,672.56	3,340,261	154.21	189,123.1

(Data from https://www.vtenergydashboard.org/my-community/bristol/statistics as of 5 March 2019. Capacity installed since 12/2016 calculated from installation date or Certificate of Public Good issuance date).

Bristol's existing electricity generation resources are primarily from solar power, which are primarily roof-mounted photo-voltaic panels at a fixed angle, with some fixed and tracker ground-mounted photovoltaic arrays (Table 8B). In addition, several additional homes have solar domestic hot water systems.

Table 8B. Existing Solar Generation Sites in Bristol					
Type	**Total Sites (2016)**	**Total Capacity (kW) (2016)**	**Total Generation (kWh/year) (2016)**	**Capacity installed since 2016 (kW)**	**Additional Generation since 2016 (kWh/year)**
Ground-mounted PV	8	46.99	57,628.5	27	33,112.8
Ground-mounted PV: Tracker	5	533.40	654,161.8	24	29,433.6
Roof-Mounted PV	99	642.17	787,557.3	103.21	126,576.7
Total Solar Energy Generation	110	1,222.56	1,499,348	154.21	189,123.1

Types of Generation Potential

There are a number of different types of renewable generation potentially available to Bristol's residents that they might harness to meet statewide generation targets for the community.

Solar Energy

Globally, the sun supplies energy to Earth at some 10,000 times the rate at which humankind uses energy. However, this energy is not distributed equally, and Bristol's location and climate mean our share of solar energy is less than average. Nevertheless, the rate of solar energy input to Bristol ranges from about 500 kilowatts per acre in January to 900 kilowatts per acre in June; these are for solar collectors tilted at an angle equal to its 44˚latitude (National Renewable Energy Laboratory, Solar Radiation Data Manual for Flat-Plate and Concentrating Collectors).

Given the town's current total electrical energy consumption rate of 22,514 MWh (Table 4), this means that even in January Bristol could, in principle, meet its average energy demand with solar energy (18.4 MW), using just 150 acres. Inefficiencies could raise this figure many times over, as would the increased energy consumption in January. Nevertheless, it's clear that the solar resource at Bristol is theoretically more than adequate for their energy needs.

Although the technology exists to convert solar energy into heat and electricity, at this point it would be impractical to supply all of Bristol's energy with in-town solar installations. However, the use of solar energy for electricity and/or heat in individual homes and for charging electric vehicles is technologically feasible. Solar energy facilities ranging from 150 kW to 5MW are starting to be constructed in neighboring Addison County towns with varying visual and other impacts. Table 8B, 'Existing Solar Generation in Bristol' describes some of the town's current solar installations.

As noted earlier, Bristol supports renewable energy generation installations sized, sited and constructed pursuant to the community Siting Standards contained later in this section. Bristol believes the best commercial/industrial solar sites in town would be in the area Bristol has designated for rural-agricultural use in the town plan, and has identified a "Preferred Area" to support these sites.

Biomass

Biomass energy produced by trees is a renewable resource, however burning wood still releases carbon, stored over the previous decades, back into the atmosphere. For an equal amount of heat or electricity, it releases more CO_2 than burning gas, oil and even some types of coal. Recovering this carbon in forest regrowth may take 80 to 120 years under optimal conditions in Vermont.

Many homes in Bristol use wood either as the primary heating fuel or to supplement another heat source, usually oil, but sometimes solar or geothermal. As Table 1 shows, about 17% of Bristol's households burn wood for heat, generating approximately 32 Billion BTUs. Burning wood for heat in Bristol certainly makes a significant dent in the town's fossil fuel consumption. County foresters project that each acre of Addison County forest might sustainably yield about one-third of a cord of firewood each year. Given that most of the eastern half of Bristol is wooded, if we assumed that 3,000 of Bristol's forested acres were sustainably harvested for firewood, that could yield nearly 1,000 cords per year, a little more than 3 cords per wood-burning household.

In 2006, Mt. Abraham Union High School in Bristol installed a woodchip heating system with a heating capacity of 1.8MW (6 MMBtu/hr). The fuel is obtained by two local woodchip producers- Lathrop's and the A. Johnson Company- located within a mile of the school. The $1.5 million system reduced annual fuel oil usage by almost 40,000 gallons. By the end of the first year after switching to wood heat, the community saved approximately $27,000, nearly 30%, on the school-heating bill.

Bristol also has an opportunity to produce biomass energy from its dairy farms and land area devoted to farming. Four Hills Farm began electricity production from a methane digester in 2012. It has a total Electricity Capacity of 450 kW and provides a model for future energy production on dairy farms. While not currently economical, biomass crops, for both space heating and as a liquid alternative to diesel fuel could support Bristol's farming economy in the future.

Accordingly, Bristol **encourages** the use of biomass for residential and small commercial heating applications within town, and as a renewable biodiesel alternative to diesel fuel. As a cautionary note, widespread use of wood and other biomass materials as a heat-producing or energy producing fuel might result in unacceptable levels of airborne particulates and other forms of air pollution. Therefore, while supportive, Bristol should consider biomass in the context of public health impacts in addition to whether supplies are sustainable and effective to meet short and long term demands for renewable heat source energy.

Wind

A small portion of Bristol, most of which is located on mountain ridges in the Bristol Cliffs Wilderness area of the Green Mountain National Forest, has wind speeds considered good to excellent for larger-scale wind installations (see Map 2). Other parts of Bristol may be capable of producing wind energy at the smaller scales of individual- or multiple-home wind turbines.

Accordingly, Bristol **supports** residential and community scale wind projects that meet its siting standards contained later in this chapter. 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 projects that have towers over 200 feet or generate over 1 MW of power are **prohibited** in the Town of Bristol.

Geothermal Energy

Energy moves from Earth's interior to the surface at a modest average rate of about 350 watts per acre, far less than the solar input. For Bristol, far from major geological activity, that number is almost certainly significantly lower. In addition, solar energy warms the Earth, especially in the summer, and some of that energy is stored as heat in the upper layers of soil and rock. The result of these geothermal and solar effects is that soil temperatures just a few yards deep under Vermont average around 45º F to 50º F year-round. This temperature is too low for direct heating, although it can help with summer cooling. Nevertheless, the constant ground temperature represents a significant energy resource, and with appropriate technology it can be used as a heat source.

To date, no one has used geo-thermal systems relying on heat pump technology in Bristol. However, the technology is potentially viable and therefore included above.

Energy Storage

Should Bristol permit large-scale generation in its jurisdiction, it should also negotiate to include some type of battery storage facility to supplement the power generated to improve its short-term resiliency. Battery storage, while expensive, is decreasing in price, is commercially available to support homeowners and may work well with generation assets.

Generation – Potential and Targets

Renewable Generation Potential

As part of the mapping protocols described below, ACRPC created maps of places where resources were available to generate renewable generation resources within the Town of Bristol.

Map 7, "State and Local Known Constraints" at the end of this plan depicts natural resource layers that will preclude renewable energy development. These "Known Constraints" depict places where because of the natural resources located in the area it would be prohibitive to secure a permit for energy development. Map 8, entitled "State and Local Possible Constraints" depicts places where natural resources exist, but may not prohibit development. Prime agricultural soils would be an example of a possible constraint. A lot of Prime Agricultural resources exist within Bristol. However, it may or may not prevent wind or solar development.

The next set of maps show the location of where solar resources exist, wind resources and biomass resources exist in quantities that would support generation. These maps are depicted below as Map 4 Potential Solar Resources, Map 5 Potential Wind Resources, and Map 6 Potential Biomass Resources. While these maps depict where resources exist, they depict baseline resources, not necessarily the "best" resources in the area. So, for example, the Wind Resource Map depicts where the wind blows at the minimum velocity necessary to support wind power. As noted in the wind discussion above, while many places may meet the minimum criteria for wind development, the best area of Bristol is probably located within the Bristol Cliffs Wilderness of the Green Mountain National Forest, which appears to have class 3 winds (around 12 miles/hour at 100 meters above the ground), considered marginally suitable for larger-scale wind installations. Accordingly, users are cautioned to read the maps in this context.

Mapping
Mapping Energy Resources and Constraints

The town of Bristol has developed maps with the assistance of ACRPC. These maps show data as required by the Department of Public Service Determination Standards, including access to energy resources, and constraints to renewable development, and are a required element of enhanced energy planning.

The maps show areas that are potentially appropriate or inappropriate locations for future renewable generation facilities. The maps are a planning tool only and may not precisely indicate locations where siting a facility is acceptable. When a generation facility is proposed, the presence of all natural resources and other specific characteristics of the site shall be verified as a part of the application.

Mapping Methodology

Spatial data showing the location of potential energy resources (solar, wind, hydro, and biomass) formed the basis of the maps developed by ACRPC.

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

The known constraints and possible constraints used to create the maps include constraints that are required per the State Determination Standards from the Department of Public Service and constraints that were identified by ACRPC. A full list of known and possible constraints included on the maps is located in Tables 9A and 9B.

Table 9A. Known Mapping Constraints for Solar, Wind and Biomass

Constraint	Description	Source
Confirmed and unconfirmed vernal pools	There is a 600-foot buffer around confirmed or unconfirmed vernal pools.	Vermont Agency of Natural Resources (VT ANR)
DEC River corridors	River Corridors were mapped. Includes 50 foot buffer for streams with a drainage area less than 2 square miles.	Vermont Center for Geographic Information (VCGI)/ACRPC
FEMA Floodways		VCGI
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
National wilderness areas		VCGI
Class I and Class II Wetlands		VCGI
Municipal Conservation Land Use Areas	Conservation Land Use Districts, as designated in municipal plans, that include strict language that strongly deters or prohibits development have been included as a regional known constraint. The inclusion of this resource as a regional constraint is consistent with the goals and policies of the Addison County Regional Plan.	Bristol Town Plan
Designated Downtowns, Designated Growth Centers, and	These areas are the center of dense, traditional development in the region. This constraint does not apply to roof-mounted solar within such designated areas. The inclusion of this resource as a regional	Bristol Town Plan

Designated Village Centers	constraint is consistent with goals and policies of the Addison County Regional Plan.	
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)	VT ANR Vermont Conservation Design
Protected lands	This includes public lands held by agencies with conservation or natural resource oriented missions (e.g. USFS), municipal natural resource holdings (e.g. 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 (e.g. The Watershed Center), and private parcels with conservation easements held by non-profit organizations.	VCGI

Table 9B. Possible Mapping Constraints for Solar, Wind and Biomass

Constraint	Description	Source
Agricultural soils	Local, statewide, and prime agricultural soils are considered.	VCGI
FEMA Flood Insurance Rate Map (FIRM) special flood hazard areas	Special flood hazard areas as digitized by the NRPC 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 Northwest Regional Plan.	Federal Emergency Management Agency (FEMA), ACRPC
Act 250 Agricultural Soil Mitigation Areas	Sites conserved as a condition of an Act 250 permit.	VCGI
Deer wintering areas	Deer wintering habitat as identified by the Vermont Agency of Natural Resources.	VT ANR
Hydric soils	Hydric soils as identified by the US Department of Agriculture.	VCGI

At the end of the mapping evaluation, ACRPC calculated the amount of renewable resource generation possible in Bristol based upon the maps and some assumed values for the amount of land it took to produce specified amounts of solar and wind energy. The results of this analysis are depicted in Table 10, Renewable Generation Potential. As the table demonstrates, the amount of renewable generation potential is substantial, especially when compared to the numbers of actual generation that currently exists in Bristol, contained in Table 8.

Table 10. Renewable Generation Potential

	MW	MWh
Rooftop Solar	10	12,350
Ground-mounted Solar	638	782,443
Wind	3,950	12,109,167
Hydro	0	0
Biomass and Methane	0	0
Other	0	0
Total Renewable Generation Potential	4,598	12,903,961

Renewable Generation Targets

As part of the same evaluation, DPS also provided Renewable generation targets that all municipalities would need to meet in the context of the State meeting its target of producing half of its energy within the State. Those targets for Bristol, shown in Table 11 below, are based upon a combination of Bristol's population and to the amount of potential resources available in Bristol.

When one compares the targets in Table 11 with the potential in Table 10, it is readily clear, that at least theoretically, Bristol's resource potential dwarfs its generation targets.

Table 11. Renewable Generation Targets

	2025	**2035**	**2050**
Additional Renewable Generation Target (MWh)	4,463.14	8,926.28	13,524.66
Total Renewable Generation Target (MWh)	7,665.36	12,128.49	16,726.88

Therefore, Bristol has chosen to apply the community land use standards in the following section to help guide energy projects to locate in areas the town deems acceptable and to prohibit energy projects in other areas.

Land Use, Renewable Generation and Transmission Pathways to Implementation

Given the generation targets, noted above, for Bristol to meet statewide targets, the town has identified the following statements of policy and implementation actions:

Statements of Policy

Land use

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

2. Encourage development of compact neighborhoods.

3. Concentrate development within our residential-agricultural-commercial districts which results in the conservation of natural resources, land, energy used and infrastructure demands.

4. Promote commercial businesses within designated areas.

5. Allow infilling of existing large-lot development if higher density development is desirable and appropriate.

6. Provide opportunities for appropriate home occupation businesses consistent with zoning regulations.

7. Conserve forest land as a renewable energy resource, tempered by the sustainable use of wood for biomass energy production, with practices to recapture carbon through regenerative growth.

8. Support local farms and local food system which decrease energy demands of trucking and shipping and gives value and purpose to our open agricultural lands.

Generation

1. Support the development and siting of renewable energy resources in the Town that are in conformance with the goals, strategies, and mapping outlined in this energy plan.

2. Favor the development of generation utilities in identified preferred locations over the development of other sites.

3. Support production of energy from farm-byproduct methane as a desirable agricultural practice

4. Support the use of wind energy only with due regard to aesthetic and environmental considerations, especially in high and medium density residential areas.

Implementation Actions

1. The Bristol Energy Committee will work closely with the Bristol Planning Commission, DRB and Zoning Administrator on any proposed energy development projects within Bristol.

2. Investigate the installation of municipal solar and/or wind net-metering facilities to offset municipal electric use to identify where installation is economically feasible.

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

Locally Preferred Areas for Energy Production Siting

Bristol has identified the following specific areas as preferred locations for siting energy generation (Map 9): An area of approximately 3,910 acres within the Rural/Agricultural Land Use Planning Area on the western half of the town. This excludes the areas with Known Constraints as identified in Table 10, which are primarily river and stream corridors as well as State Significant Natural Communities and Rare, Threatened, and Endangered Species locations. Additionally, the preferred area excludes those areas identified as Highest Priority Forest Blocks, as well as existing protected lands. This preferred location is the largest contiguous piece of unconstrained land in Bristol and is in close proximity to existing transmission line and 3-phase power infrastructure.

Using existing solar facility footprints as a model, this area has the potential solar energy capacity of more than 230 MW or production of 281,000 MWh each year, well in excess of Bristol's 2050 generation targets (Table 11).

Community Standards for Siting and Decommissioning Energy Projects

Where a project is placed on the landscape constitutes the most critical element in the aesthetic siting of a project. Poor siting cannot be adequately mitigated. Accordingly, all renewable energy projects in Bristol must evaluate and address the proposed site's aesthetic impact on the surrounding landscape and significant viewsheds. The historical working landscape that defines Bristol is dominated by open fields, rural residential development, and forests against the backdrop of the Green Mountains. Rural structures like barns fit into the landscape because their scale and mass generally do not impact large tracts of otherwise open land. Large scale generation projects, however, may need to be limited in height and mass, and/or have their height and mass broken by screening to fit in with this landscape.

Following are Bristol's standards for siting new energy generation. Bristol shall not apply the siting standards so strictly so as to eliminate the opportunity to meet its electrical generation targets.

SOLAR:

Residential scale solar projects, defined as grid-connected/ net-metered projects less than 15kW, whether rooftop or ground mounted, are **supported and encouraged** in all areas of the Town of Bristol. Owners are encouraged to use the siting standards noted below when siting their array on their property.

Net metered commercial solar projects, defined as any project subject to Public Utility Commission (PUC) Rule 5.100 governing net-meter solar arrays and ranging in size from 15kW – 500kW are **supported and encouraged** in Bristol, subject to the siting criteria below, within the preferred areas as designated by this Plan depicted on Map 9, Preferred Energy Area.

Commercial solar projects, are of a size greater than that permitted by the net-metering rules (>500kW) are **discouraged** in the Town of Bristol, but allowed within the preferred areas as designated by this Plan depicted on Map 9, Preferred Energy Area, subject to the siting criteria below.

1. Siting:

Good 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.
- "Preferred" areas as defined by the Public Utilities Commission Rule 5.100 governing net metered sites;
- Sites designated as "preferred" areas by this Plan.

Poor Sites have one or more of the following characteristics:

- Sites obscure views of historic buildings and scenic views from common vantage points like roads and neighborhoods.
- Topography that causes the arrays to dominate the skyline from common vantage points like roads or neighborhoods (recognizing that this is more difficult for wind towers);
- Locations in floodways or mapped river corridors;
- A location in proximity to and interfering with significant viewsheds of the Green Mountains, Deer Leap, and Hogback Mountain;
- The removal of productive agricultural land from agriculture use (except in identified "Preferred Areas");
- Sites that require public investment in transmission and distribution infrastructure in order to function properly;
- Areas of forestland that need to be clear cut for the installation of solar arrays.

2. Mitigation methods

- Locate the structures on the site to keep them from being "skylined" above the horizon from public and private vantage points;
- Shorter panels may be more appropriate in certain spaces than taller panels to keep the project lower on the landscape;
- At a minimum, all solar arrays must observe the setback restrictions contained in Act 56 governing solar installations. However, developers are encouraged to increase setbacks to at least those 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 plantings 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; Plantings shall be made in accordance with a screening plan, included with application for and made a condition of the project's Certificate of Public Good.

  a) Such screening plan shall include at a minimum:

  (i) A schematic showing the location of both existing and planned planting material, earthwork and structures.

  (ii) A plant material list including all plants to be made as part of the screening, listed by both common and botanical name, the size at installation, expected size at maturity, and expected number of years to maturity.

  (iii) Pre-construction photographic images of the site to document the site's condition prior to planting or project construction. These images shall set the basis for decommissioning.

  b) The screening requirements of this Section apply year-round during the entire period of existence of a project, whether or not a solar project is still in service. Screening must remain in place and be maintained until a project has been fully decommissioned or deconstructed and the site restored.

  All planting must be completed within four weeks of the date on which the solar project first feeds electricity onto the electric grid (the "in service date"), or in the case of new commercial development the completion of principal construction. A solar project with an in-service date falling during frozen ground conditions must complete all plantings by May 31 of the same year.

c) Where new screening materials must be installed or planted, natural, living, screening materials, such as trees and shrubs, shall be used in lieu of artificial screening materials such as walls, fences, and other structures; provided, however, that limited use of artificial screening materials is permissible to the extent that

(i) the use of living screening in that area is not feasible, and

(ii) the artificial screening is of size, scale and materials that are consistent with the character of the surrounding neighborhood and landscape.

d) Maintenance of landscaping and screening shall be the joint responsibility of the developer and property owner on which the project is constructed, maintained and operated. Screening maintenance shall include at a minimum prompt replacement of any diseased, damaged or dead plant material, and limit the impacts of invasive species identified by the State of Vermont Agency of Natural Resources, and in the case of any project such obligations shall be a condition of and enforced through any Certificate of Public Good granted by the PUC, or any successor administrative agency having jurisdiction over such a project.

- The siting of solar equipment shall minimize view blockage for surrounding properties. 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. Locating solar equipment in a manner designed to reduce impacts on neighbors or public viewsheds constitutes reasonable mitigation;
- Use fencing that allows small wildlife passage.

WIND:

Residential (on property) Scale Wind, consisting of a single tower less than 120 feet high generating less than 15kW of energy, are **supported** under the following siting and mitigation guidelines.

Community (Commercial) Scale Wind, consisting of one or more towers all less than 200 feet high (so as not to require night lighting) and producing less than 1 MW of electricity, are **supported** under the following siting and mitigation guidelines.

Industrial Scale Wind, consisting 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, are **prohibited** in the Town of Bristol, due to low energy potential and significant aesthetic impacts.

1. **Siting**:

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 transmission system to minimize the new infrastructure required to serve the project;
- Reuse of former impacted property or brownfields that have qualified for and are listed in the State of Vermont Brownfield program.
- Significant isolation distances from existing residential uses to allow the noise from the turbine to dissipate to a level of at least the State decibel standard before it reaches the property line.
- Sites designated as "preferred" areas by this plan.

Poor Sites have one or more of the following characteristics:

- A location in proximity to and interfering with a significant viewshed, especially of the Green Mountains, Deer Leap, and Hogback Mountain;
- Sites that require public investment in transmission and distribution infrastructure in order to function properly.
- Sites impacting significant natural resources.

2. Mitigation methods:

- At a minimum, all wind turbines must observe setback restrictions such that if a tower falls, the entire structure will land on property owned or controlled by the tower's owner. Commercial Developers must increase setbacks to mitigate noise to State decibel standard and mitigate shadowing impacts.
- Wind turbines are likely to be most appropriate within agricultural, commercial or industrial contexts and should be sited, where practical, near other structures.
- In landscapes valued for natural or scenic features, particularly the views from downtown and towards Bristol Pond, Deer Leap, and Hogback Mountain, siting will be evaluated for potential visual impacts on scenic views and the experience of a natural landscape.
- Steps should be taken to reduce impacts on wildlife including the flight and migration patterns of birds.
- No wind towers requiring night lighting (wind turbines with a total height greater than 200 ft.) shall be allowed within the Town of Bristol.

TRANSMISSION LINES (necessary to connect the installation to the Public Utility)

These are in addition to the considerations for new energy installations mentioned above.

1. Siting:

Good Sites have the following characteristic:

- Shared or neighboring ROW with other transmission or transportation infrastructure.

Poor Sites have one or more of the following characteristics:

- The removal of productive agricultural land from agricultural use (except in identified "Preferred Areas");
- The clearcutting of forested land.

2. Mitigation methods:

- Consider burying the transmission infrastructure in sensitive areas;
- Use the existing topography, development or vegetation to screen and/or break the mass of the transmission line.

Other Transmission Infrastructure (necessary to connect the installation to the Public Utility, e.g. batteries, converters, storage facilities, etc.)

These are in addition to the considerations for new energy installations mentioned above.

1. Siting:

Good Sites have one or more of the following characteristics:

- Systems located in close proximity to the generating facility.

Poor Sites have one or more of the following characteristics:

- Topography that causes the infrastructure 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, especially of the Green Mountains, Deer Leap, and Hogback Mountain;
- The removal of productive agricultural land from agricultural use (except in identified "Preferred Areas").

2. Mitigation methods:

- Locate the structures on the site to keep them from being "skylined" above the horizon from public and private vantage points;
- Shorter structures may be more appropriate in certain spaces than taller structures to keep the project lower on the landscape;
- Developers shall meet setbacks equal to those 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 substation.

DECOMMISSIONING AND RESTORATION

All projects shall be decommissioned at the end of their useful life. This means equipment shall be removed, landscaping preserved and disturbed areas restored. Developers of all non-residential (commercial and industrial) projects shall provide the municipality with appropriate assurances to guarantee funding exists to decommission the project. In Bristol the requirements of PUC Rule 5.904 (A) shall apply to commercial scale solar installations greater than 100 kW.

Bristol Enhanced Energy Plan Maps

Map 1. Transmission and Distribution Resources

Map 2. Wind Power Resource

Map 3. Highest Priority Forest Blocks

Map 4. Potential Solar Resource Siting Areas

Map 5. Potential Wind Resource Siting Areas

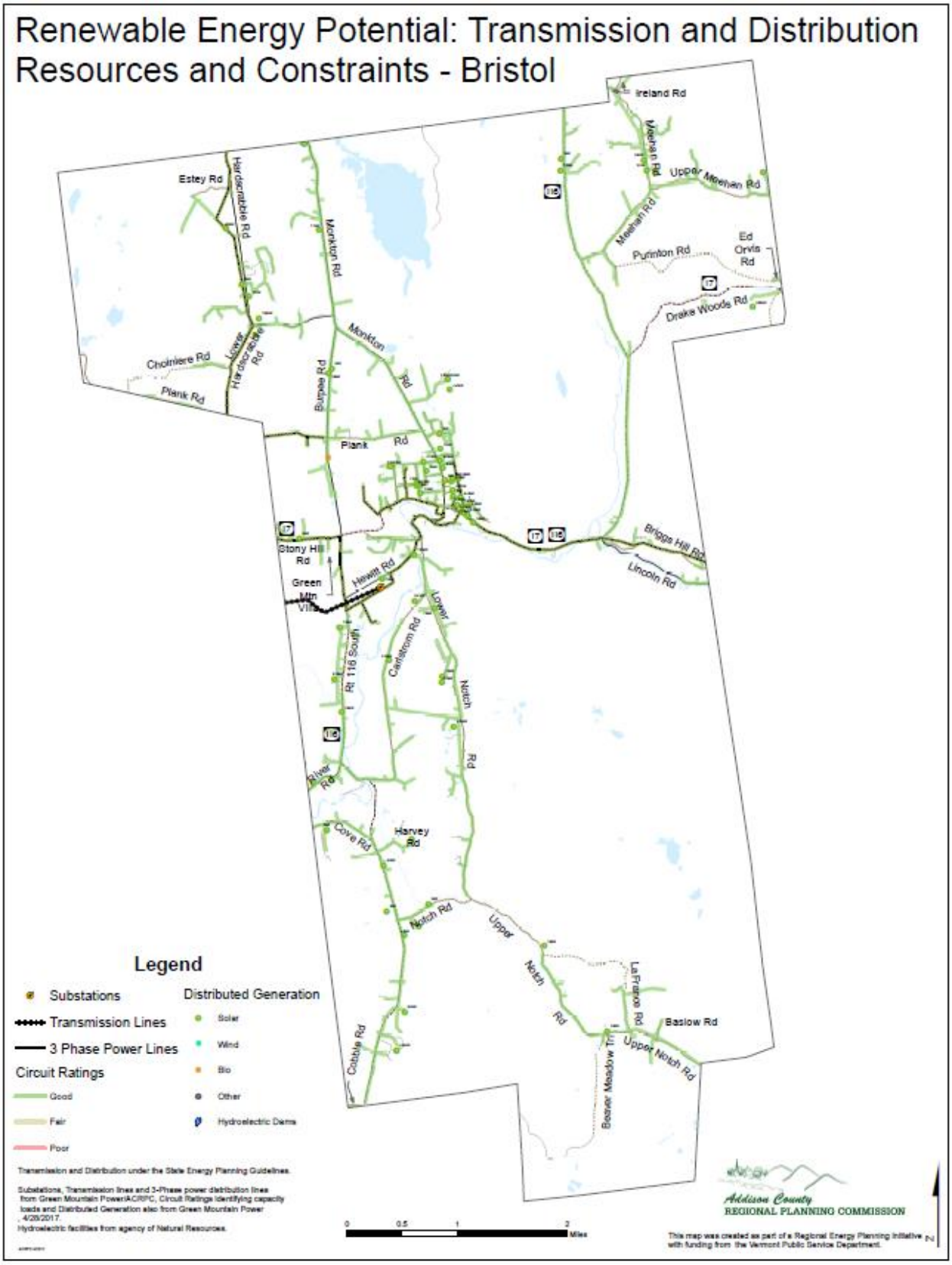
Map 6. Potential Biomass Resource Siting Areas

Map 7. State and Local Known Constraints

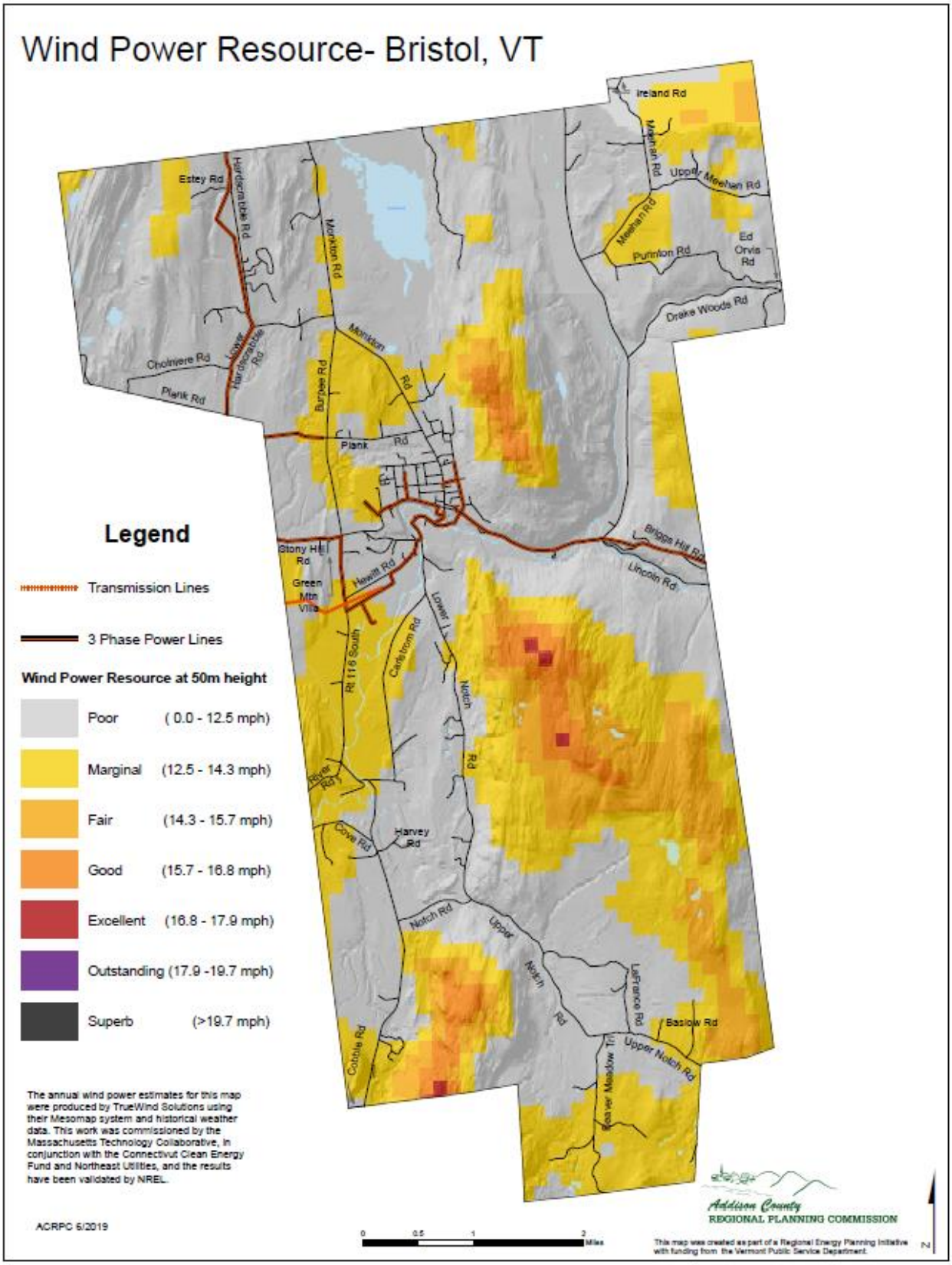
Map 8. State and Local Possible Constraints

Map 9. Preferred Energy Area

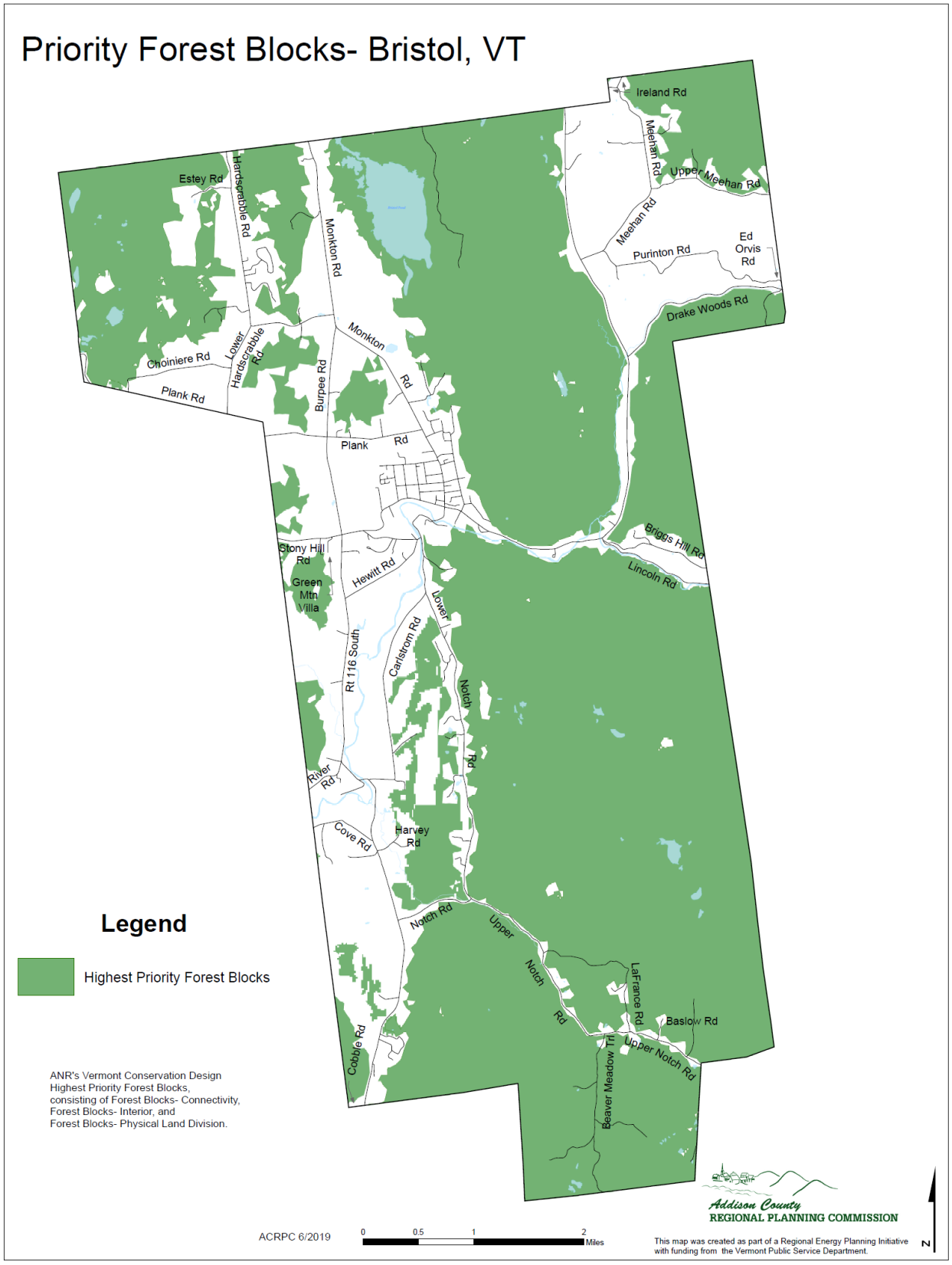
Map 1. Transmission and Distribution Resources



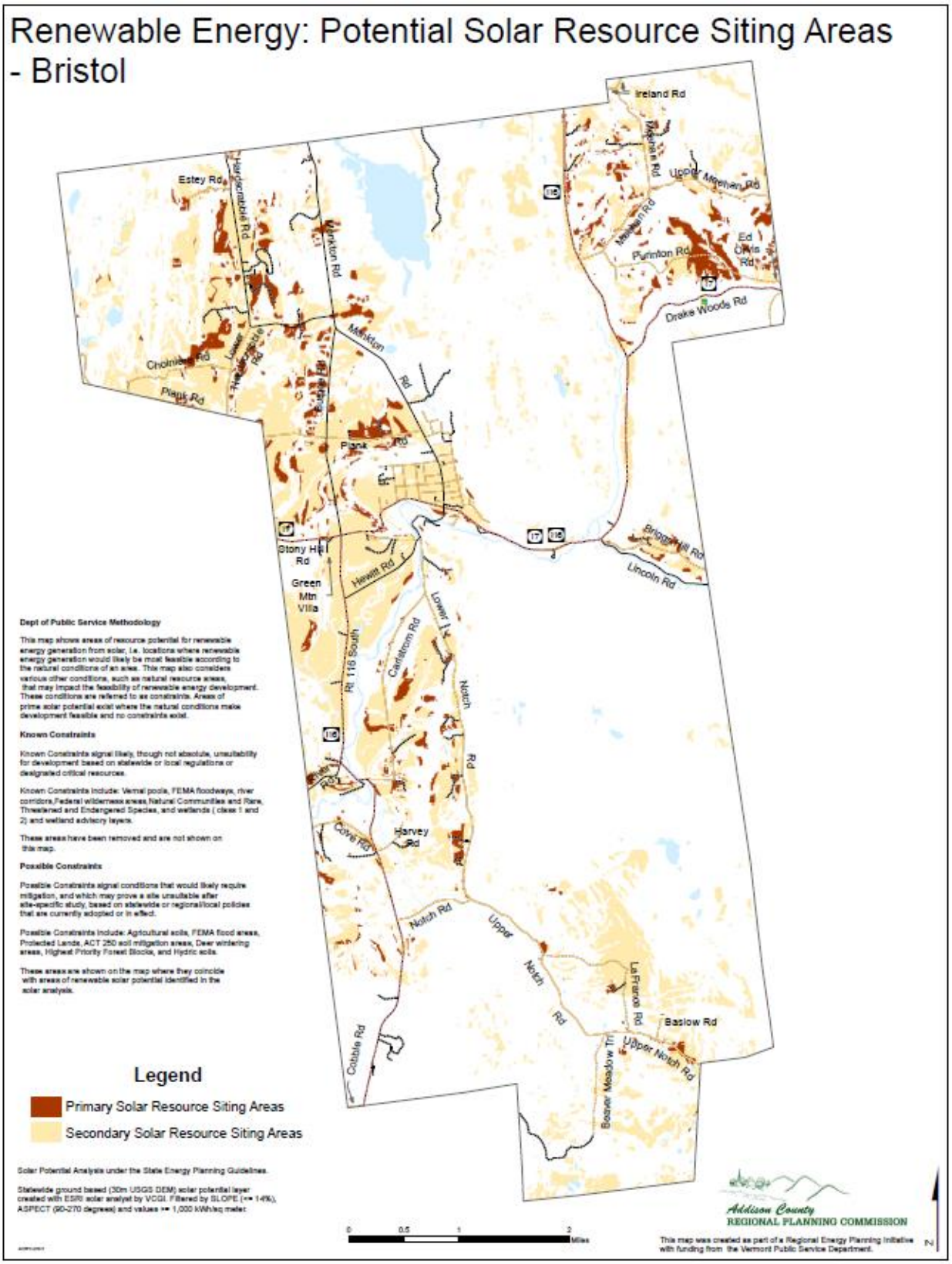
Map 2. Wind Power Resource



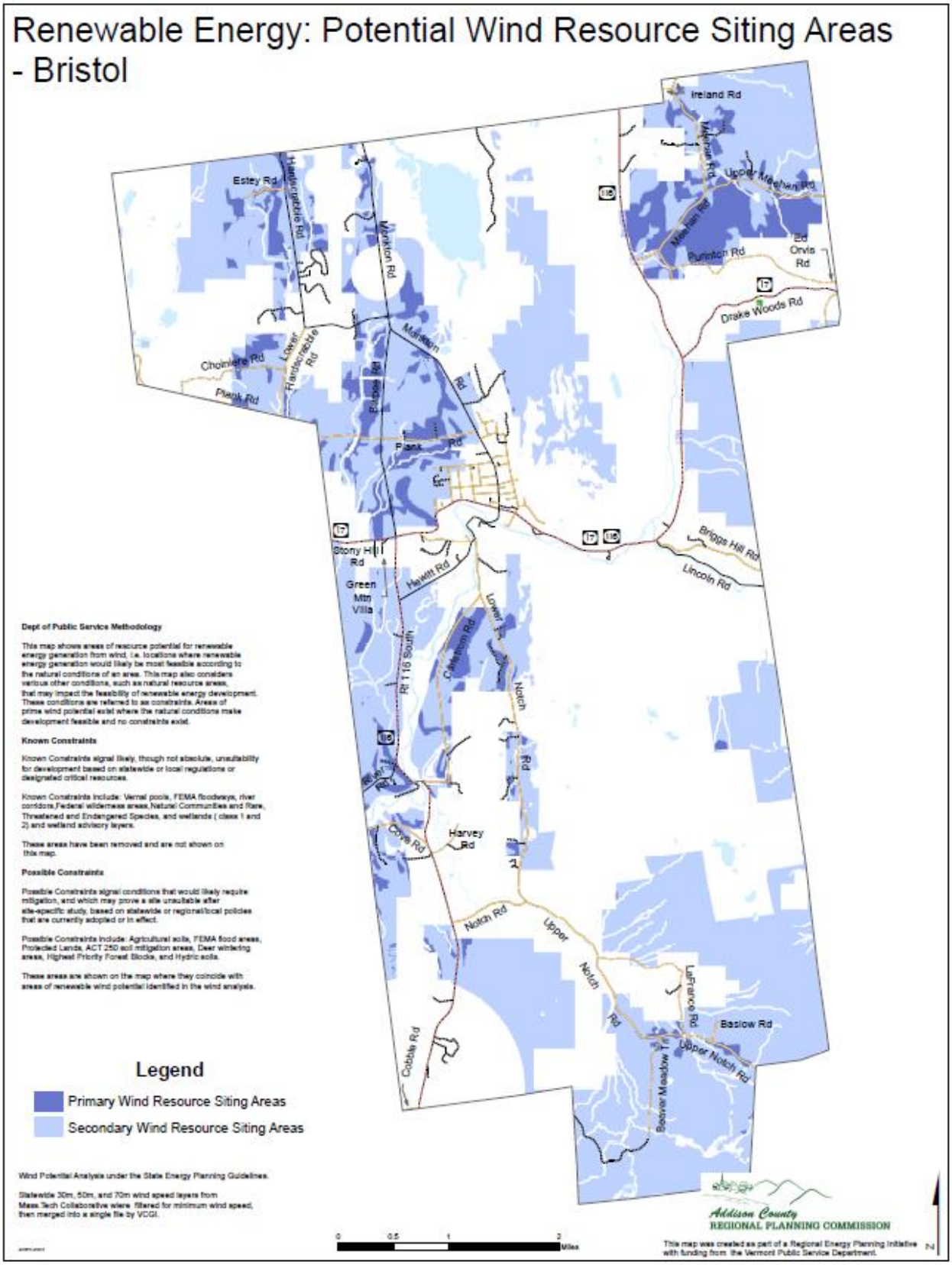
Map 3. Highest Priority Forest Blocks



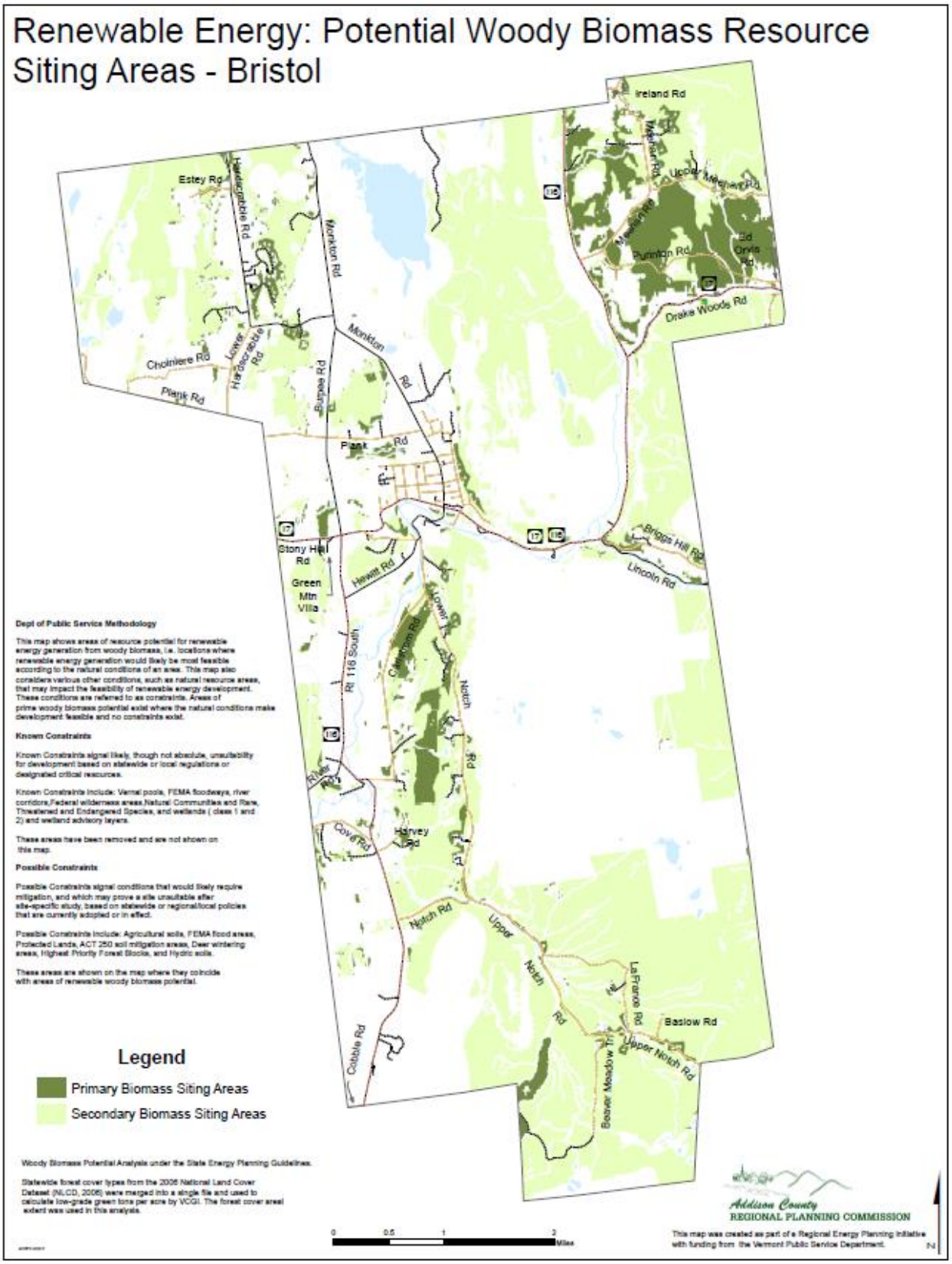
Map 4. Potential Solar Resource Siting Areas



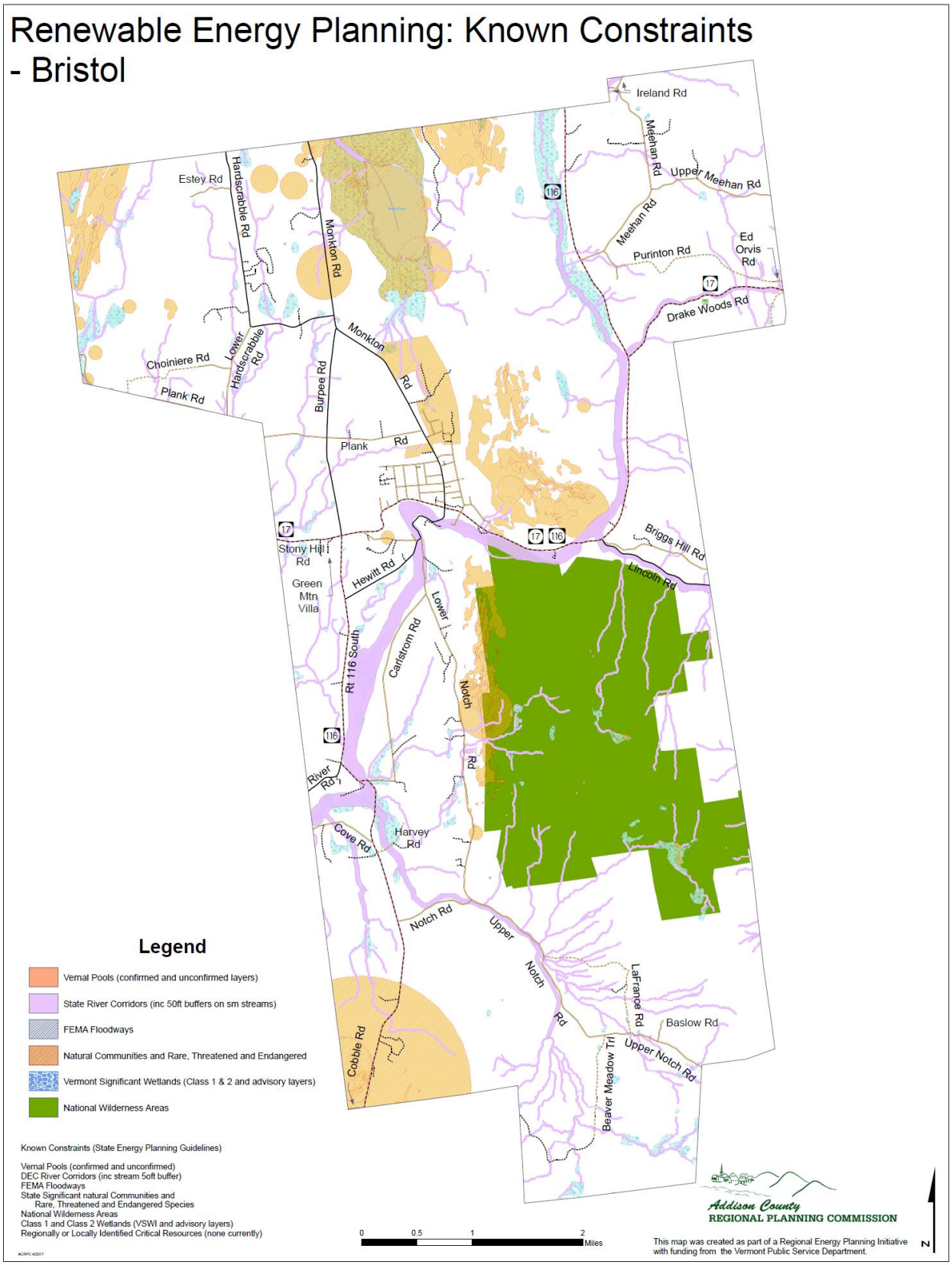
Map 5. Potential Wind Resource Siting Areas



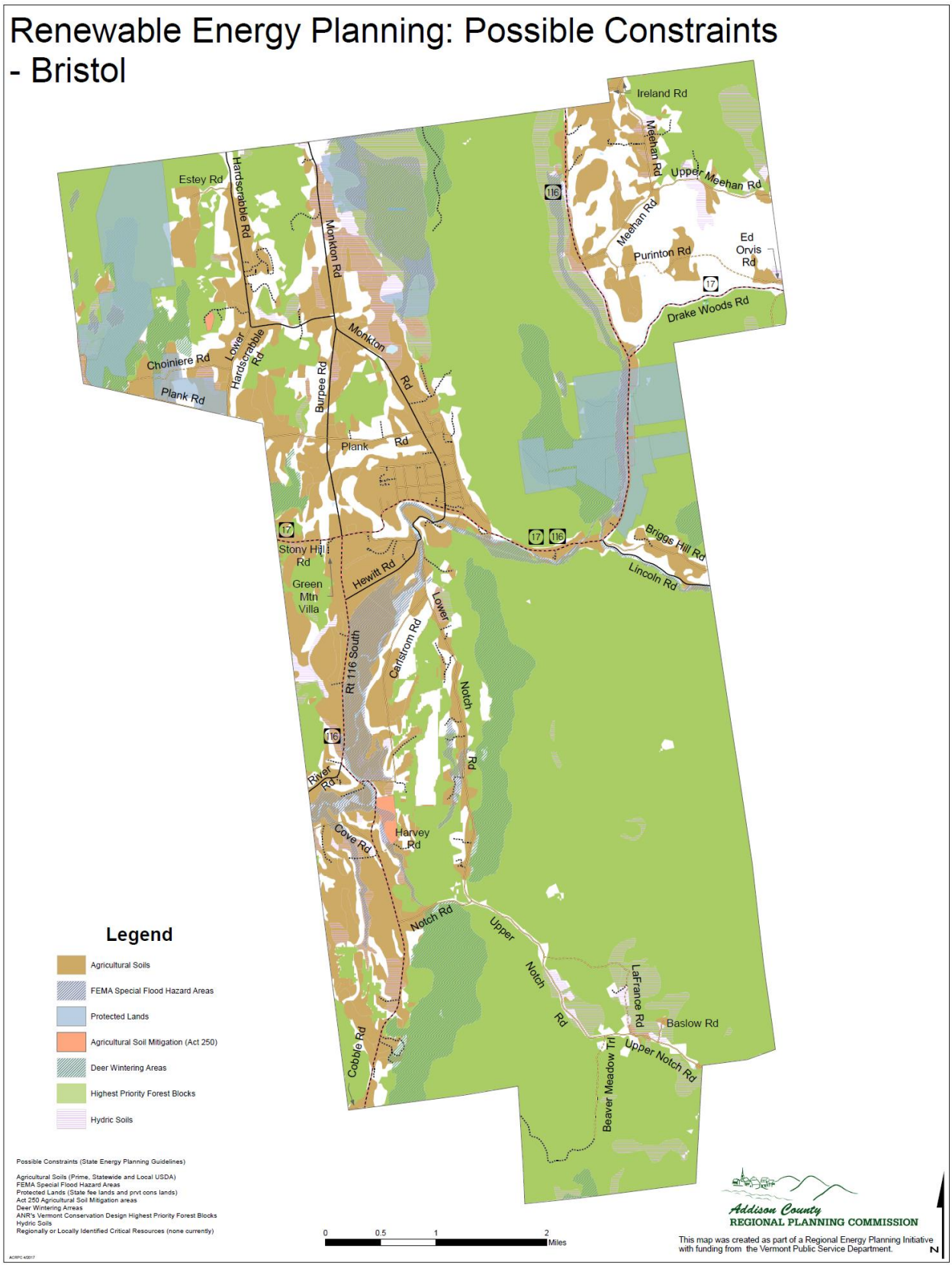
Map 6. Potential Biomass Resource Siting Areas



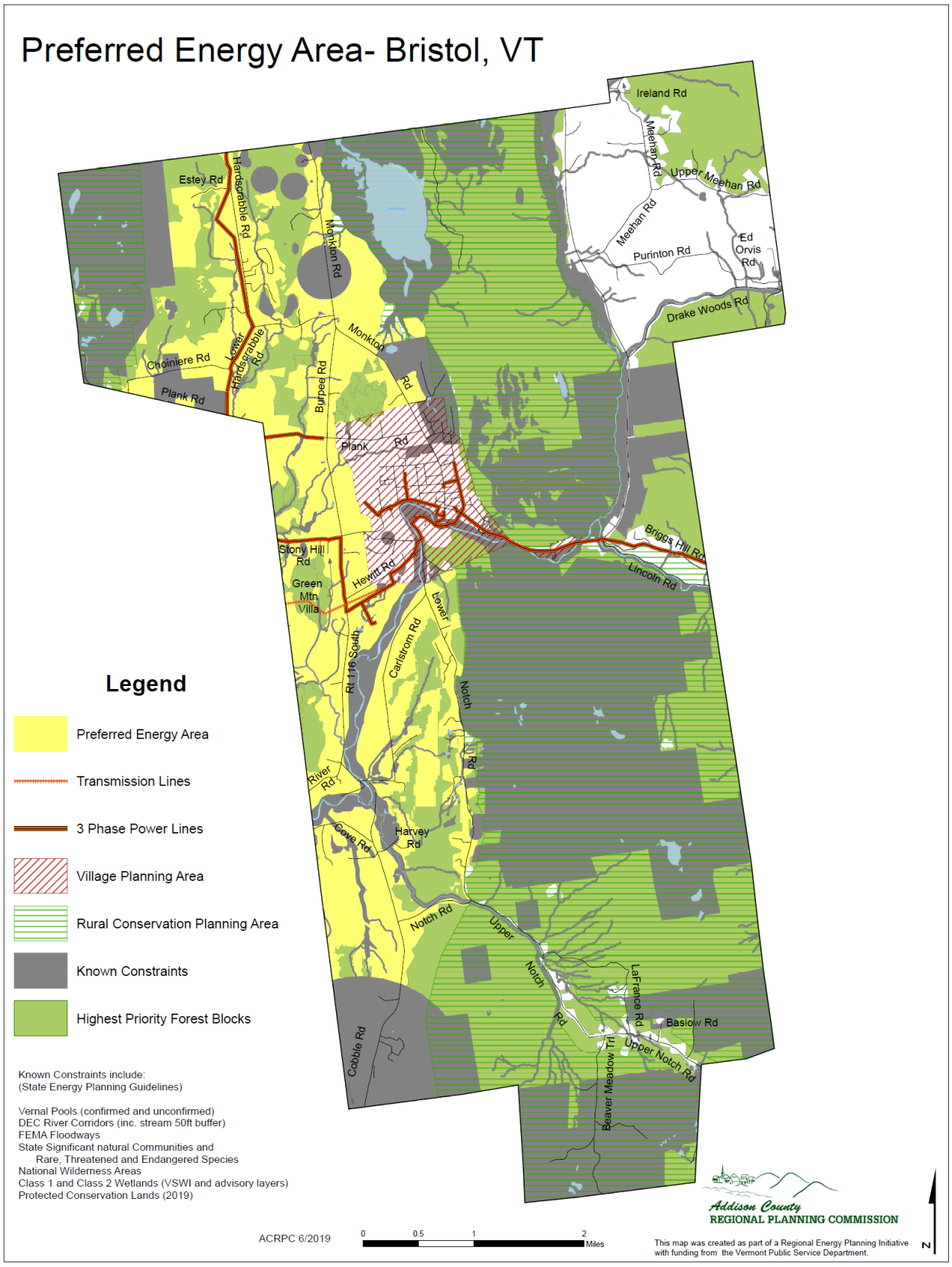
Map 7. State and Local Known Constraints



Map 8. State and Local Possible Constraints



Map 9. Preferred Energy Area



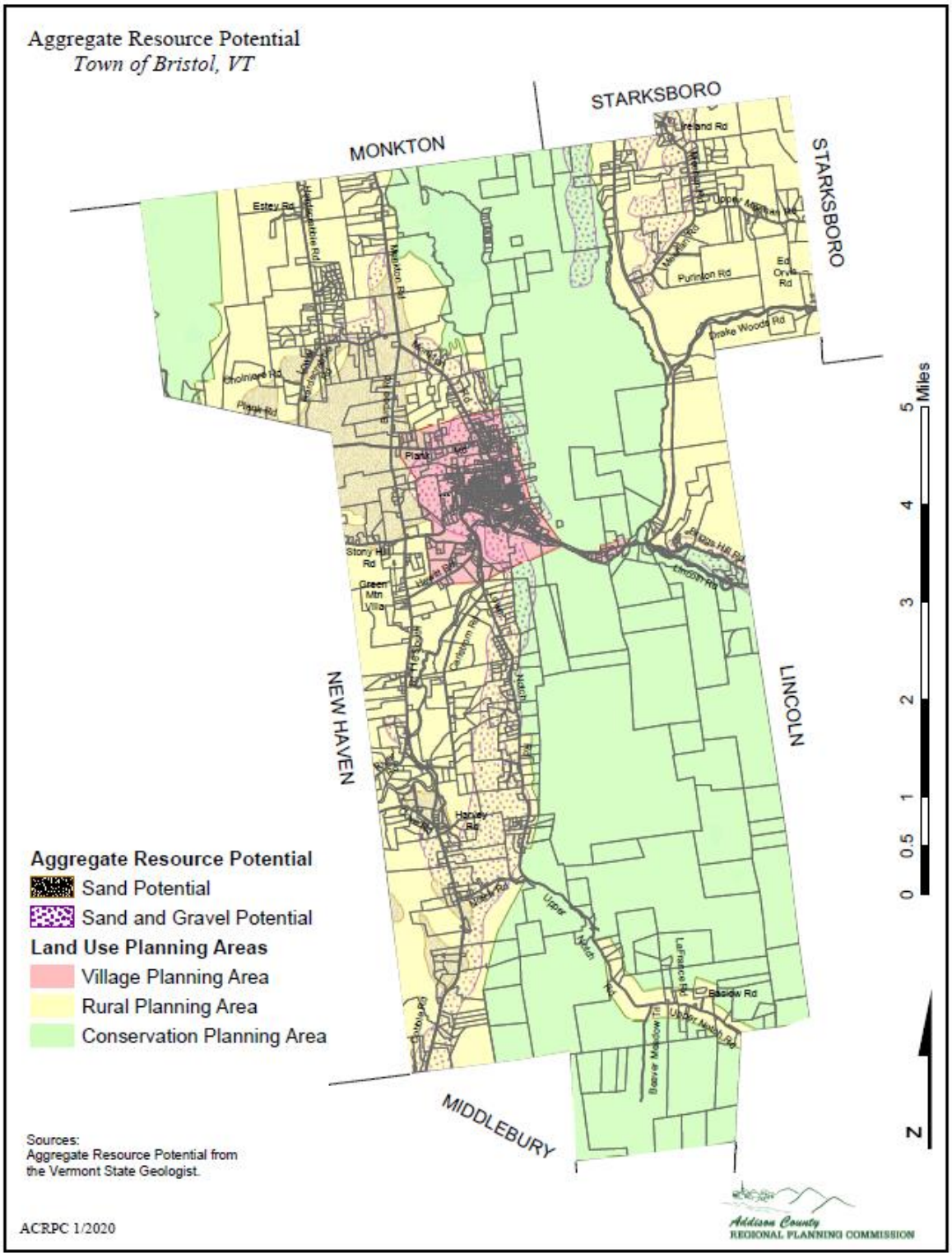
Appendix 2. Resource Extraction

The appropriate use of Bristol's natural resources inventory, both renewable and non-renewable, presents real challenges for the community. Deposits of soil, sand, gravel and rock ("earth resources") many times closely adjoin pockets of substantial residential development, and commercial extraction of these resources is often not compatible with this residential development

Extraction of soil, sand, gravel and rock has been a contentious issue for the community of Bristol. Section 526 of the current zoning regulations is vague on this topic and has been interpreted in two ways: to either allow extraction in only limited areas, or to allow extraction in all areas assuming certain conditions are met.

Bristol has a long history of extraction operations, with upwards of 25 pits having been in operation at one time or another. Based on the survey conducted and participation at public meetings, there appears to be public support for the concept that extraction of these resources should be permitted at least in limited areas in Bristol, but only when it can be done in a manner that takes into account public health, safety and welfare, to include such matters as aesthetics, visual and sound impacts, noise, air quality, water quality, size of the excavation area, hours of operation, reclamation plans, traffic and erosion. It is also understood that extraction may be necessary in connection with preparing a site for other types of development that have received any necessary permits, and that material extracted for this reason can be sold commercially. This provision shall not be construed as permitting the extraction and processing of soil, sand, gravel or rock solely for resale. On-site processing of such material is permitted only when the primary use of such material will be for on-site development and is undertaken in compliance with any regulations applicable to extraction as a principal use of land.

While there has been widespread agreement that where extraction is permitted that it must be done so only pursuant to a clear regulatory scheme dealing with all of the effects created by the extraction, drawing the line between the areas where extraction could be permitted with restrictions, and those where it would not be permitted under any circumstance, has been a very difficult issue. Information collected by the Planning Commission from a survey in 2006 and a poll of voters on Town Meeting day in 2011 suggests general support for permitting commercial sand and gravel extraction, with more support for new extraction projects located outside the village area (Survey Question #34). Sand/gravel was also ranked among the lowest goals that Bristol as a community should pursue (Question #10).

The Planning Commission's initial proposed solution to all of this input was to prohibit extraction in certain zoning districts. After further consideration and input, and as a part of the ongoing re-zoning discussions, and supported by the poll taken of voters, it has been determined that the area prohibiting extraction should be identical to the Village Planning Area. It is anticipated that the rezoning now under discussion will result in these areas being included within the Village Planning Area where extraction will be prohibited. A final decision related to

extraction has been to redefine the Village Planning Area so that it now includes residential growth areas to the north and south of the current village area. Due to the nature of the uses in the Village Planning Area, extraction would not be allowed anywhere in this area. Quarrying will continue to be prohibited in all zoning districts until this use can be further studied.