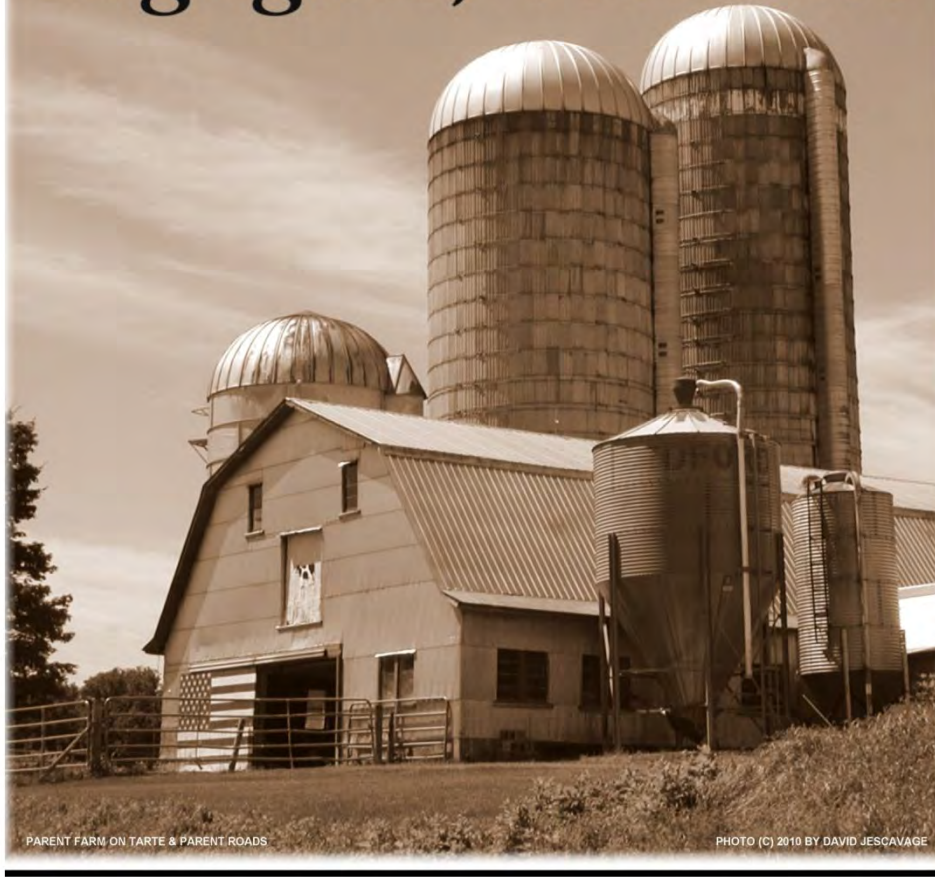


# HIGHGATE TOWN PLAN 2023-2031

*Highgate, Vermont*



PARENT FARM ON TARTE & PARENT ROADS

PHOTO (C) 2010 BY DAVID JESCAVAGE

*The Dairy Farming Capital Of Vermont*

# 2023 - 2031 Highgate Town Plan

## Draft for PC Hearing

Prepared With  
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# CHAPTER 1

## Introduction

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### **PURPOSE**

The purpose of a municipal plan is to help guide decision-makers to chart the future of a community. A plan is a town's vision for the future. It states related goals and objectives based upon a brief reflection of the past and an analysis of existing conditions. A plan is developed from an established planning program. This planning program involves the public in a variety of ways. Through this collective effort, the vision and recommendations are developed with the best interests of the town as a whole in mind. In other words, a town plan is a calculated vision that is put together by the residents of the town.

If the recommendations of the Highgate Town Plan are implemented, the quality of life in Highgate can be positively affected. The Plan addresses inter-related topics including land use patterns, population, housing, community facilities and services, transportation, education, natural resource features, historic, cultural, and archaeological resources, energy, economic development, and disaster resilience.

Recommendations within the Municipal Plan are based on an analysis of current conditions, the input of many residents, and projections of housing, population, and development trends in the Town and surrounding region. Though the goals and recommendations of this Plan are long-term, it is expected that Highgate will re-examine them periodically and amend the Plan as needed and as required by law.

Highgate Town Officials engage in an ongoing planning program for additional reasons including:

- Providing additional information and data to guide decision-makers in developing new policies;
- Identifying areas where additional study is needed; and
- Providing a foundation for developing a capital program and amending the zoning and subdivision bylaws.

A town plan will help Highgate control its future by providing it with the means to control change. A town plan does that by providing the community with a plan of action, or blueprint, which shows a community what it will be like in the future. A town plan shows a community what things are going to stay the same and what things are going to change. It defines how those changes are going to happen, and how quickly, or slowly, they are going to take place. A town plan gives Highgate the power to guide change, and the pace at which change will occur, so that change does not control the Town's future.

### **AUTHORITY**

The Town of Highgate is authorized to prepare and adopt a Municipal Plan via Chapter 117, Title 24 of the VSA (Vermont Municipal and Regional Planning and Development Act). Section 4382 of the Act dictates what needs to be included in a plan. The intent of the law is to encourage a municipality to "engage in a continuing planning process that will further several stated goals." The Act further

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states that municipal plans shall be re-examined, updated, and re-adopted every eight years. This process should be ongoing, whereby the Plan is continually reassessed and revised to meet the changing needs of the community. Consequently, there will be future opportunities to review and amend the Plan. Residents, community groups, or anyone with an interest in the Town are encouraged to provide input to the Highgate Planning Commission.

## **PLANNING PROCESS**

A Highgate Town Plan was developed and adopted in 1977, with re-adoption of the original Plan in 1983. In 1988, the 1983 Plan expired, and given accelerated growth in population and housing activity since 1980, an update/revision of the current Plan was necessary. The 1988 Town Plan was developed by a collaborative effort between the Town and the Northwest Regional Planning Commission. The current Town Plan was first adopted in 2000 and then revised in 2004, 2010 and 2015. This current version was updated in 2023 again with assistance from the Regional Planning Commission.

Under current law, Chapter 117 of Act 200, a municipality must address twelve (12) elements in its plan development which are the following: a statement of objectives, policies, and programs of the municipality to guide the future growth and development of land, public services and facilities, and to protect the environment; a land use plan; a transportation plan; a utility and facility plan; a statement of policies on the preservation of rare and irreplaceable natural areas, scenic and historic features and resources; an education plan; a recommended program for the implementation of the objectives of the development plan; a statement indicating how the plan relates to development trends and plans for adjacent municipalities, areas, and the region developed under this title; an energy plan; a housing element that shall include a recommended program for addressing low and moderate income person's housing needs; an economic development element; and a flood resiliency plan. In order to develop regulatory mechanisms (bylaws) appropriate to guide development, a plan must first be adopted by the Town Select board. Once adopted, the plan becomes the basis for development and enactment of zoning/subdivision regulations.

## **ROLE OF THE HIGHGATE PLANNING COMMISSION**

The Highgate Planning Commission is empowered to formulate goals and objectives toward Plan development. The Commission is responsible for the review and revision of the Town Plan and for proposing amendments to the zoning bylaws and regulations in an effort to implement the plan.

The role of the Commission is ongoing. Changing community conditions, preferences, and priorities call for consistent monitoring of Plan objectives. Amendments to the Plan may be necessary from time to time and the Commission has responsibility for this task.



# CHAPTER 2

## Visions for the Future of Highgate

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Growth is destined to happen. How that growth affects the character and quality of life in the Town is the concern of every resident of Highgate. The following visions serve as guidelines for the future.

- *The preservation of the character of Highgate and the protection of our natural assets will remain foremost in the Plan for growth of our Town.*
- *A commitment to our children, families, senior residents, land, water, and natural beauty will continue to make our Town special and unique to year-round residents as well as our summer tourists and visitors.*
- *Highgate is a friendly small town where there is vitality, connection, activities, and events. There are opportunities to share our community values and traditions with our children.*
- *Town character will be a factor in the businesses that look towards Highgate not only as a good location for their business, but also a quality way of life for their employees. Highgate is a place where people want to live and raise families.*
- *Highgate has a culture of agriculture, recreation and entrepreneurship. Environmentally sound, clean businesses, new technology, home-based businesses, and enhancement of our tourist trade are encouraged and will lead to a more stable tax base and help in reducing reliance on residential property taxes.*
- *Encouraging diverse agricultural practices will help maintain the rural landscape of the Town and help the local economy.*
- *Our young people should have employment opportunities, a continuation of the way of life in which they grew up, and the ability to live near their families and strengthen the family unit.*
- *Growth in Highgate will occur at a rate that does not exceed the Town's ability to accommodate the growth and provide essential services. Services and resources are available and accessible to community members.*
- *Ensuring an adequate supply of safe, healthy, attractive, and affordable housing will satisfy the living requirements of all Highgate residents.*
- *Highgate is a vital rural community with strong community connections between neighbors. Both longtime residents and newer members of the Highgate community have many opportunities to connect and gather.*
- *Highgate will have a strong walkable Village Core with infrastructure & community services.*

# CHAPTER 3

## Social and Economic Resources

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### HISTORY AND DEVELOPMENT

Highgate is located in the northwestern corner of the State of Vermont in Franklin County. Three towns, a lake, and a country border it. The Town of Franklin borders it to the east, the Town of Sheldon borders it to the southeast, and the Town of Swanton borders it to the southwest. Lake Champlain makes up Highgate's western border while Quebec, Canada makes up the northern border. The Town covers approximately 33,803 acres, which is 52.82 square miles.

The first European settlers of Highgate were Hessian troops, German mercenaries serving in the British forces during the American Revolution. They believed they were settling in Canada. Highgate was chartered on August 17, 1763. As originally chartered, the Town was six square miles in size. Highgate, with a population of only 103 persons, was organized as a Town in 1791; the same year Vermont joined the Union. Population grew steadily until it peaked in the year 1850 with 2,653 persons. By 1920, the population had declined to 1,528 persons. At this time, there were fourteen school districts. Many businesses were located in the Town such as sawmills, shingle and cider mills, an axe factory, carriage and blacksmith shops, a foundry, grist mills, and hotels.

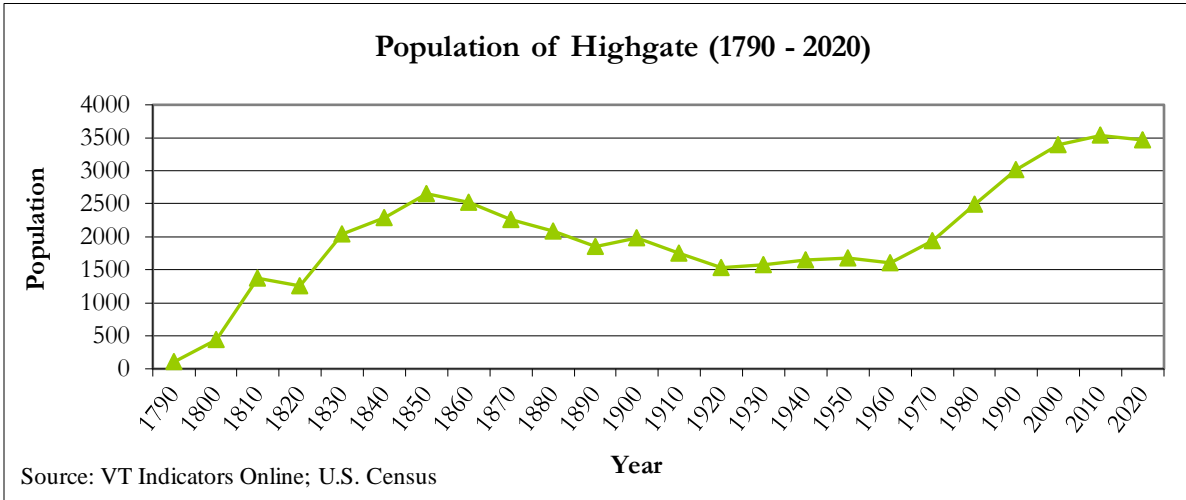


Highgate Center looking west at Desorcie's Store, circa 1900  
Photo used with permission from the Highgate Historical Society

## POPULATION

Highgate's population growth rate from 1970 to 1990 exceeded that of Franklin County and the State of Vermont (Table 3.1). However, since 1990, growth of population has slowed and from 2010-2020 Highgate lost population for the first time since the 1960s, despite continued growth in the County overall. Figure 3.1 shows the population from the year 1790 until the year 2020.

FIGURE 3.1



	Census Population					Percent Change			
	1980	1990	2000	2010	2020	1980-90	1990-2000	2000-10	2010-20
<b>Highgate</b>	2,493	3,020	3,397	3,535	3,472	28.8%	12.5%	4.1%	-1.78%
<b>Franklin Co.</b>	34,788	39,980	45,417	47,746	49,946	11.2%	13.6%	5.1%	4.61%
<b>Vermont</b>	511,456	562,758	608,827	625,741	643,077	15.1%	8.2%	2.8%	2.77%

Source: U.S. Census (1980-2020)

## HOUSING STOCK

According to the 2020 American Community Survey, there were 1,662 housing units in Highgate. Of these units, 1,164 were owner-occupied and 289 were renter-occupied year-round housing. The total number of housing units has increased by 21% since 2000. A minority of the housing units, 16.5 percent, were classified as vacant by the U.S. Census, excluding seasonal units 5.6% of units are vacant.

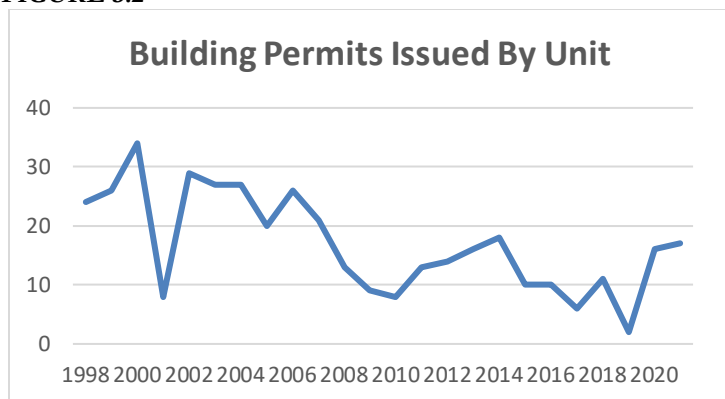
Type of Housing Unit	2000				2010				2020			
	Highgate		Franklin Cnty		Highgate		Franklin Cnty		Highgate		Franklin Cnty	
	Units	%	Units	%	Units	%	Units	%	Units	%	Units	%
<b>Total Housing Units</b>	<b>1,375</b>	<b>100</b>	<b>19,191</b>	<b>100</b>	<b>1,554</b>	<b>100</b>	<b>21,588</b>	<b>100</b>	<b>1,662</b>	<b>100</b>	<b>22,076</b>	<b>100</b>
Total Occupied Units	1,207	87.8	16,765	87.4	1,311	84.4	18,513	85.8	1,453	87.42	19,045	86.27
Owner-Occupied	965	80.0	12,582	75.0	1,047	79.9	13,829	74.7	1,164	80.11	14,762	77.51
Renter-Occupied	242	25.1	4,183	33.2	264	20.1	4,684	25.3	289	19.89	4,283	22.49
Total Vacant Units	168	12.2	2,426	12.6	243	15.6	3,075	14.2	209	12.58	3,661	16.58
Seasonal Units	134	79.8	1,940	80.0	194	79.8	2,040	66.3	93	44.5	2,320	63.4
All Other Vacant	34	20.2	486	20.0	49	20.2	1035	33.7	116	55.5	1,341	36.6

Data Source: 2000& 2010 U.S. Census, 2020 American Community Survey

The reduction in household size is a national as well as a local phenomenon. In 2020, the U.S. American Community Survey estimated Highgate’s average household size at 2.51 people and 2.57 people for the County. Both of these estimates have continued to decrease since 1990 where the average household size was 3.04 people and 2.76 people respectively. As household size decreases, the number of housing units needed to house the same number of people increases.

In 2000, Highgate needed approximately 1,209 year-round housing units to house the 2000 population<sup>1</sup>, while the Town held a stock of 1,241 year round housing units. With the 2020 household size of 2.51, 1,383 year-round housing units would be needed to accommodate the current population and 1,568 non-seasonal units were reported by the Census. The trend of decreasing household size will likely mean that even if Highgate’s population remains stagnant, more housing units will be needed. Even further units will likely be needed to house new workers if Highgate’s economic goals are achieved. Additionally, as discussed later in this chapter, the region’s stock of affordable housing is decreasing and there is no available data giving the percentage of permits issued for affordable units.

**FIGURE 3.2**

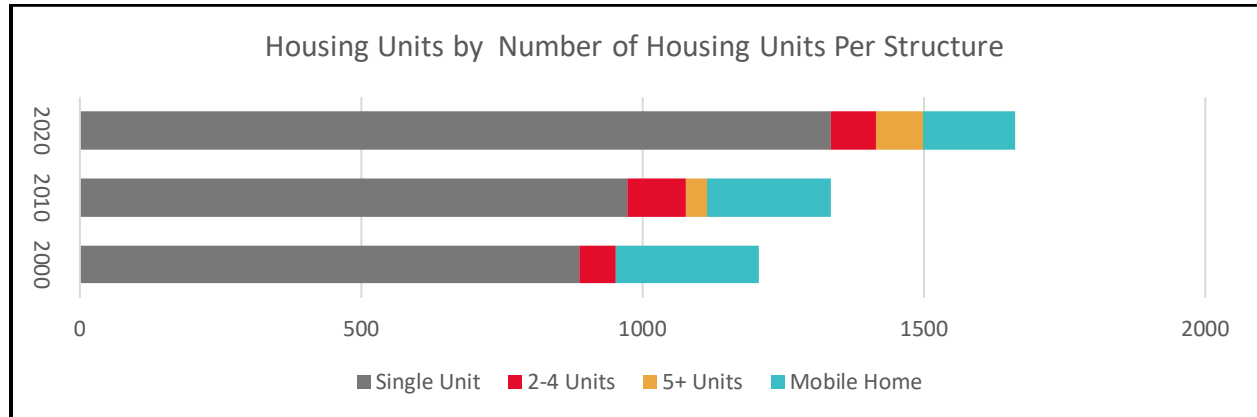


Source: Census Building Permits Survey

<sup>1</sup> This figure was calculated by dividing the 2000 Census population (3,397) by the 2000 Census occupancy rate (2.81).

Based on the 2020 American Community Survey estimates, the majority of housing units in Highgate are detached, single-family (Figure 3.3). Mobile homes make up 15% of the housing stock and multi-family units are around 10%. Almost all growth in housing units is from single-unit homes.

**FIGURE 3.3**



The Town is receiving spillover growth from the greater Burlington area, which influences market area housing development. It is likely that the Town will feel increasing growth pressure in the future. Constraints on housing growth include a developable land supply that is limited by extensive prime agricultural land. This represents a loss in agricultural land and, subsequently a weakening of the traditional economic base. The demand for land and housing is caused by good commuter access to job markets, the majority of which are located to the south in St. Albans or Burlington, Vermont. As long as the Greater Burlington area predominates in the rapid expansion of job opportunities, the relatively inexpensive yet accessible land in Highgate will continue to attract home investors.

The role of Highgate as well as other Franklin County communities is to provide for higher density (lower price per unit) housing within areas to be served by proposed water and sewer services (village center and adjacent areas). Rental housing and other diverse forms contribute to housing a diverse labor market of various income levels. Business location decisions are based more and more on the local diversity of labor availability.

Highgate should make sustained efforts, through both the Town Plan and in the development regulations, to provide for various housing densities and affordability levels. Current mobile home activity in Highgate is substantial, but conforms spatially to requirements for conventional, single-family homes.

In 2015, the Town adopted Development Regulations that combine the zoning bylaws and subdivision regulations into one document to improve the readability of the regulations. The regulations continue to incorporate options for flexible criteria such as Planned Unit Development (PUD) to allow various types of housing and density while preserving open space. These changes, along with other modernizations of the regulations, should encourage housing growth to occur in a manner that prevents substantial loss of important resources and land, and that does not exceed the Town’s ability to provide services. The Town has adopted a capital budget and program.

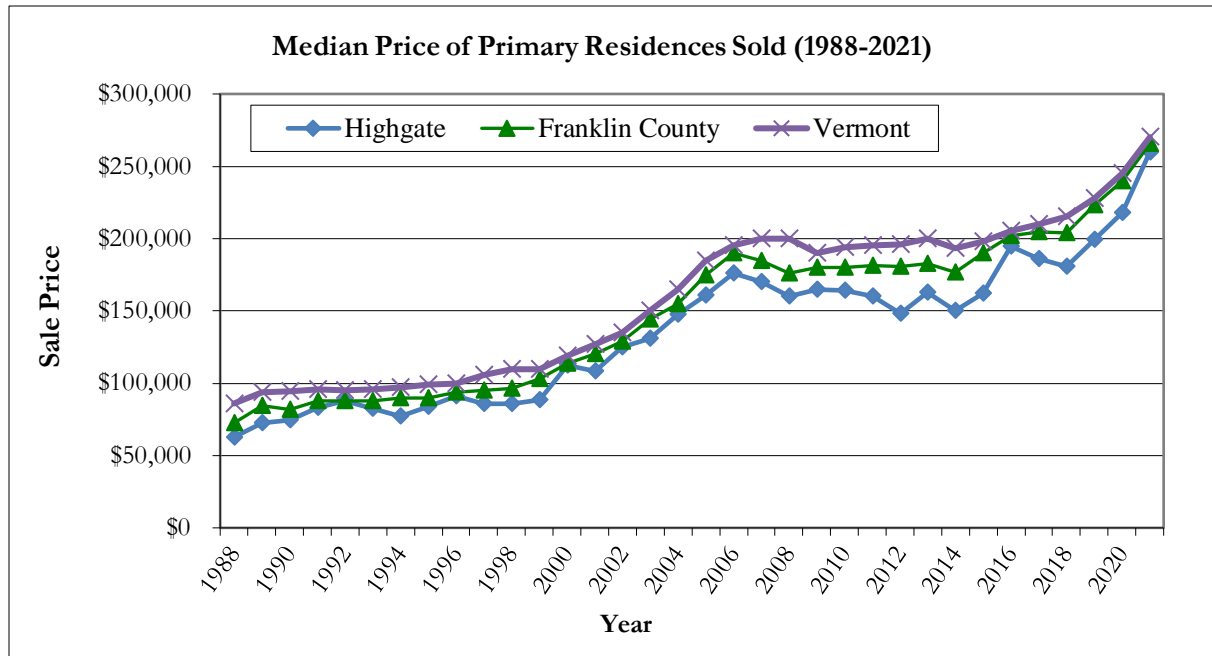
## ELDERLY HOUSING

With 14 percent of the population of Highgate being of a retirement age (65) or older, affordable housing options for retired persons must be considered when looking at the town's housing stock. Senior residents often are looking for smaller, accessible units as well as units that are affordable to those on a fixed income. There are no registered affordable rental housing locations within Highgate, although there are opportunities in nearby Towns. Nearby rental opportunities for senior housing include 3 subsidized senior housing locations in the bordering town of Swanton, 2 in the Town of Franklin, and 7 more in St. Albans. Adjacent towns also offer facilities for assisted living such as the Carriage House in Franklin, Vermont. The Town of Highgate should evaluate if the community's needs for senior housing are being met.

## AFFORDABLE HOUSING

The issue of housing transcends local boundaries and is a regional, state, and even national issue. Affordability is a focal issue (property inflation) that has been exacerbated by federal cutbacks in housing assistance programs. Highgate, like most other regions of the State, has experienced a rapid rise in prices for single-family dwellings.

FIGURE 3.4



Data Source: Vermont Housing Data, [www.housingdata.org](http://www.housingdata.org), based on property transfer data from the Vermont Department of Taxes.

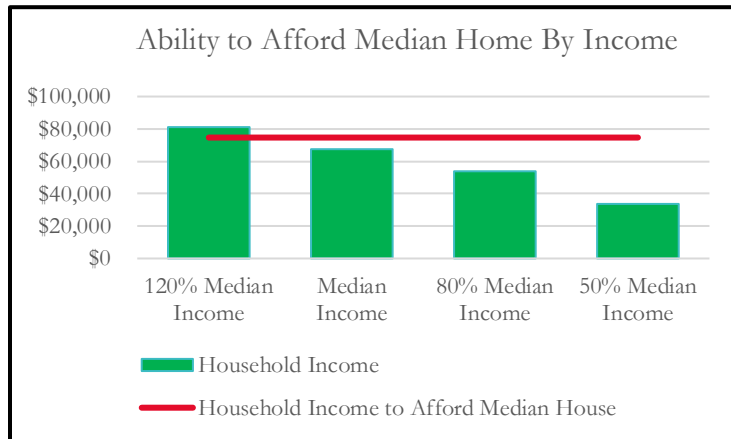
Figure 3.4 shows the median prices of primary residences sold in Highgate based on Vermont State tax data. Median home sale prices have increased dramatically in Highgate, with an over 30% increase in the last 5 years. Over 18% of that increase happened in 2020 and 2021, reflecting the competitive housing market in the last few years.

The standard Federal and State definition of affordable home ownership is a mortgage (principle and interest) plus taxes and property insurance that consumes no more than 30 percent of 80 percent of the County's median household income, or the metropolitan statistical area's (MSA's) median household income, if it applies. Franklin County is part of the Burlington-South Burlington MSA;

however, incomes in the County are much lower than the MSA as a whole. Therefore, we are using numbers from the Northwest Region of Franklin and Grand Isle Counties to more accurately reflect typical incomes.

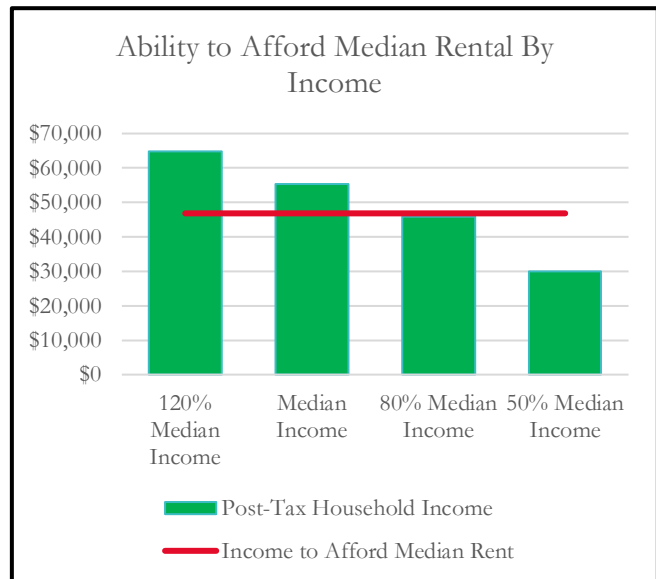
**FIGURE 3.5**

As a result of the significant increase in home prices but slower growth in income, a household earning a median income cannot afford the median home for sale in Highgate. Although this affordability gap is small, this represents a major change from 2016, where homeownership was easily affordable to those making median incomes. Moreover, the average renter household in Highgate has a median income of only \$64,000 a year, which also means there is an affordability gap for renters who may be looking to purchase a home in Highgate.



Rental housing can be more affordable than home ownership in Highgate. Affordable rent is defined by the State of Vermont as a household earning no more than 80 percent of the County’s or MSA’s median household income, if it applies, that spends no more than 30 percent of their income on rent plus utilities. According to the American Community Survey, the median contract rent in Highgate was \$895 (estimate of rent only), with utilities the average cost is \$1,170. Renting is affordable to those making 80% of median household income, making it a more affordable option for residents. However, region-wide there is extremely limited rental vacancies, making finding this housing option difficult for many households.

**FIGURE 3.6**



The minimum wage in Vermont for 2023 is \$13.18/hour. A household earning one minimum wage would earn an annual income of approximately \$27,414, or about 40 percent of the Northwest Region’s median household income. A household earning two minimum wages would earn an annual income of about \$54,000, or about 81 percent of the Northwest Region’s median household income. A household earning one full-time minimum wage salary could not afford to rent or buy a home in Highgate, while a household with two full-time minimum wage salaries would be able to afford to rent but not buy a home.

In 2021, the average mobile home with land cost \$224,000. Mobile homes with land have increased nearly 60% in median price over the last 5 years. As a result, a household making 80% of the regional

median income could not afford the median mobile home with land in Highgate. Mobile homes without land (usually in a rented lot of a mobile home park) are the most affordable option. As of 2013, there were five mobile home parks in Highgate, one of which charges rent for lots that include mobile homes, and four of which charge lot rents, where the mobile homes are owned. 1 mobile home park is resident-owned. According to the Grand List, the average value of a mobile home without land is \$34,041.89, which is more than double the 2013 average.

Many current Highgate residents are facing a high cost burden for housing. Cost burden is defined as spending more than 30% of a household’s total income on housing. Overall, 36% of Highgate households are cost burdened, included more than half of all senior households.

The lack of appropriate housing options for elderly residents is also a major issue in Highgate. There are no specific senior housing options. Given that 6.3% of Highgate residents 65+ have an ambulatory disability, lack of accessible housing options may also be an issue for senior residents.

In 2020, the Planning Commission began working with the Northwest Regional Planning Commission on a Bylaw Modernization project to address potential barriers to housing choice and affordability caused by the Town’s Development Regulations. As part of that effort, a Housing Assessment was developed with more detailed data on housing in Highgate, the report is included in an appendix to this plan. The Town will consider changes to its development regulations that reduce barriers to housing while still preserving the character of Highgate’s neighborhoods.

**ECONOMY**

Historically, the dairy industry has accounted for a significant proportion of Highgate’s economy. National and local factors have impacted the dairy industry as a whole. Therefore, diversification of the economic base at the local level is an important goal. Over the past few years, the Town has been actively involved in planning for its future economy, with the goal of developing appropriate industrial businesses while supporting the Town’s agricultural base.

Currently, the Town's economy is still largely divided between agriculture and a few related services, with most non-agricultural employment located in neighboring communities. Industrial growth within Highgate has lagged compared to neighboring towns. The Town is proximate to the local job markets of Swanton and St. Albans, has a State-owned airport facility and is accessible to the interchanges of I-89, and railroad facilities. Large areas of developable soils in the southwest quadrant provide adequate land for industrial expansion. Employers in the community

<b>TABLE 3.3: WHERE HIGHGATE RESIDENTS COMMUTE TO FOR EMPLOYMENT</b>		
<b>Destination</b>	<b>2019</b>	
	<b>Number of Commuters</b>	<b>% Commuters</b>
<b>St. Albans Town</b>	245	16.3%
<b>St. Albans City</b>	196	13.0%
<b>Swanton</b>	149	9.9%
<b>Sheldon</b>	111	7.4%
<b>Highgate</b>	90	6.0%
<b>South Burlington</b>	85	5.7%
<b>Burlington</b>	66	4.4%
<b>Georgia</b>	60	4.0%
<b>Essex</b>	57	3.8%
<b>Enosburgh</b>	48	3.2%
<b>Rest of Chittenden Co</b>	144	9.5%
<b>Rest of Franklin Co.</b>	47	3.3%
<b>Other: Vermont</b>	164	11.4%
<b>Other: Out-of-State</b>	41	2.1%
<b>Total</b>	<b>1503</b>	<b>100%</b>

Source: Longitudinal Household-Employer Dynamics

range from manufacturing to Homeland Security and Casella Waste Systems. There are also long-standing family businesses which include DeSorcie’s Market, Boucher Fertilizer and McCuin & Sons



Best Value. Additionally, Charlebois Truck Repair and Harvest Farm Equipment draw business to the area.

As of 2019, the majority of Highgate residents work outside of the community. Although 63% of residents work within Franklin County; a quarter of the residents commute to Chittenden County for employment.

The seasonal, tourist, and vacation home industry has maintained an impact on local tax revenues, at a decreasing rate, though, since the early part of the decade. Since 2002, primary housing (residential properties and mobile homes) are making up a larger proportion of the Town’s property tax base. The value of taxable vacation property as a proportion of the Town’s property tax base decreased 1.1% since 2012. This is consistent with the trend of decreasing number of seasonal dwellings in Town, which may reflect a conversion of seasonal dwellings to year-round ones.

<b>% Total Listed Value</b>	<b>Residential Properties</b>	<b>Mobile Homes</b>	<b>Vacation Homes</b>	<b>Commercial Properties</b>	<b>Industrial Properties</b>	<b>Utilities</b>	<b>Farms</b>	<b>Other</b>
<b>2012</b>	53.3%	9.3%	4.6%	7.2%	0.4%	14.7%	5.9%	4.5%
<b>2021</b>	46.1%	7.6%	3.5%	7.2%	0.4%	16.3%	6.9%	9.9%

Source: Vermont Department of Taxes, 2012, 2021; listed values equalized

Development of an industrial base in Highgate has been a major goal of the Town. In recent years, efforts have focused around developing industry near the Franklin County State Airport. Recognizing that water and wastewater are key to developing high value industrial uses, the Town has secured funding to extend water and sewer service to land near the airport to support the development of an industrial park. An economic analysis conducted as part of the feasibility study suggests that these investments could result in as many as 698 direct jobs and 512 indirect jobs. To the extent that industries adjacent to agriculture are developed, such as food manufacturing, these uses may also further support the viability of farming.

In addition to supporting industrial development, the Town has conducted significant planning to support the development of appropriately scaled commercial services in the Highgate Village Core. There are state agencies that offer aid and training for people starting small businesses. Agencies like the Vermont Small Business Development Center and Vermont Economic Development Authority provide information and training on how to start and run a business. They also help businesses acquire the right loans to help them get started or improve an existing business. This can lead to a stronger and more diverse town economy.

Highgate’s unemployment rate has generally followed state trends, with unemployment spiking in 2020 as result of the pandemic but dropping back to lower levels by 2022. The most recent Vermont Department of Labor statistics from 2022 state that the unemployment rate in Highgate is 2.7%. This is slightly higher than the state average of 2.1 percent. For those who do need assistance with employment, the state offers unemployment compensation to those who qualify as well as supplying resources to help find employment and learn new skills. The nearest Vermont Career Resource Center is located in St. Albans.

## **CHILD CARE FACILITIES**

Childcare can be a growing concern for existing and prospective families, whether it means finding quality services or securing the costs of services. High quality, available childcare is a critical component of supporting a stable workforce.

According to State data, Highgate currently has two registered childcare homes and two childcare centers, with a total capacity of 60 children, 48 slots for those under the age of 6. The 2020 American Community Survey data indicates that there are 332 children under the age of 6 in Highgate; nearly 100% of these children are in households with all parents in the workforce. Of the 491 children ages 6-17, 98% live in households with all parents in the workforce. Since there is only a capacity for 48 children under 6 in registered childcare facilities in Highgate, the needs of the other 284 children under 6 may not be met currently. There may be other forms of childcare that fill the gap left by existing childcare services such as childcare in other towns, siblings, stay at home parents, family care providers, unregistered childcare homes, or other options. These possibilities may explain the gap between childcare facilities and the total number of children; however, there is no current indication of how this gap is being met.

## **SOCIAL AND ECONOMIC GOALS**

1. Provide for commercial development that meets the shopping needs of Highgate residents.
2. Provide for a strong and diverse economy and encourage development that creates job opportunities while maintaining high environmental standards.
3. Preserve and promote the important role of agriculture in the local economy.
4. Ensure that adequate opportunities exist for the creation and maintenance of childcare infrastructure.
5. Provide for a diversity of housing types and ownership options in a variety of settings and to ensure that housing continues to be affordable to present and future residents of Highgate.
6. Provide educational opportunities that advance career training for the workforce.

## **SOCIAL AND ECONOMIC OBJECTIVES**

1. Encourage concentration of commercial development in the Highgate Center village, Highgate Springs and Highgate Falls areas through zoning mechanisms, such as PUDs.
2. Restrict strip development that relies on car travel or discourages other modes of transportation such as walking and bicycling.
3. Encourage infill and the reuse of older, centrally located buildings to concentrate development and maintain Highgate's rural characteristics.
4. Encourage agriculture and forestry through supporting value-added industries and locally grown products.
5. Actively encourage the development of appropriately scaled industrial and commercial uses for appropriate land areas.
6. Encourage development of industries which project the greatest taxable base to the community, which provide a base adequate to cover any increased cost in municipal services, and that promise the highest employment potential to the residents of Highgate.
7. Develop, improve and maintain infrastructure in areas that are suitable for industrial development and/or residential & commercial development in appropriate areas.

8. Provide a range of housing types within walking and biking distance of village services and amenities.
9. Encourage the preservation and rehabilitation of existing housing stock.

### **SOCIAL AND ECONOMIC ACTIONS**

1. Extend water and sewer infrastructure to the Franklin County Airport Industrial/Commercial area.
2. Develop water and sewer infrastructure in the Highgate Village Center Core.
3. Encourage the development of childcare centers and home-based childcare businesses and ensure development regulations support childcare establishments.
4. Explore new partnerships and funding options to enhance the supply and diversity of housing options at all affordability levels, with special focus on opportunities to add senior housing to Highgate Village Core.
5. Identify the needs of special needs populations including those with disabilities, the elderly and low-income households, and work to ensure the continued provision of appropriate housing.

# CHAPTER 4

## Natural and Cultural Resources

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### SOILS

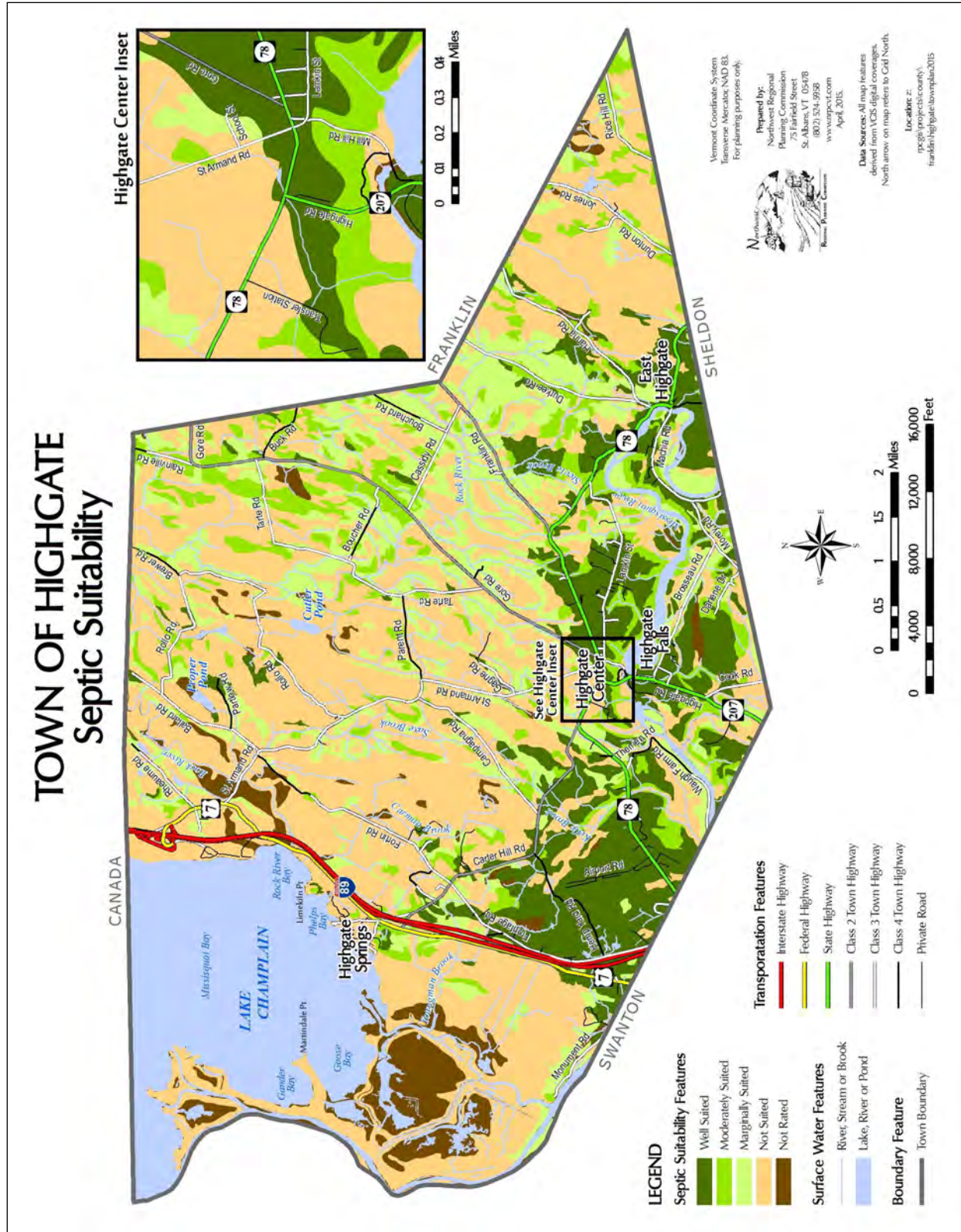
Soil quality is an important physical factor governing the use of land in rural areas. Soils are classified based on their structure, form, composition, and suitability for various types of development. The most widely used classification system is that of the U.S. Natural Resource Conservation Service (NRCS). The latest soil survey of Franklin County was done by the NRCS in 1998.

Soil characteristics generally depend on particle size (sand, silt, and clay) and water content. Poorly drained, fine-grained (clay) soils have the greatest limitations for most types of development, especially for anything that requires on-site sewage disposal. A good portion of the northern boundary of Highgate, extending south to the Town center is characterized by such poorly drained, silt and clay soils. Upland areas intersperse the dominance of the latter with deep, somewhat excessively drained sandy soils, which are either moderately or marginally suited for on-site sewage disposal. In addition, soils with slopes greater than 20 percent pose severe limitations, with potential seepage problems and slope failure. In total, there are 16,594 acres (43 percent of total land area) of soils not suited for on-site sewage disposal. See the Septic Suitability Map for a complete septic suitability survey of the Town.

In contrast, course grained, well drained sandy soils, though somewhat droughty for agriculture, are best suited for residential, commercial, industrial, and other related types of uses. Moderately well drained, loamy soils are best for onsite septic and often these associations, such as Peru or Cabot have lower slope percentages as well. In total, there are 5,220 acres of soils (14 percent of total land area) well suited for on-site sewage disposal, largely located in the southern portion of the Town.

Some of the best soils for urban development are those characterized as agricultural. There are 6,849 acres (18 percent of total land area) of State designated prime agricultural soils in Highgate.

Map 4.1 Septic Suitability



## **WATER RESOURCES**

Highgate's topography is defined by two watersheds; the Rock River Watershed and the Missisquoi Watershed (See the Water Resources Map). Its dominant surface water resources are the Missisquoi River and Missisquoi Bay. The Missisquoi River serves as an important resource for hydroelectric energy to the region's development. However, such projects have greatly reduced the recreational benefits over the years. The Missisquoi River drains into Missisquoi Bay, a valuable recreational and water resource for the Town and region. While the Bay provides opportunities for swimming, boating, and fishing; problems of pollution continue. Phosphorus loading has been identified as the primary threat to Missisquoi Bay. High phosphorus levels promote the growth of algae and aquatic plants, and reduce the health, aesthetic and recreational values of the Bay. Elevated levels of mercury in walleye are also of concern and a lake-wide health and consumption advisory is in effect.

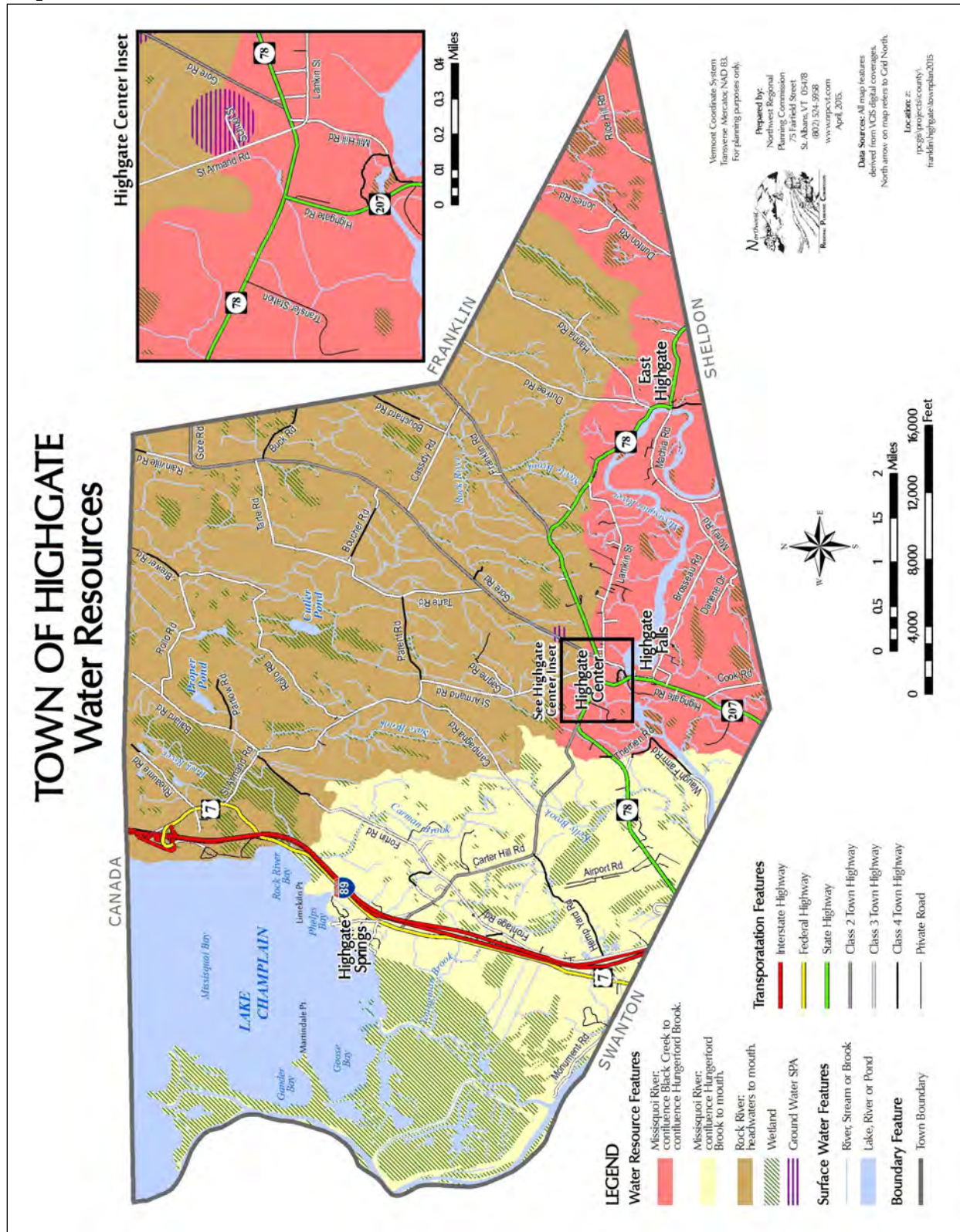
The Lake Champlain Phosphorus Total Maximum Daily Load (TMDL) establishes maximum allowable phosphorus loads from each sub-watershed of Lake Champlain and the TMDL implementation plan outlines the actions that will be necessary to achieve these phosphorus targets. The Vermont Agency of Natural Resources and the Environmental Protection Agency have reached agreement on a TMDL implementation plan. The plan relies on a combination of regulatory and non-regulatory actions. These actions include best management practices on farms to reduce nutrient runoff, stabilization of stream banks and stream channels, and better stormwater management and erosion control on developable land and roadways. The Town has been working with the Friends of Northern Lake Champlain (FNLC) on identifying areas in the community where water quality issues can be addressed. FNLC is a non-profit organization that works with municipalities and landowners on projects to improve water quality projects as well as providing public education and outreach. The amount of funding available for water quality projects has increased significantly as a result of the Clean Water Service Delivery Act, which was enacted in 2019.

While phosphorus has been identified as a high priority threat to water quality in the Missisquoi Bay, there are also concerns regarding the health of fish and wildlife, the invasion of nuisance aquatic plants, rising mercury levels and other watershed-related issues. The Lake Champlain Basin Program produces a Lake Champlain Management Plan "Opportunities for Action" which identifies actions that should be taken to address the many threats to the health of Lake Champlain.

To further the effort of improving water quality in Missisquoi Bay and Missisquoi River, the Town of Highgate has been working with the Missisquoi River Basin Association (MRBA), a non-profit organization in operation since 1996. MRBA is a volunteer organization that carries out streambank stabilization projects and educational forums about water quality. In 2007, the Town of Highgate, MRBA, the Northwest Regional Planning Commission and the VT River Management Program partnered to complete a geomorphic assessment study of the Rock River. This study documented the condition of the river and identified opportunities to reduce channel erosion, plant stream buffers, replace culverts, and restore adjacent wetlands and floodplains in order to improve water quality and stream stability.

In 2018, the State developed the Municipal Roads General Permit (MGRP) which requires municipalities to complete work on town highways to reduce stormwater-related erosion, promoting good water quality. Highgate has met its target goals for water quality projects and is currently in the process of completing a road erosion inventory.

Map 4.2 Water Resources



Subsurface water resources serve as potable supply for residents of the community. Such areas are extensive in Highgate, and include bedrock and gravel aquifer recharge. Areas of greatest sensitivity are northern and far-western portions of the Town, while areas of lesser sensitivity and far greater development potential lie in southern portions of the Town.

The information base defining areas of development limitations is not site-specific. Careful percolation tests and soil borings may well establish sites with few limitations for sub-soil sewage disposal. On the other hand, development must be approached cautiously for areas of noted sensitivity.



**East Highgate Bridge over the Missisquoi River, circa 1928**  
Used with permission from the Highgate Historical Society

## **FOREST RESOURCES**

Highgate has 9,560 acres of forest (18% percent of the total), including 2,666 acres of deciduous forest, 1,527 acres of coniferous forest, 2,707 acres of mixed forest and 2,660 acres of forested wetland. Highgate's forests provide quality forest products while supporting tourism, recreation, wildlife habitat, and the scenic, rural nature of the Town. Protecting the Town's forest resources is very important to the people of Highgate therefore the Town has created two areas of forest reserve making up 3,879 acres. The forest reserve is valuable forested land that lacks access to public roads, is important for wildlife and wildlife habitat, has potential for commercial forestry, or has one or more physical limitations to development.

## **FRAGILE, NATURAL, AND ECOLOGICALLY SENSITIVE AREAS**

### ***Fragile Areas***

According to Title 10 VSA, Chapter 158, Section 6551, a fragile area is "an area of land or water which has unusual or significant flora, fauna, geological or similar features of scientific, ecological, or educational interest". Under Chapter 158, the Department of Fish and Wildlife is mandated to create a Fragile Areas Registry, which is designed to identify and educate rather than regulate. The Missisquoi River Delta (within the Missisquoi National Wildlife Refuge) is listed. The river delta, shared by the towns of Highgate and Swanton, consists of approximately 1,500 acres of freshwater marsh and swamp. Aside from its rich ecological wildlife value, the area has hydrological potential as a major source of potable ground water. The Missisquoi National Wildlife Refuge consists of 6,642 acres of quiet waters and wetlands that attract large flocks of migratory birds. Upland areas consist of a mix



of open fields and hardwood forest of American elm, white ash, white oak, and silver and red maple. Both of these areas provide habitat for migratory songbirds, resident mammals, and other wildlife.

### ***Natural Areas***

The Non-game and Natural Heritage Program of the Vermont Department of Fish and Wildlife has designated several ecologically significant natural areas that are either among the best-known representatives of a natural community type in the State or support rare species. These areas include Highgate State Park, the Rock River Flood Plain, Mason Hill, Phelps Bay Shore, Missisquoi Bay Delta Complex, the Missisquoi River Islands, Hungerford Brook Falls, Highgate Falls Island, Kelly Brook, and Youngman Brook. The Critical Areas Map identifies the location of all the endangered species, many whom call one of these ecologically natural areas their home.

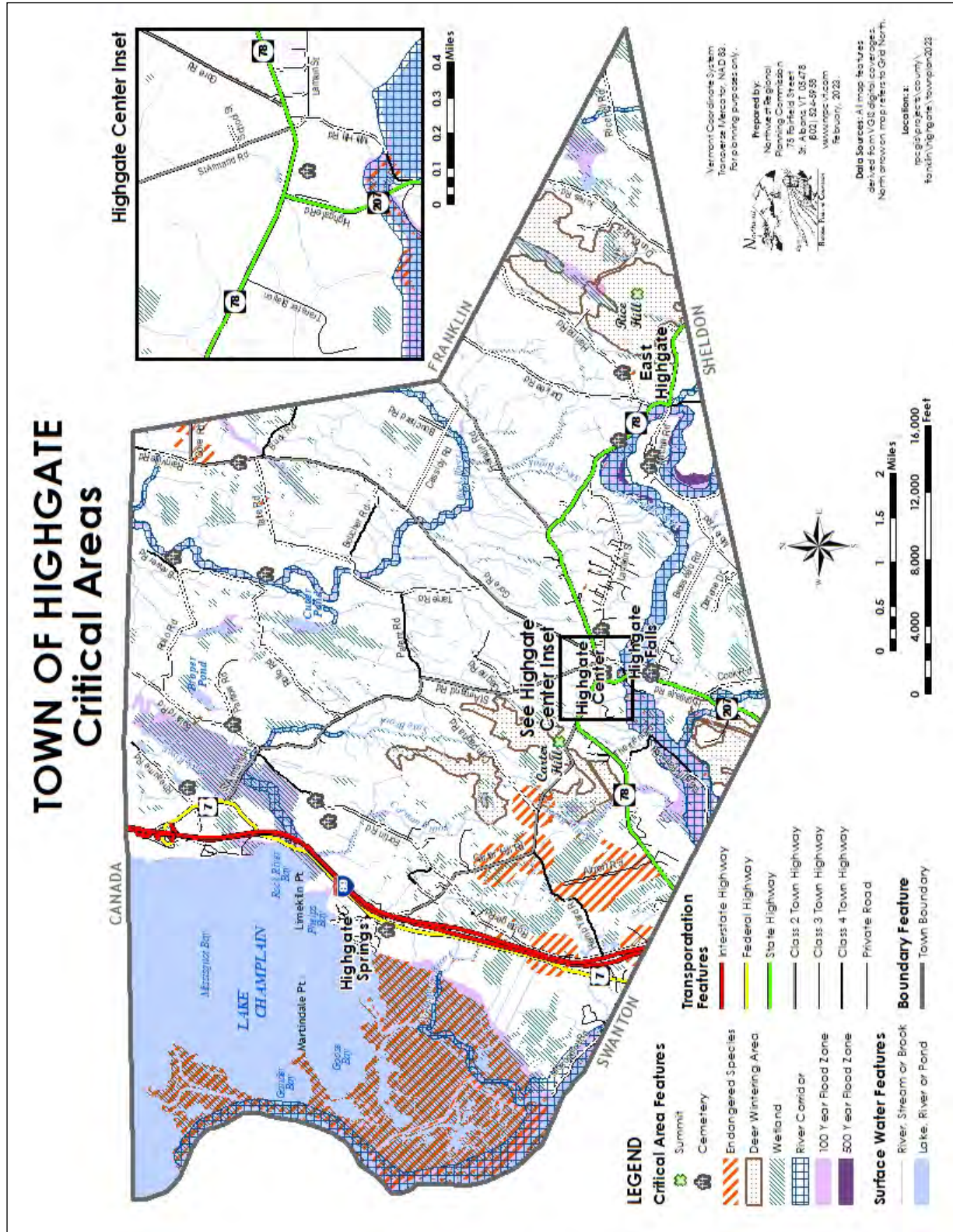
Highgate Cliffs Natural Area (encompassed by Highgate State Park) consists of 37 acres of headland above Missisquoi Bay. The area is home to several significant natural communities, including several uncommon and rare plant communities. A warm calcareous cliff community varies in elevation from 95 to 200 feet and consists mainly of white dolomite. The cliff face is sparsely vegetated except for the summit, which is densely populated with northern white cedar. Purple clematis and wall rue, two uncommon plants, are found on the cliff face. Turkey vultures were first documented nesting in Vermont at this site and have continued nesting there since 1975. Peregrine falcons are also known to nest there. A trail follows the crest of the bluff for recreational use. This area has good potential for increased recreational use.

A calcareous talus (rock fall) lies at the base of the cliff. It is very small but it is in unspoiled condition. Several lime-loving plant species such as bulbet fern and herb robert grow extremely well in the soil among the rocks as does one uncommon species, the Alleghany-vine. The lakeside cobble shore is considered uncommon in Vermont. Three rare plant species, the early ladies-tresses, the bugleweed, and the marsh bellflower, grow in association with a variety of grasses, sedge, and other herbaceous species. Along the bluff of the cliffs, there is a hardwood forest. Small trees and exotic herbaceous species attest to past logging and clearings. Two rare sedges, the *Carex hitchcockiana* and the *Carex albursina*, can be found growing in these woods.

The Rock River Flood Plain, which has been designated a State Wildlife Management Area, includes a 288 acre floodplain forest, marshy shrub swamp, cattail marsh, and seep rush marsh. It is home to several rare species including the cursed crawfoot (*Ranunculus sceleratus*), yellow water crowfoot (*Ranunculus flabellaris*), Gray's sedge (*Carex grayi*), and the northern three-lobed bedstraw (*Galium trifidum*). It is also home to the uncommon map turtle (*Graptemys geographica*).

Mason Hill, a classic thrust fault 50 foot tall, is southeast of the Rock River Flood Plain and is an excellent example of a warm calcareous cliff community. The cliff is home to a wide variety of uncommon plant species including the smooth cliff-brake (*Pellaea glabella*), fragile rock brake (*Cryptogramma stelleri*), walking fern (*Asplenium rhizophyllum*), purple clematis (*Clematis occidentalis*), and the large yellow lady's slipper (*Cypripedium calceolus*, variation *pubescens*).

Map 4.3 Critical Areas



Phelps Bay Shore, Missisquoi River Islands, Hungerford Brook Falls, and Highgate Falls Island all contain rare, uncommon, or State threatened species. Kelly and Youngman Brook are home to the State threatened Brook Lamprey.

### ***Wetlands***

There are 2,718 acres of non-forested wetland and 2,660 acres of forested wetland in Highgate, totaling 5,378 acres of wetlands. Wetland areas are of particular sensitivity to disruption and surface water runoff from urban areas. State water quality experts have notified Highgate Town officials of locations and regulations regarding wetlands. The far western third of the Town, which is bordered by the Missisquoi River and Bay, serves as a large wetland and aquifer recharge area. Shore lands of the northwest sector along Missisquoi Bay are also sensitive to development pressures. In particular, there is one federally protected wetland area, the Missisquoi National Wildlife Refuge, and one State protected wetland area, the Rock River Wildlife Management Area. The Town has also acted to make other vulnerable wetland areas part of their Protected Area and Forest Reserve Districts. In 2013, the Missisquoi Delta and Bay wetlands was recognized as a RASMAR Wetland of International Importance for the critical wildlife and aquatic organism habitat that it provides along important ecological services such as flood water retention and water quality maintenance.

### ***Floodplains***

Floodplains include areas along streams and rivers that experience frequent flooding and for obvious reasons are poorly suited for most types of development. Agriculture, forestry, and outdoor recreation are most suited to these areas. The Town of Highgate has adopted floodplain regulations as part of its zoning bylaws, which conform to federal requirements for participation in the National Flood Insurance Program (NFIP). The area is delineated as the 100-year floodplain on the Flood Insurance Rate Map for the Town of Highgate (available at the Town Office) by the Federal Emergency Management Agency (FEMA). Conditional use review is required for all development in this zone to ensure that the design and construction of development in flood hazard areas is accomplished in a manner that minimizes or eliminates potential for flood damage. FEMA is in the process of updating maps for Highgate, with new maps expected in 2023.

### ***Shoreline and Riparian Areas***

The shoreline of Lake Champlain is designated as the Shoreline District on the Proposed Land Use Map. The District is established to control and prevent water pollution, to protect spawning grounds, fish and aquatic life, and to control building sites along the waters in the best interest of the citizens of Highgate. Riparian areas include the banks of the Missisquoi and Rock Rivers. These areas are particularly sensitive to development due to the potential for flooding, runoff, erosion, and impacts related to water quality. Special management of these areas is recommended, including setbacks and vegetated buffers of sufficient width. Water quality protection measures should not be limited to Lake Champlain and the Missisquoi and Rock Rivers, but should extend to all of Highgate's surface waters, including Cutler Pond, Proper Pond, and other streams.

### ***Deeryards***

Five deeryards have been identified in Highgate and can be seen on the Critical Areas Map. The largest area (343 acres) is located in the southern part of Town in the Medium Density Residential District near the Swanton border. Another large area (314 acres) is located in the Agricultural District north of Route 78 and bisected by Carter Hill. An area of 266 acres is located in the Protected Area District surrounding Spooner Road. An area of 104 acres is located in the Agricultural District just

north of Campagna Road, and an area of 40 acres is located in Medium Density Residential District around the intersection of Morey Road and Brosseau Road. These areas provide winter shelter and browse for deer, and are critical to the long-term survival of the local deer population.

### ***Steep Slope***

Areas characterized by slopes of greater than 20 percent are noted since septic seepage and aesthetic considerations play a part in land use development decisions. Steep slopes characteristically have shallow soils and frangipan areas, which are hard brittle layers below the soil surface, which present considerable constraints to many types of development.

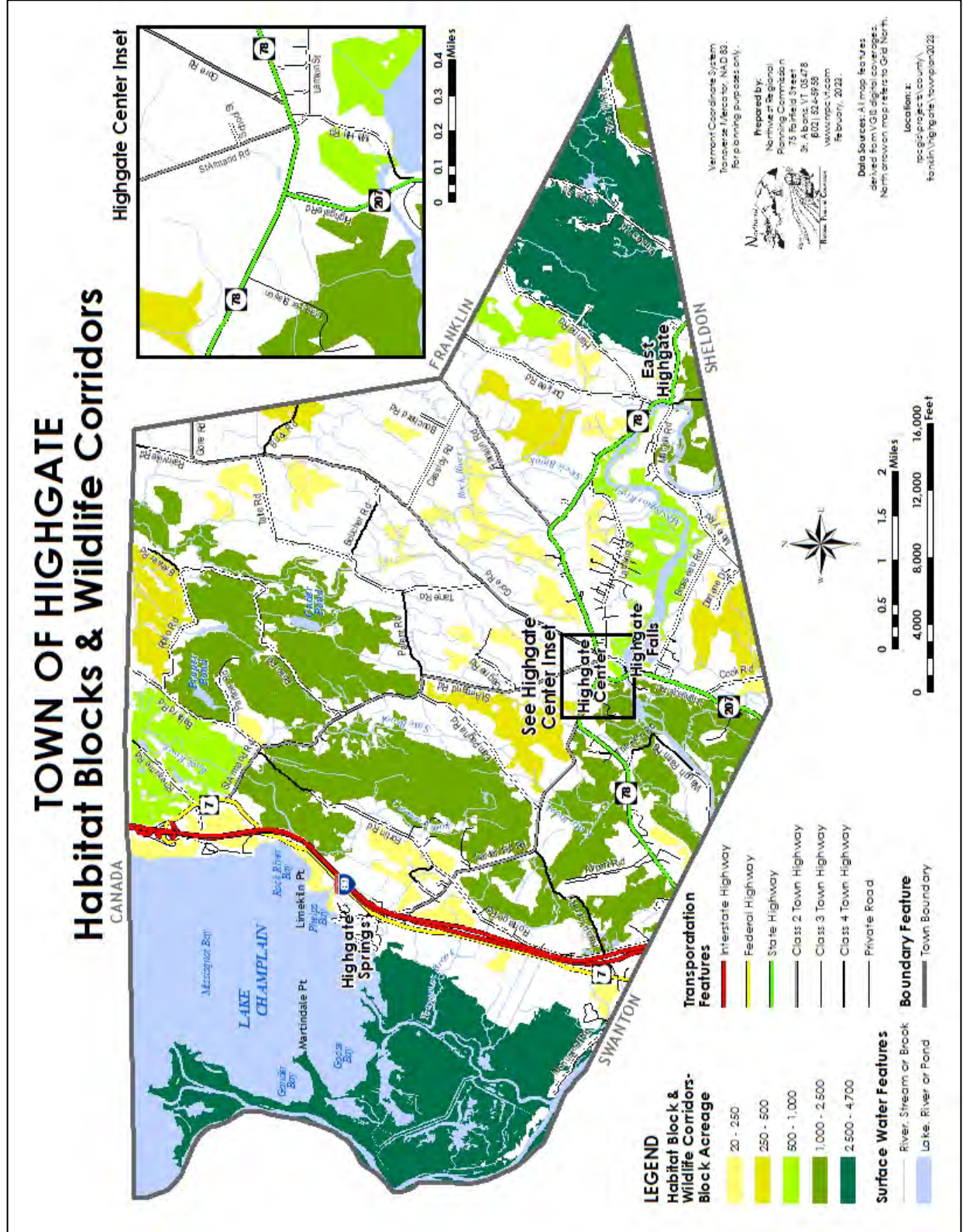
Development on steep slopes can be expensive for the municipality as the costs of road maintenance, including runoff maintenance and sedimentation problems, are much higher on steep slope areas. School bus and fire service may also be difficult, expensive, and even impossible depending on weather conditions. Considerable environmental problems may arise from development of steep slopes presenting hazards to those residing within the areas as well as those outside. Development on steep slopes may upset the natural slope repose angle, which with the removal of vegetation and the injection of effluent by onsite sewage removal, will increase runoff, erosion, and the possibility of mass movement or slumping. Slippage of foundations can also be common in steep sloping areas.

Septic tank disposal fields located on slopes greater than 20 percent may result in partially treated effluent surfacing and seeping into the down slope surface causing health hazards and possible nutrient enrichment of surface water, not to mention aesthetic problems. Much of the effluent that does remain under the shallow soil of steep slopes may flow laterally and result in groundwater contamination or the surfacing of effluent at outcrop or frangipan areas. Development should therefore be limited to slopes of less than 20 percent, especially when it requires on-site sewage disposal.

### **Habitat Blocks and Connectors**

Maintaining large unfragmented habitat areas is critical to supporting large animal species and habitat functions. Over time even low-density rural development and roads can fragment these areas, threatening the health, function and value of these habitats. The highest priority habitat block in Highgate is in the southwest corner of Highgate. Much of the habitat block is protected as part of the Missisquoi National Wildlife Refuge, protecting it from fragmentation. Other priority habitat blocks are shown on Map 4.4

Map 4.4 Habitat Blocks & Wildlife Corridors



## **Air Quality and Climate**

Climate represents the normal or average type of weather conditions that are characteristic of an area over a long period of time. In general, Vermont's climate is dominated by cold dry air from sub-arctic Canada, particularly in the winter months, and warm, moist air, which moves northward from the Gulf of Mexico, mainly during the summer. Highgate is located along Lake Champlain, which provides some moderating effects to the climate.

Meteorological data shows that Vermont is experiencing warmer and short winters combined with experiencing warmer summer days and more severe or significant weather events. Highgate will need to prepare for the impacts of this severe weather to ensure climate resilience.

Air quality is generally high throughout Vermont, especially in rural communities such as Highgate. Motor vehicles are the largest source of air pollution in Vermont, which can create localized areas of poor air quality where traffic is congested. Air quality can also be impacted by weather patterns which carry pollutants from other areas, such as in 2021 when fires in Southern Canada impacted air quality across northern Vermont.

## **CONSERVATION PROVISIONS**

In effort to preserve some of Highgate's most cherished resources, the Town passed a Forest Reserve District of 3,879 acres and a Protected Area District of 1,564 acres, which each have limited development provisions. In 2004, the Planning Commission offered new amendments to the Town's zoning bylaws that would further protect these districts. These amendments did not pass. The land in the Protected District contains vulnerable wetland, wildlife habitat, soils, and/or slope unsuitable for development. The Forest Reserve District, as identified earlier under forest resources, contains valuable forested land that lacks access to public roads, is important for wildlife and wildlife habitat, has potential for commercial forestry, or has one or more physical limitations to development. See Chapter 8 (Land Use) for full descriptions of each district and elaboration on conservation strategies. Each land use district can be identified on the Proposed Land Use Map.

## **EARTH RESOURCE OPPORTUNITIES**

Highgate was endowed with extensive sand and gravel deposits, particularly, along the Missisquoi River basin. Several have been and/or are still being exploited commercially for concrete production and ultimately construction activities in and out of the region. While these mineral resources are of value to the Town, care must be taken of harmful side effects to other resources; extensive aquifer recharge areas are possible in subsurface portions of mining locations. In order to avoid siltation and resultant harm to potable water supplies, preventive engineering measures should be employed. This resource is becoming scarcer due to development in the area over the past several years. These deposits will eventually no longer generate industrial revenue or provide employment in Highgate, other opportunities should be considered. In addition, once the mineral is depleted, appropriate reclamation activities can once again make the area suitable for urban and recreations activities.

## ***NATURAL RESOURCE GOALS***

1. Protect ecological and resource sensitive areas such as wetlands, fragile soils, steep slopes, wildlife habitat, and State designated natural and fragile areas from inappropriate development.

2. Maintain the character of the Town through the preservation of the environmental resources that make Highgate unique: including the Town's forests, wildlife habitat, biological diversity, shore land and water resources, scenic vistas and agricultural land.

### ***NATURAL RESOURCE OBJECTIVES***

1. Prohibit development in areas that threaten potable water supplies, such as wellhead protection areas.
2. Regulate shore lands to ensure land use development and other activities do not degrade water quality in the Bay.
3. Ensure new development does not have a detrimental effect on air quality.
4. Discourage fragmentation of important habitat blocks and encourage clustered development.

### ***NATURAL RESOURCES ACTIONS***

1. Identify important wildlife and plant habitats in the Town of Highgate and work with other groups to maintain their continued protection.
2. Guide new development away from productive agricultural and forest soils and consider slope and soil characteristics when reviewing individual development proposals.
3. Improve access and trail maintenance in the Highgate Cliffs Natural Area.
4. Identify the important vistas and scenic features in Highgate that are worthy of protection.

## ARCHEOLOGICAL AND CULTURAL RESOURCES

### *ARCHEOLOGICAL RESOURCES*

The Town of Highgate has significant land with sensitive and unique resource value. Archaeological sites have been noted, regulated, and excavated. The State sponsored "Vermont Rivers Study" published in 1986 identified several areas of known archaeological sensitivity in Highgate. The Town of Highgate recognizes the archeological sensitivity of these areas, including the Monument Road area in Highgate and Swanton for its significance to Native Americans. In 2002, Highgate and Swanton adopted interim zoning bylaws that recognize these archeologically sensitive areas in the towns. The interim bylaws were created through a collaborative process involving the two towns with representatives from the Abenaki Nation and homeowners. Highgate continues to work through the related issues and expects to continue to coordinate with and receive assistance from the State of Vermont in addressing these resources.

### *CULTURAL RESOURCES*

The Northwest Region of Vermont contains hundreds of historic sites, settlements, and structures. Each year, the towns in which these sites are located conduct surveys for the Division of Preservation. Once the sites are identified, they are then entered into the State Register of Historic Places. The Town of Highgate is home for the Douglas and Jarvis Iron Bridge, the St. John Episcopal Church, and the Highgate Springs Border Station. Their years of inclusion on the Register were 1974, 1976, and 1986 respectively. The Abenaki Monument located on Monument Road is also an important cultural resource in Highgate. The Monument consists of a carved wood pole and an inscription describing the carvings. The site of the Monument is a former Abenaki burial ground.

#### **The Inscription at the Abenaki Monument**

*Given to the People of Swanton by the Abenaki Nation*

**Magawogan waji tagwahoganiak oji wobaraki i ngwed  
kamigzoak sataigizos**

*The turtle, otter, wolf, beaver, bear, and eagle ascend the pole. The turtle has thirteen squares on its back, representing the thirteen original old villages and appears at the base of the pole. It also often represents the Western Abenaki. The otter is the name of otter creek where many Abenaki lived before the great changes. The wolf was commonly used as a symbol of the Loup or Mahican Nation, of which there are some families at Missisquoi. The beaver is an animal symbol of the ancient Lake Champlain/Missisquoi Community. The bear is the old sokoki/pennicook symbol. The eagle stands at the top as the universal symbol of great sacredness.*

*Funded in part by a grant from the Vermont Council of the Arts.*

The Highgate Historical Society was formed by a few interested people in 1986 for the purpose of preserving Highgate's history. It is a non-profit corporation with all volunteer employees. The object of the society is:

1. To discover, collect, preserve, and exhibit under proper regulations, any items that relate to the history of the Town;
2. To foster and promote interest in Highgate's history; and
3. To create a constructive effort to research Highgate's history.



In 1996, the Society was able to purchase the former Odd Fellows Hall in Highgate Center. Many repairs were made to the building and in the fall of 1997, an open house was held. The building houses a museum, a library, and a meeting room. Regular museum hours are held during the summer months. The building is closed during the winter months. In 2020-2021, the Historical Society completed re-bricking work and replaced the Museum's porch.

The intersection of St. Armand Road and Ballard Road leads to an important historic marker in town. This is the location of the first gristmill built by John Saxe in 1796; the Saxes were the first family to settle in Highgate. On this spot John's sons added a sawmill, potashery, general store, post office, and tavern (VT Division for Historic Preservation).

Highgate has fourteen cemeteries throughout the town. As of 2021, 12 cemeteries are owned by the Town and maintained with municipal funds through the Highgate Cemetery Commission. The Town should ensure that funding arrangements are made for long-term maintenance of cemeteries.

The Highgate Falls Lenticular Truss Bridge is another important historic feature in Highgate. Built in 1887 the structure is a rare surviving example of this bridge type and should be preserved.

The Recreation Department organizes the Town sponsored concerts in the park.

### ***ARCHEOLOGICAL AND CULTURAL RESOURCE GOALS***

1. Protect ecological and resource sensitive areas from inappropriate development.
2. Maintain the character of the Town through the preservation of the cultural resources that make Highgate unique.
3. Preserve & protect monuments, historic structures, cemeteries and other significant archeological resources.
4. Promote cultural interests, tourism, historic walking tours, and self-guided tours.

### ***ARCHAEOLOGICAL AND CULTURAL RESOURCE OBJECTIVES***

1. Encourage the protection of sensitive archaeological sites.
2. Assist preservation activities aimed at preserving and promoting the history of the Town.
3. Promote the preservation of historical resources through the adaptive reuse of structures to maintain their importance in community life.
4. Support efforts of the Highgate Cemetery Commission to preserve local cemeteries.

### ***ARCHAEOLOGICAL AND CULTURAL RESOURCE ACTIONS***

1. Investigate methods to educate people about the importance of protecting historic sites.
2. Create a list of Town historic sites including, but not limited to buildings, farm-scapes, archaeological and other historic sites, and features that contribute to the identity of the Town and the broad patterns of its history.
3. Continue to hold concerts and family activities in the Village Park.
4. Demolish or restore the Stinehour Hotel.

# CHAPTER 5

## Energy

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The intent of this section is to meet the municipal determination standards for enhanced energy planning enabled in 24 V.S.A. 4352. The purpose of enhanced energy planning is to further regional and state energy goals, including the goal of having 90% of energy used in Vermont come from renewable sources by 2050 (90 x 50 goal), and the following:

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

A positive determination of compliance with the requirements of enhanced energy planning, as provided by the Regional Planning Commission, will enable Highgate to achieve “substantial deference” instead of “due consideration” in Section 248 applications for energy generation facilities (ex. wind facilities, solar facilities, hydro facilities, etc.) under Criteria (b)(1)-Orderly Development. In short, this means that Highgate will have a greater “say” in Certificate of Public Good proceedings before the Vermont Public Service Board about where these facilities should or should not be located in the community.

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

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

This chapter will include the required analysis, targets, and mapping. The “pathways,” or actions, have been included in the implementation section of the municipal plan.

### **ENERGY RESOURCES, NEEDS, SCARCITIES, COSTS, AND PROBLEMS**

The following subsection reviews each energy sector of energy use (thermal, transportation, electricity) and generation in Highgate.

#### ***THERMAL ENERGY***

An estimate of current residential thermal energy demand in Highgate, based on data from the American Community Survey (ACS 2011-2015), is shown in Table 5.1. The data shows that 58% of

households in Highgate depend on fuel oil for home heating. Fuel oil and wood sources are estimated to heat 75.1% of homes in Highgate. There is access to natural gas in Highgate along Route 78 through Highgate Village along Lamkin Road, which serves around 11% of households.

<b>Fuel Source</b>	<b>Highgate Households (ACS 2011-2015)</b>	<b>Highgate % of Households</b>	<b>Highgate - Households Square Footage Heated</b>	<b>Municipal BTU (in Billions)</b>
Natural Gas	143	10.9%	261,712	16
Propane	181	13.8%	337,584	20
Electricity	3	0.2%	3,600	0
Fuel Oil	766	58.3%	1,344,416	81
Coal	0	0.0%	0	0
Wood	220	16.8%	418,880	25
Solar	0	0.0%	0	0
Other	0	0.0%	0	0
No Fuel	0	0.0%	0	0
<b>Total</b>	<b>1313</b>	<b>100.0%</b>	<b>2,366,192</b>	<b>142</b>

Estimates for commercial and industrial thermal energy use are more difficult to calculate. An estimate of total commercial energy use (thermal and electricity) is provided in Table 5.2, based on data from the Vermont Department of Labor (VT DOL) and the Vermont Department of Public Service (VT DPS). According to NRPC, it is assumed that the majority of this energy use is likely to be for thermal energy needs.

	<b>Commercial Establishments in Highgate (VT DOL)</b>	<b>Estimated Thermal Energy BTUs per Commercial Establishment/year (in Billions) (VT DPS)</b>	<b>Estimated Thermal Energy BTUs by Commercial Establishments in Highgate/year (in Billions)</b>
Commercial Energy Use	42	0.725	30.45

***ELECTRICITY USE***

An estimate of current electricity use in Highgate is shown in Table 5.3. This data is from 2016 and is available from Efficiency Vermont. Highgate electricity use has decreased since 2014 from 20.5 million kWh in 2014 to about 19.3 million kWh per year in 2016. Most of this reduction in use has come from residential accounts. According to Efficiency Vermont, the average residential usage per household has decreased from 8,494 kWh per year to 8,016 kWh per year between 2014 and 2016. Highgate’s average residential usage in 2016 was about 1,000 kWh higher than the average regional residential kWh use.

<b>Use Sector</b>	<b>Current Electricity Use in Highgate - 2021 (Efficiency Vermont)</b>	<b>Current Electricity Use (in Billion BTUs)</b>
Residential (kWh)	14,935,485	51
Commercial and Industrial (kWh)	6,008,883	21
<b>Total (kWh)</b>	<b>20,944,368</b>	<b>72</b>

<b>Transportation Data</b>	<b>Municipal Data</b>
Total # of Passenger Vehicles (ACS 2021)	2,530
Average Miles per Vehicle (VTrans)	11,772
Total Miles Traveled	29,783,160
Realized MPG (2013 - VTrans 2015 Energy Profile)	23.4
<b>Total Gallons Use per Year</b>	1,272,785
<b>Transportation BTUs (Billion)</b>	153
Average Cost per Gallon of Gasoline in 2016 (NRPC)	3.40
<b>Gasoline Cost per Year</b>	<b>\$4,454,746</b>

Highgate is served by three electric utilities. The Village of Swanton Electric Department serves the majority of Highgate including the villages of Highgate and Highgate Springs. Vermont Electric Cooperative serves the rural eastern and western portions of Highgate. Green Mountain Power serves a small area along the Sheldon border.

***TRANSPORTATION***

Table 5.4 contains an estimate of transportation energy use in Highgate. It’s estimated that Highgate residents drive approximately 29.8 million miles per year and spend about \$4.4 million on transportation fuel expenses a year. This calculation does not include expense for commercially owned and operated vehicles.

***GENERATION***

There is currently at least 22.9 MW of electricity generation capacity from renewable generation facilities in Highgate. This capacity results in approximately 62,000

MWh of electricity generation per year. This is roughly equal to the annual electricity use of about 930 households in Vermont based on information available from the U.S. Energy Information Administration (558 kWh per VT household per month).

<b>TABLE 5.5 – EXISTING RENEWABLE GENERATION</b>		
<b>Generation Type</b>	<b>MW</b>	<b>MWh</b>
Solar	13.5	29,062.85
Wind	0.00	0.00
Hydro	9.40	32,937.60
Biomass	0.00	0.00
Other	0.00	0.00
<b>Total Existing Generation</b>	<b>22.9</b>	<b>62,000.45</b>

Table 5.5 organizes information about existing generation in Highgate by type of facility. Appendix A contains a map that shows the location of all electricity generators in Highgate with a maximum generation capacity greater than 15 kW.

Highgate generally has good access to electricity transmission lines and three-phase distribution lines. These types of lines are used to transmit large quantities of electricity and are needed to serve large industrial users and commercial centers. Access to this type of infrastructure may make development of renewable energy facilities easier and more cost-effective than in other surrounding communities with less existing grid infrastructure. Appendix A contains a map that shows the electricity transmission and three-phase distribution infrastructure in Highgate. Access to renewable generation resources, such as

solar and wind, will be addressed below in the mapping section.

One barrier to the development of new energy generation facilities in Highgate is constraints on the electrical transmission grid. After the addition of the Kingdom Community Wind plant in the Town of Lowell, the Sheffield-Highgate Export Interface (SHEI) was created to monitor the system and flows in relation to system capacity in Northern Vermont. Generation resources in this area are often required to curtail their output due to the lack of capacity to export power. This issue will need to be addressed on a statewide basis for Highgate to meet its energy goals.

While not included in the targets for energy use and generation, another potential source of energy in Highgate are anaerobic biodigesters. Biodigesters capture methane from manure or food waste and convert it into a renewable gas which either can be used in natural gas pipelines or transformed into electrical energy on-site through use of a generator. Anaerobic biodigesters can have beneficial climate impacts as they reduce methane emissions and can offset use of traditional natural gas. Biodigesters can also provide an important source of income for farmers. A major barrier to the expansion of biodigesters is that many small farms do not generate enough manure to make the biodigester profitable. Highgate supports efforts to expand on-farm anaerobic biodigesters with creative solutions including digester hubs and micro digesters.

***EQUITY AND AFFORDABILITY***

Reaching Highgate’s energy goals will bring both environmental and economic costs and benefits. The equity issues related to who will bear those costs is of continuing concern to Highgate. A just energy transition requires that all residents have equitable access to the benefits and costs of the energy transition. The efficiency of green technologies offers savings for consumers as seen with electric vehicles, electric heat pumps, newer appliances, residential solar, etc. These technologies often require upfront investment, making them more difficult to access for residents with lower income. Low-income workers in Vermont also tend to work in industries that are more susceptible to the effects of climate change such as tourism and agriculture and are often disproportionately impacted by natural disasters like flooding. Equity for all residents will be considered in every decision about energy.

## TARGETS FOR ENERGY USE AND ENERGY GENERATION

Northwest Regional Planning Commission worked with the Vermont Energy Investment Corporation (VEIC) and the Vermont Department of Public Service in 2016 to develop regional targets for future energy use and generation to meet the State of Vermont’s 90 x 50 goal. The targets represent only one scenario that would meet this goal. There may be many different ways that would also enable Vermont to achieve the 90 x 50 goal. For more information about the regional targets, please see the Northwest Regional Energy Plan ([www.nrpcvt.com](http://www.nrpcvt.com)). Tables 5.6, 5.7 and 5.8 show the targets for future energy use for Highgate by sector (totals are cumulative). These municipal targets are based on regional targets that have been disaggregated.

<b>TABLE 5.6 – THERMAL ENERGY TARGETS</b>			
<b>Thermal Targets</b>	<b>2025</b>	<b>2035</b>	<b>2050</b>
Percent of Total Heating Energy From Renewable Sources - Heating (BTUs)	46.4%	60.1%	88.1%
New Efficient Wood Heat Systems (in units)	5	12	55
New Heat Pumps (in units)	136	325	641
Percentage of municipal households to be weatherized	5%	41%	78%
Percentage of commercial establishments to be weatherized	25%	49%	73%

The thermal target for Highgate in 2050 is to have 88% of structures be heated by renewable sources. Much of this transition is likely to come in the form of electric heat pumps as the primary heating source for single family homes as the technology becomes more readily available and affordable. The target also relies on wood heating being a continued source of residential heating. There are also high targets for the weatherization of residential households and commercial structures (78% and 73% respectively in 2050). While Highgate is committed to moving towards renewable heating sources, it may make sense for there to be limited expansion of the natural gas network in the Highgate Center area to smooth the transition to renewable fuel sources by the 2050 target date.

The transportation energy targets for Highgate are similarly ambitious. By 2050, 87.8% of transportation energy will need to come from renewable sources. This will primarily be done through conversion to electric vehicles from fossil fuel vehicles for light-duty, passenger vehicles. However, it will also mean conversion of heavy-duty vehicles from diesel to biodiesel sources. The biodiesel technology and infrastructure will certainly need to advance and evolve in order to meet this target.

<b>TABLE 5.7 – TRANSPORTATION ENERGY TARGETS</b>			
<b>Transportation Targets</b>	<b>2025</b>	<b>2035</b>	<b>2050</b>
Percent of Total Transportation Energy from Renewable Sources - Transportation (BTUs)	6.2%	25.3%	87.8%
Electric Vehicles	252	1886	4487
Biodiesel Vehicles	227	449	854

Targets for electricity use are more complex to interpret. Electricity use is targeted to double by 2050 (Table 5.8). This will likely be driven by conversions to electric heat pumps and electric vehicles. These consumer changes will cause electricity use to grow. At the same time, total energy use (energy, not electricity) will become more efficient. This is because electric cars and electric heating sources are more efficient than using other energy sources, such as fossil fuels.

<b>TABLE 5.8 – ELECTRICITY TARGETS</b>			
<b>Electricity Targets</b>	<b>2025</b>	<b>2035</b>	<b>2050</b>
Electricity Use Growth (Efficiency and Conservation in BTUs)	25.2%	48.3%	100.7%

Table 5.9 shows the electricity generation targets for Highgate in 2025, 2035, and 2050. All new wind, solar, hydro, and biomass electricity generation sites will further progress towards achieving the generation targets (in MWh). Given the difficulty of developing additional hydro generation, and the constraints upon wind development, it is likely that solar generation will need to be a substantial component of meeting these generation targets. Meeting the generation targets will take considerable effort over the next 30 to 35 years. The 2050 generation target (17,413 MWh) is about half of the current generation capacity (33,079 MWh) within the Town of Highgate.

<b>TABLE 5.9 – ELECTRICITY GENERATION TARGETS</b>			
<b>Renewable Generation Targets</b>	<b>2025</b>	<b>2035</b>	<b>2050</b>
Total Renewable Generation Target (in MWh)	5,746.48	11,492.96	17,413.58

Highgate has sufficient land to meet the above generation targets based on mapping completed by NRPC. Based on mapping and calculations completed by NRPC, Highgate has access to the generation capacity outlined in Table 5.10. This generation capacity was calculated using the “base” layers for solar and wind. For an explanation of what constitutes a “base” layer, please see the mapping subsection below.

<b>TABLE 5.10 – RENEWABLE GENERATION POTENTIAL</b>		
<b>Resource</b>	<b>MW</b>	<b>MWh</b>
Rooftop Solar	1	1,820
Ground-mounted Solar	1,196	1,467,293
Wind	1,080	3,312,736
Hydro	0	0
Biomass and Methane	0	0
Other	0	0
<b>Total Renewable Generation Potential</b>	<b>2,278</b>	<b>4,781,849</b>

Highgate supports NRPC’s position regarding “commercial” and “industrial” wind facilities. The NRPC Regional Plan finds that the construction of new “industrial” or “commercial” wind facilities within the region does not conform to the Regional Plan (NRPC considers any wind facility with a tower height (excluding blades) in excess of 100 feet tall to be considered an “industrial” or “commercial” wind facility).

## FIGURE 5.1 – GROUND MOUNTED SOLAR POTENTIAL

### SOLAR POTENTIAL Highgate



Energy potential from biomass and methane sources is not estimated. This is due to a variety of factors including insufficient information on which to create estimates. Highgate encourages the use of these sources for electricity and thermal generation, especially on farms.

## MAPPING ENERGY RESOURCES AND CONSTRAINTS

Highgate has incorporated maps provided to them by NRPC. 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. All maps may be found in Appendix A.

The intent of the maps is to generally show those areas that may be good locations, or may be

inappropriate locations, for future renewable generation facilities. However, it is important to note that the maps are a planning tool and do not precisely indicate locations where siting a facility is necessarily acceptable. When a generation facility is proposed, the presence of all natural resources constraints on site shall be verified as a part of the application.

### ***MAPPING METHODOLOGY***

Spatial data showing the location of energy resources formed the basis of the maps developed by NRPC. This is the data that shows where there is solar, wind, hydro, and biomass “potential.” “Known” and “possible” constraints were subsequently identified on the maps. Known constraints are conservation resources that shall be protected from all future development of renewable generation facilities. Possible constraints are conservation resources that shall be protected, to some extent, from the development of renewable generation facilities. The presence of possible constraints on land does not necessarily impede the siting of renewable generation facilities on a site. Siting in these locations could occur if impacts to the affected possible constraints are mitigated, preferably on-site.

A full list of known and possible constraints included on the maps is located in Table A.1 in Appendix A. 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 regional constraints that were selected by NRPC. The Forest Reserve and the Protected District for Highgate were included as regional possible constraints.

### ***SOLAR AND WIND***

The solar and wind maps show both “base” and “prime” areas. Base areas are areas with generation potential, yet may contain possible constraints. Prime areas are areas that have generation potential that do not contain known or possible constraints. Areas that do not contain generation potential, and areas that contain a known constraint, are shown as white space on the map.



Highgate has abundant solar resources. Many of the areas with solar potential are considered “base” solar, most commonly because of the existence of agricultural soils. The solar map indicates a general concentration of prime solar areas around the northern portion of Interstate 89 near the border crossing and in the vicinity of East Highgate. Highgate has identified the following preferred locations for solar generation facilities: rooftops, parking lots, and landfills. Brownfield sites located outside of the village are also considered preferred locations.

Highgate has a strong preference for solar facilities that have less than 5 MW in generation capacity. This preference is a reflection of the community’s dedication to preserving the aesthetic and rural qualities of Highgate by restricting the geographic size of solar facilities. In addition, Highgate prefers that solar facilities greater than 149 kW in generation capacity to be sufficiently separated from other similarly sized solar facilities to “break up” the visual impact of two or more solar facilities located next to each other. All solar facilities shall include proper screening. Highgate hopes to adopt a municipal solar screening ordinance in the near future.

There generally isn’t much land available in Highgate that has base and prime wind resources. These areas are generally concentrated south of Highgate Springs on US Route 7 and north of Highgate Village off Gagne Road.



**Highgate Falls Dam, circa 1900**  
Used with permission from the Highgate Historical Society

### ***HYDRO AND BIOMASS***

The biomass map is somewhat similar to the solar and wind maps. The biomass map also displays “base” and “prime” areas. However, these categories are not necessarily indicative of generation. They instead indicate areas of contiguous forest that may be used for the harvesting of woody biomass for use in either thermal or electric generation.

The hydro map is unique from the other types of generation maps. It shows existing dam sites used for electricity generation. It also shows existing dam sites that are not used for electricity generation, but could be retrofitted to provide generation capacity. Data about these dams comes from a study

commissioned by the Vermont Agency of Natural Resources. The hydro map also shows some known and possible constraints that could impact the redevelopment of some dam sites. Highgate has one existing dam site. The dam, owned by the Village of Swanton, is located on the Missisquoi River and currently generates electricity for the Village Electric Department.

## **CONCLUSION**

Achieving the 90 x 50 goal, and the other energy goals in state statute, will be difficult. Highgate is committed to playing its part in working towards accomplishing these goals and in creating a more sustainable, less costly, and more secure energy future. Below are Highgate's Energy Goals and Objectives. Actions that can be taken by the Town of Highgate to achieve these goals and objectives can be found in Chapter 11 – Recommendations for Implementing the Plan.

### ***ENERGY GOALS***

- Plan for increased electric demand with the support of Efficiency Vermont and local electric utilities.
- Reduce annual fuel needs and fuel costs for heating structures, to foster the transition from non-renewable fuel sources to renewable fuel sources, and to maximize the weatherization of residential households and commercial establishments.
- Hold vehicle miles traveled per capita to 2011 levels through reducing the amount of single occupancy vehicle (SOV) commute trips, increasing the amount of pedestrian and bicycle commute trips, and increasing public transit ridership.
- Focus growth within and adjacent to Highgate's villages.

### ***ENERGY OBJECTIVES***

- The support of energy conservation efforts and the efficient use of energy across all sectors.
- The reduction of transportation energy demand, reduction of single-occupancy vehicle use, and the transition to renewable and lower-emission energy sources for transportation.
- The creation of patterns and densities of concentrated development that result in the conservation of energy. This includes support of public transit connections from Highgate to other parts of the region and considering access to public transit when reviewing Act 250 applications.
- The development and siting of renewable energy resources in the Town that are in conformance with the goals, strategies, and mapping outlined in this plan. This includes language in the above mapping section about the preferred size and colocation of solar facilities. Development of generation in identified preferred locations shall be favored over the development of other sites.
- The conversion of fossil fuel heating to advanced wood heating systems or electric heat pumps for the heating of homes and businesses.
- Further support of local farms and the local food system.

# CHAPTER 6

## Transportation

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### HIGHWAY DEPARTMENT

The Town Garage was built in 1978 and is located on Route 78. The heated building is 76 x 79 foot in size and consists of four bays. Office space is located in the building along with storage space. Highgate has a salt and sand shed located at the Highgate Transfer Station. The Vermont Agency of Transportation loaned the Town their engineering plans for construction of the new covered facility, constructed in 2002. A new wing was also completed in 2005 with a heated bay.

The Town currently has the following major pieces of road equipment:

- ◆ 2016 International 7400 Truck
- ◆ 2015 Ford F550
- ◆ 2014 Western Star Dump Truck (tandem)
- ◆ 2020 International Tandem Truck
- ◆ 2004 John Deere Back Hoe
- ◆ 2001 John Deere Loader
- ◆ 1991 Caterpillar Grader
- ◆ 2021 John Deere Road Mower

The Town identifies needs for road equipment in its capital budget, a new capital budget will be developed in 2023. In general, the Town anticipates that each piece of highway equipment will have a useful life of 9 to 10 years.

### HIGHWAYS AND LOCAL ROADS

Highgate is fortunate to have diverse transportation facilities with links to the Region, State, and Canada. The primary transportation mode is the roadway network, with Interstate 89 as the central thoroughfare. Within the Town of Highgate, one I-89 Interchange (Exit 22) is available as the last on the highway before entering Quebec, Canada. The next southernmost interchange (exit 21) lies within the Town of Swanton, 3.5 miles south, and is easily accessible from Highgate. Currently, the closest Welcome Center to the Canadian border is located in Georgia, which means that many visitors do not stop in Highgate or learn about tourism opportunities in the Town. A local task force is currently working to develop a new Welcome Center in Highgate Springs to address this need.

U.S. Route 7 is a major State maintained arterial, which parallels I-89 to the west of the latter and terminates near the northernmost interchange of I-89. This facility is considered for funding purposes to be a federal-aid-primary roadway and is eligible for partial federal pass-through funding via the Vermont Agency of Transportation (VTrans). AADT traffics counts for Vermont RT 78, US RT 7 and I-89 are summarized in the table below. In general, traffic counts for RT 7 and RT 78 have decreased somewhat from 2019 to 2021 with a significant dip in 2020. This is likely due to both unemployment and remote work caused by the pandemic, and it remains to be seen if this trend will continue. Traffic on I-89 decreased significantly in 2020 and 2021, likely as a result of the closure of the Canada-US border during the pandemic. However, Southbound traffic from Highgate dropped less dramatically, and then increased in 2021. With the expected completion of Autoroute 35 in Canada

by 2025 and a \$13.8 million dollar federal project to improve the Highgate Springs port of entry, traffic through Highgate will likely increase.

<b>TABLE 6.1: HIGHGATE AVERAGE DAILY TRAFFIC</b>			
	<b>2019</b>	<b>2020</b>	<b>2021</b>
<b>Route 7</b>			
Swanton TL - Carter Hill Rd	855	724	820
Carter Hill Rd - Shipyard Rd	634	537	609
Shipyard Road - I89 Ramps A&B	416	352	399
I89 Ramps A&B- I89 Ramps C&D	426	361	409
<b>Rt 78</b>			
Swanton TL - Carter Hill Rd	3380	2863	3245
Carter Hill Rd - Highgate Falls Rd	3909	3311	3637
Highgate Falls Rd - VT 207N	5122	4338	4950
VT 207N- Franklin Rd	3784	3205	3296
Franklin Rd-Sheldon TL	1604	1359	1642
<b>I-89</b>			
Exit 22 to CA Border	4104	860	971
Exit 22 South On-Ramp	1547	1160	1855
Exit 22 South Off-Ramp	2082	448	506
Exit 22 North Off-Ramp	1508	1131	899
Exit 22 North On-Ramp	2022	412	465
Source: Vermont Average Annual Traffic Data (2019)			

There has been increased traffic on many local gravel roads in Highgate in recent years. With increased traffic, it may be appropriate for some local roads, such as Durkee Road, to be paved.

VT 78 serves east-west travel in Highgate. The facility is classified under federal-aid-secondary and is eligible for federal funds. The capacity of the roadway to handle peak traffic is impacted by the Missisquoi Valley Union High School, truck traffic off the Swanton I-89 interchange (exit 22), the various sand/gravel pit operations, the Highgate Transfer Station, and increased commercial/industrial activity associated with areas neighboring the State Airport. Agricultural vehicles are becoming a concern of the Town in terms of the weight and subsequent damage they can place on town roads. Planning Commissioners noted that as farming practices have changed, equipment is getting larger and having more of an impact and as farms consolidate, farmers are traveling farther between fields with their equipment.

Highgate has three municipally-owned bridges: Bridges #23 (St. Armand Rd), #24 (Tarte Rd) and #25 (Machia Rd). Bridges #23 & #24 are in need of some minor repairs but are generally in good condition. Bridge #25 was replaced in 2019 and is in good condition with no need for repairs.

State road condition information is collected by the Vermont Agency of Transportation and prioritizing maintenance and rehabilitation projects. Sufficiency ratings measure various conditions such as structural condition, safety, and service. Sufficiency ratings are divided into four categories:

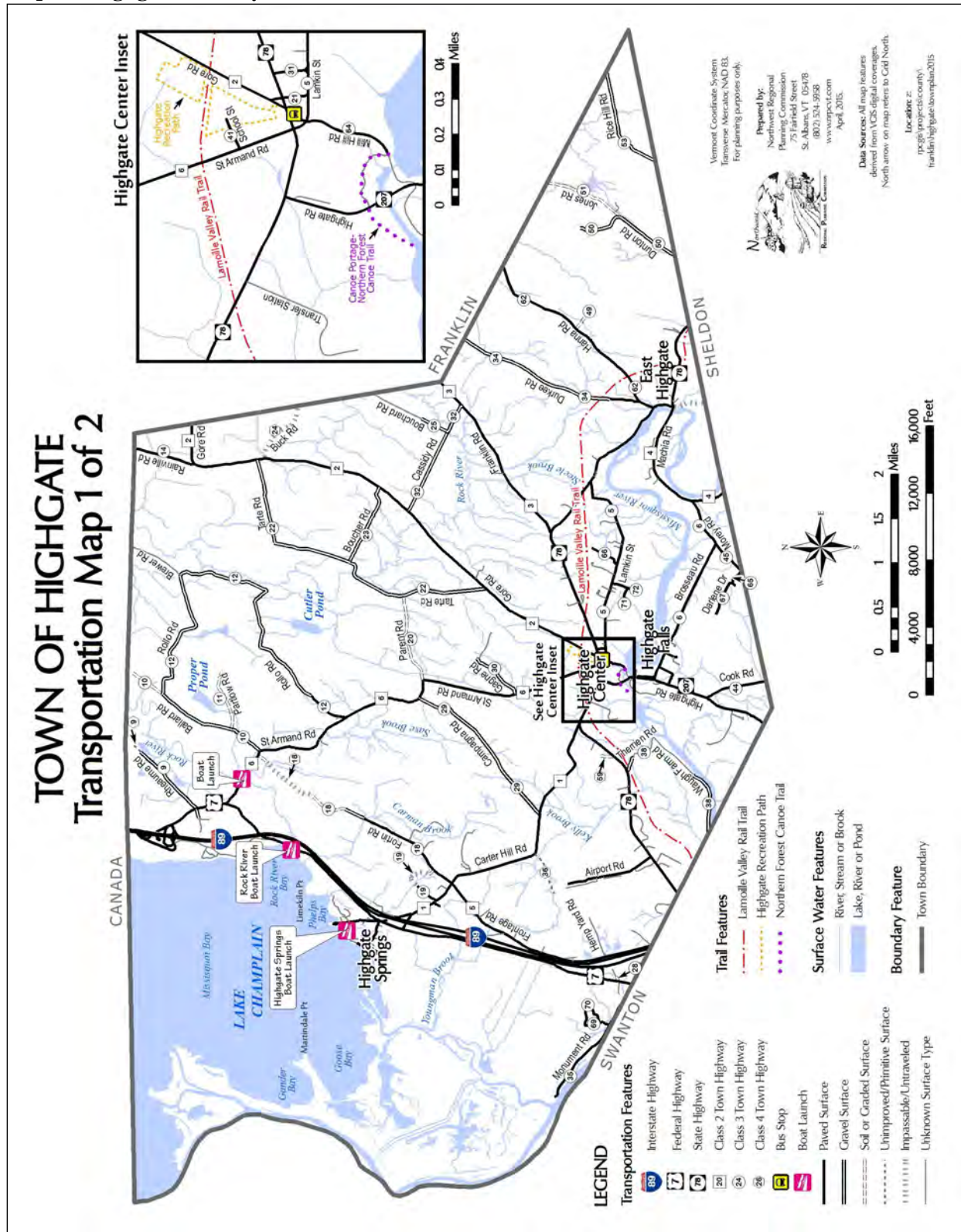
very poor (0 – 40), poor (40 – 60) fair (60 – 80), and good (80 – 100). I-89 and Vermont Route 78 are in fair to good condition throughout. VT Route 207 is in poor to very poor condition, but no major resurfacing is planned at this time. VT Route 7 was in poor condition, but as of 2022 has been repaved. In 2015, the Town work with VTrans to expand shoulders on Route 78 West.

According to Vermont Statute, the Town shall keep Class 1, 2, and 3 highways in good and sufficient repair at all seasons of the year. Class 4 highways; however, may be maintained to the extent required by the necessity of the Town, the public good, and the convenience of the inhabitants of the Town (19 VSA 931). The Town has a Road Acceptance Policy, Road Maintenance Policy and a Class IV Road that further address road maintenance standards.

In terms of local roads, erosion has been a major issue for Machia Road in Highgate. The bank of Missisquoi River is eroding along the roadway and \$2.7 million dollars is needed to stabilize the roadway and prevent further erosion. In 2021, the Town voters approved \$131,000 to support the project and VTrans has provided \$1,394,800 in grants. However, additional funding is needed. The Town hopes that neighboring communities who benefit from using the road will support the project. In the short-term the Town has instituted a weight limit to try to reduce the level of erosion. The Town has also applied to a FEMA planning grant to further address the issue.

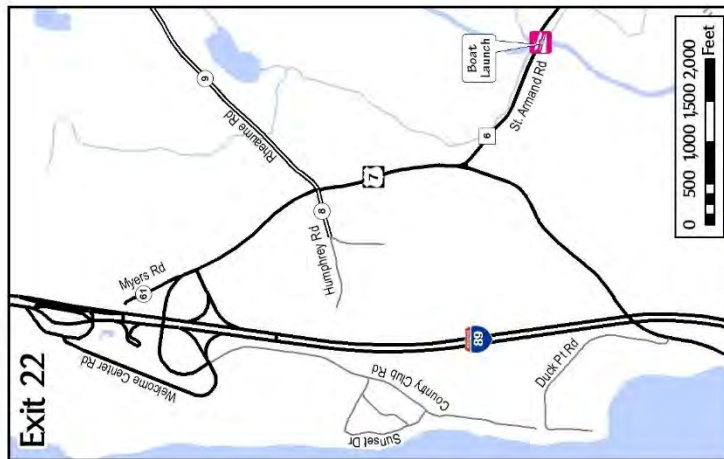
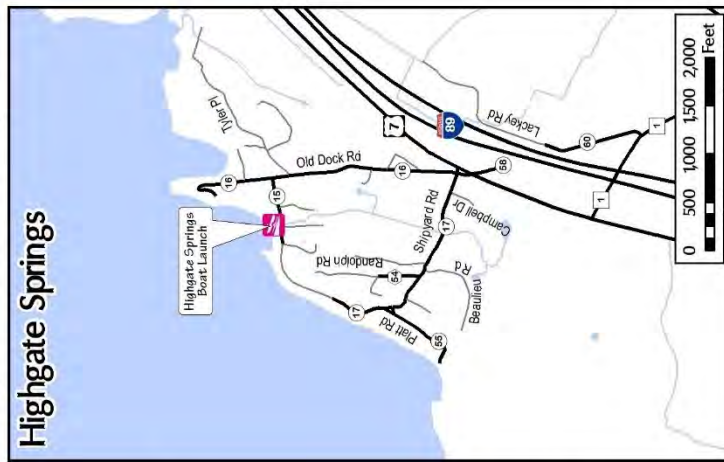
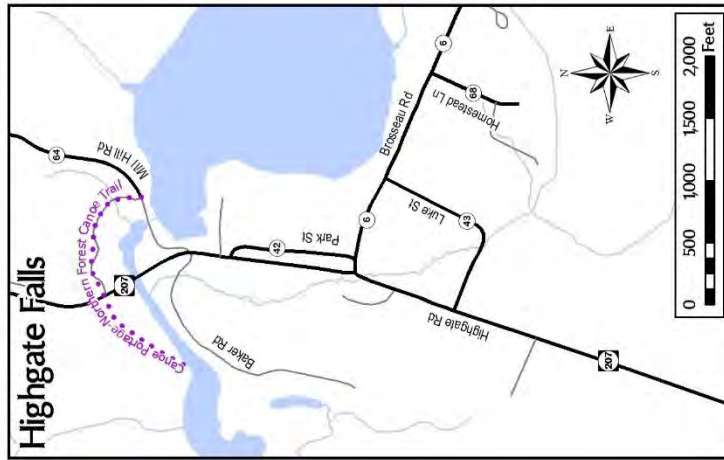
To ensure safe travel and parking in Highgate, the Town adopted a traffic ordinance in June of 2001, setting traffic speed to 35 in several areas of the Town and outlining parking regulations. The Town is in the process of updating this and the Road Inventory of public & private roads.

Map 6.1 Highgate Road System



# Map 6.2 Transportation Areas of Importance

## TOWN OF HIGHGATE Transportation Map 2 of 2



**LEGEND**

**Transportation Features**

- Interstate Highway
- Federal Highway
- State Highway
- Class 2 Town Highway
- Class 3 Town Highway
- Class 4 Town Highway

**Trail Features**

- Lamoille Valley Rail Trail
- Highgate Recreation Path
- Northern Forest Canoe Trail

**Surface Water Features**

- River, Stream or Brook
- Lake, River or Pond

**Other Features**

- Bus Stop
- Boat Launch
- Paved Surface
- Gravel Surface
- Soil or Graded Surface
- Unimproved/Primitive Surface
- Impassable/Untraveled
- Unknown Surface Type

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April, 2015

**Data Sources:** All map features derived from GIS digital coverages.  
North arrow on map refers to Grid North.

**Location:**  
ppgjo.projeccs.com/vt/franklin/highgate-townplan2015

## **AIR AND RAIL**

The Franklin County Airport is a transportation asset to the community, particularly in the area of industrial development. The Franklin County Airport in Highgate is the region's sole public airport facility. The State funded airport is owned by VTTrans and serves private aircraft. VTTrans publishes an [Airport Systems Policy Plan](#) that outlines a strategy for the State's 17 airports and essentially raises their priority for maintenance and improvements. This plan was last updated in 2021, this update included identifying as a priority the lengthening of the Franklin County Airport. The Franklin County Airport has the advantage of being relatively close to Burlington International Airport (BTV) and Interstate 89. The airport functions as a reliever airport, providing a role in handling overflow freight and private carrier traffic from BTV. The Airport Systems Policy Plan update lists Franklin County Airport as performing approximately 12,600 operations in 2017. This number has decreased slightly over time, which may be because of the need for improvements to the airport. According to a study published by VTTrans in April 2003, titled *The Economic Impact of Vermont's Public- Use Airports*, Franklin County Airport's 2002 annual revenue was \$1,608,812 and it provided 27 local jobs that year.

VTTrans is currently in the process of completing several major improvements to the Franklin County Airport. The runway will be rebuilt and widened, allowing for larger aircraft to land. The airport is also being lengthened and there is land set aside for new hangars. These improvements, in combination with the economic development efforts of the town, have the potential to catalyze industrial development in Highgate.

The Lamoille Valley rail corridor was abandoned for rail service after an assessment by VTTrans to consider the feasibility of improvements; the corridor itself was railbanked. The Lamoille Valley Rail Trail is expected to be completed in 2023.

Passenger rail services provided by Amtrak are available at the St. Albans and Essex, Vermont stations.

## **ROAD SURFACE MANAGEMENT SYSTEM (RSMS)**

In most municipalities, road and street surfaces represent the largest single cost of building and maintaining a transportation system. Forty to fifty percent of public funds spent on roadway systems are for the road surface (Source: RSMS Workshop Notebook and Reference April 1998 - UNH). It is extremely important that towns control their cost by preventing deterioration of roadway surfaces. Doing this requires making cost effective decisions regarding the maintenance, repair, rehabilitation, and construction of roadway networks within the Town.

A Road Surface Management System (RSMS) is used to determine the condition of roadway surfaces for both paved and unpaved roads. An inventory of paved and unpaved roads was taken along with a road condition survey by a consulting firm in the fall of 1999 for the Town of Highgate.

In 2004, the Town hired a consultant to incorporate the RSMS survey data into the Geographic Information System (GIS) program ArcView, made by ESRI. Using RSMS data in ArcView allows the Town to view the data spatially in a map rather than just in a table. The Town Highway and Administration staff is responsible for maintaining current inventories of all elements of the Town's highway infrastructure (roads, culverts, and bridges). This information provides the Town a greater percentage of cost-share from the State when receiving AOT grants. It is also used in the Town's capital planning efforts.



In 2015, the state passed Act 64, which required municipalities to inventory and reduce stormwater-related erosion under the Municipal Roads General Permit (MRGP). To determine which roads required improvements, the Town completed an initial road erosion inventory in 2016, and an updated one in 2021. As of 2022, Highgate has already met its goal of improving 15% of road segments in Town by 2023. For the 2023-2027 permit, the Town will need to improve 15 segments per year; .6% of Highgate's roads do not meet the MRGP standards, and 10.7% only partially meet standards. Town priorities are identified in the Highgate Municipal Roads General Permit Final Report.

## **PUBLIC TRANSPORTATION**

Green Mountain Transit (GMT) is responsible for public transit in Franklin and Grand Isle County. The Town of Highgate is serviced by one public transit route, the Green Mountain Transit commuter route from Alburgh to Georgia, which stops at the Highgate Park & Ride. Currently, afternoon service to Highgate is by request only. GMT also offers connections to St. Albans and then to Burlington, from there Burlington International Airport is the closest airport with national and international connections.

In addition to fixed route services, GMT provides GMT also coordinates the Ride Share program, Medicaid, and elderly transportation services. Highgate's park and ride facility is located in Highgate Center along Route 78, residents can find carpool options at <https://www.connectingcommuters.org/>. The Town would like more frequent public transit services and a regular afternoon stop in Highgate.

## **BICYCLE AND PEDESTRIAN FACILITIES FEASIBILITY STUDY**

Creating a walkable village in Highgate Center is a priority for the Town. The Village is the primary area of concentrated development within the Town. The Highgate Elementary School, general store, municipal offices, several businesses, and a concentration of residences are located in the Village. The Missisquoi Valley Union High School, the Franklin County Airport, and the Franklin County Field Day Site are located along VT 78 within three miles of the Village.

Planning for a walkable village began in 1999 when the Town of Highgate and the Northwest Regional Planning Commission hired the consultant firm DuBois and King Inc. to prepare a *Bicycle and Pedestrian Facilities Feasibility Study* for the village of Highgate Center. The Feasibility Study found that the community is in favor of improving its bicycle and pedestrian infrastructure and that providing sidewalks along Route 78 near the St. Armand and Gore Road intersections and to the Elementary School and Sports Arena are the number one priority improvements. The Lamkin Street Corridor study conducted in 2007 also recommended improving access to and from this area with sidewalks.

In 2013, as part of a Safe Routes to School effort, the Town received a grant from VTrans and local match to construct a sidewalk on Lamkin Street and Mill Hill Road from the St. Louis Rectory to VT 78, with an associated crosswalk to cross VT 78.

There is still a need for more pedestrian infrastructure in Highgate Center. Beyond the sidewalk mentioned above, there are no additional sidewalks in the Village and shoulders along VT 78 are generally less than one foot in width. An increase in the number and speed of motorized vehicles along VT 78 has decreased safety for people who wish to walk in the Village and cycle along VT 78. In addition, VT 78 is designated a 53-foot truck route by the State of Vermont.

As of July 1, 2011, Vermont passed Act 34 that adopts a Complete Streets initiative at the state and local level as a part of the transportation planning process. Complete Streets is an approach that considers all users, including pedestrians, bicyclists, and transit riders of all ages and abilities during planning for a specific project. The purpose of this initiative is to encourage pedestrian and bike traffic as well as reduce vehicle traffic in the village district and elsewhere in town.

As part of the redevelopment of the Village Core, the Town is planning to add a sidewalk connecting the lower and upper portions of Route 78, which will allow for access to the Highgate Arena, the Rail Trail and the school.

### **TRANSPORTATION GOALS**

1. To provide an efficient cost effective transportation network to meet the various needs of the residents of the Town.
2. Maintain a road system that guides the development goals of the Town.
3. Increase opportunities for residents and visitors to safely walk and bike within the community
4. Maintain Town Garage and equipment inventories to keep pace with Town growth.
5. Prevent erosion on Machia Road. This issue should be addressed at a regional level.

### **TRANSPORTATION OBJECTIVES**

1. Further inventory highway infrastructure and equipment to determine necessary future expenditures and upgrades.
2. Maintain a capital improvement plan to provide for future highway equipment.
3. Develop a new system to manage maintenance and improvement of town highway infrastructure.
4. Maintain the highest quality road surface for facilities serving industrial land uses.
5. Roads should be maintained according to a systematic review of their condition and levels of use, i.e. sound quantifiable policies.
6. Development roads shall not be taken over by the Town.
7. Maintain a road conditions inventory and use it in capital planning decisions.
8. Continue to update the traffic ordinance to ensure Town roads are adequately posted for enforcement and safe travel.
9. Continue to work with VTrans and the Northwest Regional Planning Commission to improve bicycle and pedestrian facilities in Town and apply complete streets principles to future roadway projects.
10. Continue to encourage the construction of sidewalks in the development regulations and requiring development considers and provides for pedestrian connections in order to create a connected network.
11. Maintain a Safe Routes to School program that will aid in addressing barriers for children walking and biking to school.
12. Consider paving high traffic gravel roads.

### **TRANSPORTATION ACTIONS**

1. Study ways to prevent erosion on Machia Road.
2. Partner with Northwest Regional Planning Commission and VTrans in developing park and ride facility improvements such as lighting.
3. Study the benefits and costs of local control of a portion of VT Route 78.

# CHAPTER 7

## Community Facilities and Services

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### INTRODUCTION

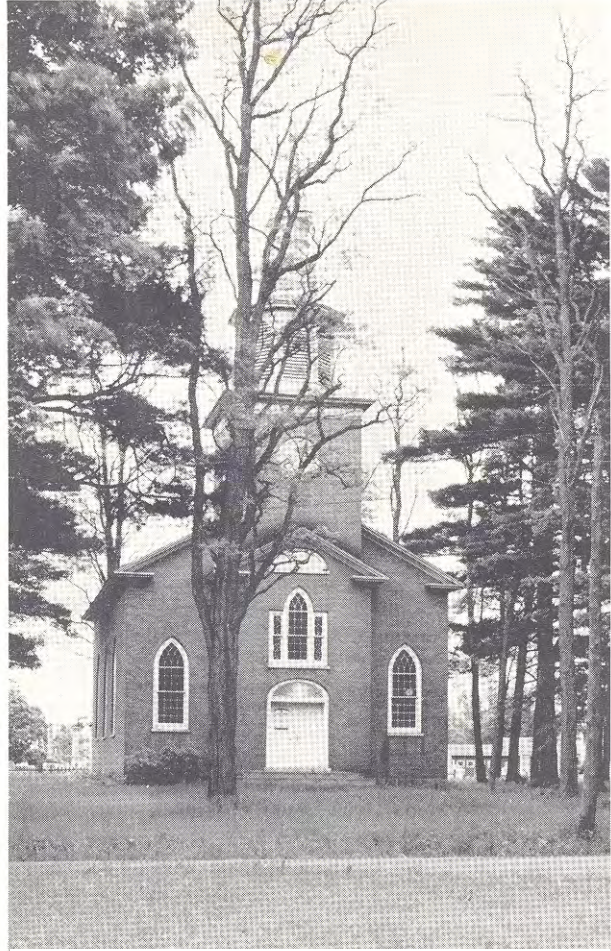
Community facilities include those institutions that provide a civic and social system function. Facilities providing education, recreation, and safety are of particular interest to Town government, and since most of these facilities and institutions are developed by and paid for by the entire community, they become by their very nature part of public policy.

Every facility or institution costs money, usually paid through local taxes. If these features are desirable then it is money well spent. However, working at cross-purposes or duplication of efforts wastes a very limited tax resource. As the demand for public expenditure increases, it is incumbent upon the developers of public policy to achieve the necessary coordination. Facilities and institutions can be used to shape and implement all phases of community policy. The location of roads, Town offices, and services for instance, governs to a major extent the development of land. Similarly, school placement and expansion can govern the pace of residential development.

### EDUCATIONAL FACILITIES

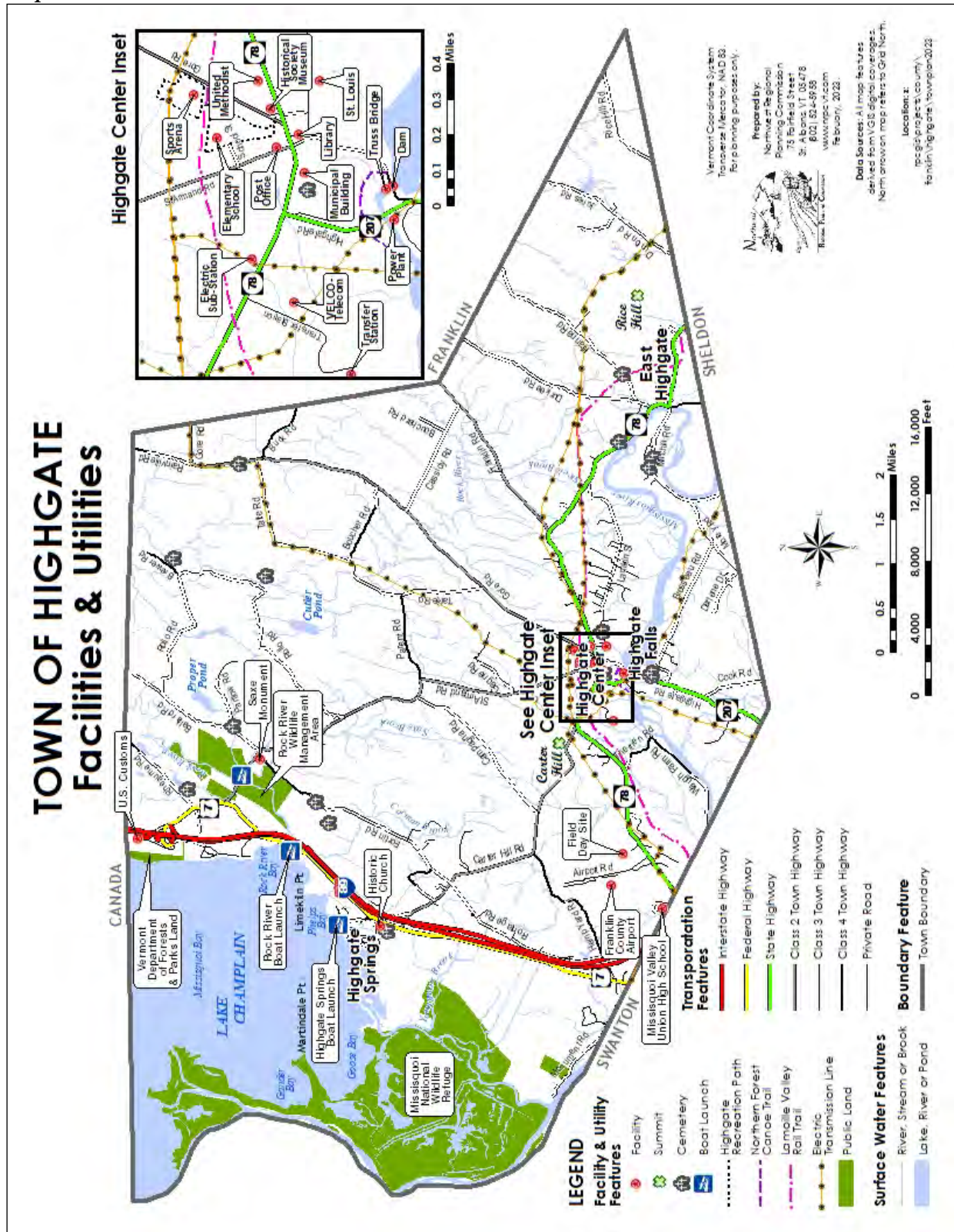
It is with great pride that the teachers of Highgate Elementary School serve the children, families, and taxpayers of Highgate. They are dedicated to giving quality educational services and actively pursue professional development opportunities. The School's goal is to provide an exceptional education to all children regardless of their abilities and/or disabilities. The School strives to make all children lifetime learners by providing them with the skills to be productive members of the workforce and citizens who will be leaders in our Town, State, and Nation.

The Highgate Elementary School is governed by an elected school board of three dedicated public servants. They are responsible for developing all school policies, which set the pathway for school operation. The second primary responsibility of the School Board Members is to establish a budget and monitor expenditure of all funds. Each bill is reviewed and authorized before payment. This process guarantees that the taxpayers' hard-earned dollars are expended in an appropriate manner.



**St. Johns Episcopal Church, Highgate Falls, VT**  
Used with permission from the Highgate  
Historical Society

Map 7.1 Facilities and Utilities



The day-to-day operation of the school is delegated to the principal. The principal is responsible for executing all board policies and operating the facility in the best interest of children, their families, and taxpayers. The principal is the educational leader of the school and is responsible for all aspects of operation.

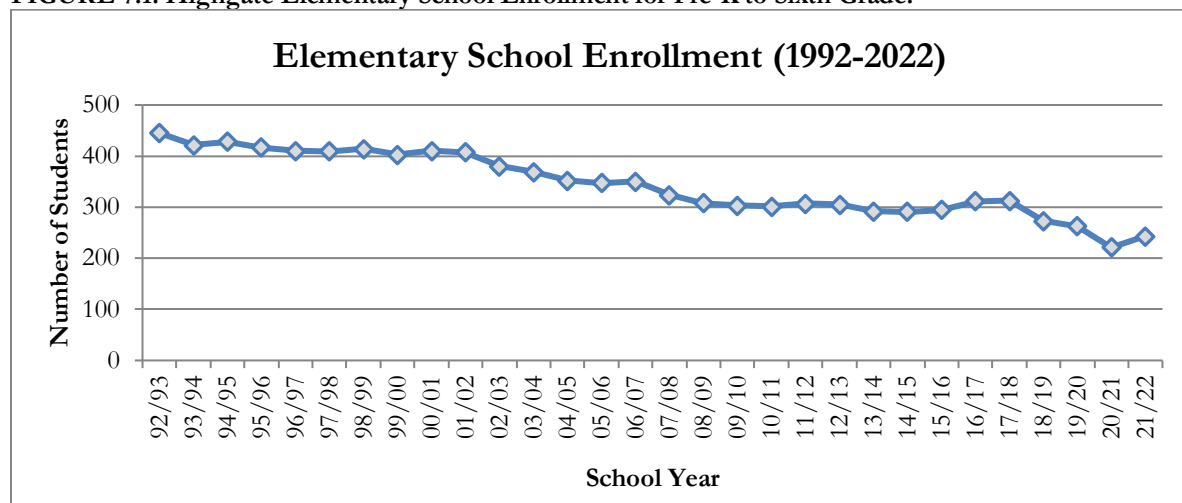
The Highgate Elementary School is a part of Missisquoi Valley School District (MVSD), which consists of elementary schools in Highgate, Swanton, Franklin, and Sheldon. Highgate’s post-elementary students attend Missisquoi Valley Union High School.

The MVSD is led by a Superintendent of Schools who is appointed by the school board members of all member towns. The Superintendent’s Office provides district leadership in regular education, special education, business management, and curriculum development. Highgate has always maintained a close working relationship with the Superintendent of Schools.

Highgate Elementary School is located adjacent to the municipal arena. In 1999, the School District purchased an additional 20 acres, which should serve space needs for several decades. The existing school property consists of two buildings, play fields, parking lots, septic fields, and open spaces. It is nestled in a residential section of Town with limited traffic. In summer of 2004, volunteer efforts led to the construction of a one-mile walk/run/bike path around the perimeter of the school property and the ice arena.

The original building (the White Building) was constructed in 1941 and served children in grades 1-12, who previously attended one-room schoolhouses. This facility was renovated in 1999 and presently houses grades five and six, a music classroom, and special services offices. With no existing bathroom facilities in these classrooms, the school principal encourages the construction of three new classrooms with bathrooms. A second building (the Brick Building) was constructed in 1961 and a substantial addition was added in 1990. This facility presently houses children in preschool (Essential Early Education, EEE, and Head Start) to grade four. Additionally, room is available for physical education, art, music, counseling, special education, and administration. Other possible improvements might include office areas for grades K-4, a new gym that would benefit the entire community, and a band room. There also has been discussion of a new access road that would eliminate a current traffic problem at the school.

**FIGURE 7.1. Highgate Elementary School Enrollment for Pre-K to Sixth Grade.**



Elementary school age children have been decreasing steadily over the last two decades (Figure 7.1), and therefore the construction of the additional school facilities may be able to be delayed until there is greater need. As of the 2021/2022 school year, there were 243 students in grades K through grade 6, as well as 26 pre-K students. This appears to be more than sufficient to provide for future school age children in Highgate; however, even with the decrease in school age children, there is a high demand for special programs and services that require more space. This will influence how soon the construction of additional school facilities will take place.

Nearly all the students attending Highgate Elementary School are transported on school buses. The Town has constructed a sidewalk along Lamkin Street that will connect the Town Office and library with the overall aim to create a safe connection to the school.

At Highgate Elementary School, mathematics is stressed through computation and number knowledge. The School is very focused on improving its curriculum in the area of problem solving. The School's goal is to develop quality knowledge of numbers and the ability to use this knowledge to solve everyday mathematical problems. The School also focuses on students being able to show their mathematical thinking in multiple ways while maintaining strong number sense.

In addition to the other basic subject areas, Highgate Elementary School is deeply committed to preparing students in the technologies of the 21<sup>st</sup> century. With the assistance of bonds, grants and fund raising, the School has been able to make computers a basic part of the curriculum over the course of the past ten years. Students in Kindergarten through sixth grade are 1:1, meaning each student has a Chromebook assigned to them. For preK, students have access to iPads, also being one to one. As technology is integrating into our world, so too has technology been a big part of the classroom. Each classroom is also equipped with a touchscreen interactive board, which comes into daily instruction in all classrooms. It is a joy to see children researching projects and finding complex information with this technology.



**First High School in Highgate, opened in 1907**  
Used with permission from the Highgate Historical Society

The Highgate Elementary School offers comprehensive instruction in physical education, art, health, and both vocal and instrumental music. Any child wishing to learn can gain a quality education in Highgate.

The Elementary School offers a variety of programs designed to enhance and enrich a child's school life. In the arena of co-curricular activities, both girls and boys have the opportunity to learn skills and excel in basketball, soccer, and baseball. The School also coordinates with the Highgate Recreation Department to provide different extracurricular activities after school as well as the weekends. The School and the Highgate Recreation Department often collaborate to offer more extracurricular activities for students and families of Highgate.

During the summer months, the Elementary School runs a summer school program which offers a range of services from academic assistance to enrichment activities for all students. The winter enrichment program is less academically oriented and focuses on lifetime activities such as cooking, French, cribbage, fly-tying, and many others. This program is a big hit with both students and their parents.

The Highgate Elementary School is particularly proud of their extensive program for accommodating students' different physical and educational needs. Regardless of a child's disability, they work diligently to provide the best possible education opportunity.

One of the joys of working at the Highgate Elementary School is the trusting relationship between the school and the community. There is a wonderful working relationship with the arena, which is located adjacent to the school. Children make use of these facilities for ice-skating, as well as baseball and soccer.

Parents are constantly involved with the school. The School holds senior citizen dinners and classroom teas that bring many generations together and allow us all to learn from one another. An excellent example of community involvement is the school playground, which was entirely built by community members.

Missisquoi Valley Union High school (MVU), where children in grades 7 – 12 attend, is located on Route 78 in Highgate. Approximately 766 students attend MVU from the towns of Highgate, Swanton, and Franklin.

MVU is staffed by an outstanding group of teachers who offer state of the art instruction in all core curriculum areas. MVU is particularly proud of its reading program, which stresses fluency, comprehension, and vocabulary.

Continuing education for adults is available in St. Albans, Burlington, or Plattsburg, New York. Higher education opportunities also exist in St. Albans and Burlington, the Community College of Vermont



**Missisquoi Valley Union High School** Photo Credit: NRPC

offers courses and degree programs. Numerous colleges in the Burlington area include the University of Vermont, Burlington College, St. Michael's College, and Champlain College.

### ***EDUCATION GOALS***

1. To provide educational opportunities commensurate with the needs of the population.
2. To broaden access to educational and vocational training opportunities sufficient to ensure the full realization of the abilities of current and future residents.
3. To ensure that growth keeps pace with the ability to provide educational services.

### ***EDUCATION OBJECTIVES***

1. Work to develop educational facilities and programs that can be shared or used jointly by union towns.
2. Use the Town's educational resources more effectively by requesting that State mandated school programs be State funded.
3. Study whether the Town should implement impact fees.
4. Coordinate new partnerships with various groups and organizations including, but not limited to, Highgate Historical Society, the Franklin County Chamber of Commerce, Friends of Missisquoi National Wildlife Refuge, the Missisquoi Bay Working Group, local churches, the youth service group Highgate Cares, and the Maquam Bay of Missisquoi to provide community activities and educational opportunities for young and old.

### **POLICE PROTECTION**

The Town of Highgate currently utilizes the services of the Vermont State Police, the Franklin County Sheriff Department and the Saint Albans City Police Department for public safety and law enforcement. Highgate has contracted with the Saint Albans City Police Department for 26 hours/week of coverage. Crime statistics for the region can be obtained from the Department of Public Safety – Criminal Justice Services. A list of all offenses and their definitions can be found in the Vermont Crime Report available from the Vermont Department of Public Safety. Combined, police services in Highgate reported 938 incidents and 63 arrests in 2021.

The MVU Middle/High School does have a full-time School Resource Officer on staff. The U.S. Border patrol also has a significant presence in town contributing to law enforcement efforts.

### ***POLICE PROTECTION GOAL***

1. Continue to provide police protection services that ensure residents of the town a safe and comfortable standard of living.

### ***POLICE PROTECTION ACTION***

1. Identify methods to fund and enhance the police protection in our community.



## **FIRE PROTECTION**

Firefighting and rescue services are two services that are absolutely essential for communities to function. The Highgate Volunteer Fire Department provides fire protection for the Town. The department has twenty-three firefighters and three cadets. The department is funded by Town appropriations, donations, and fundraisers.



**Highgate Fire Department**

**Photo Credit: NRPC**

The fire station is a town-owned building located on Vermont Route 78 in Highgate Center along with the Municipal Offices. The 60 x 79-foot building is divided into four bays. The building has room for an office/communications center, a training room, a maintenance area, and a storage facility. The fire station is adequate for the present inventory of equipment but it does lack an adequate meeting space. However, as population growth continues, pressure may be placed on the department to expand.

The current major pieces of firefighting equipment are:

- ◆ 2015 F350 1 Ton Truck
- ◆ 1998 Freightliner Engine : #2 2500 gallons
- ◆ 1988 International Engine: #1, 1000 gallon tank, 1000 GPM
- ◆ 2006 International Pumper Tanker: #2

Useful lives of fire vehicles are generally in the range of 20 to 25 years. The Department currently has funds available for the purchase of a new pumper and will then retire an older piece of equipment.

The Department responded to over 100 calls in 2021, the most common call was for vehicle accidents and there were 5 structure fires.

### ***FIRE PROTECTION GOAL***

1. Continue to provide first-rate volunteer fire protection.

### ***FIRE PROTECTION OBJECTIVES***

1. Identify equipment that needs to be replaced and develop methods of financing the replacement.
2. Continue to support the needs and acknowledge the efforts of the local volunteer firefighters.
3. Continue to provide the necessary training for all members of the fire department.

### ***FIRE PROTECTION ACTIONS***

4. Start a recruitment program that can further enhance the fire department.
5. Adopt new bylaws to enhance fire department objectives training and implementation of Standard Operating Guidelines (SOGs).

## **AMBULANCE AND RESCUE SERVICES**

Ambulance and rescue services are provided to the towns of Highgate and Swanton by Missisquoi Valley Rescue, Inc. (MVR). The service is supported through private donations, contracted contributions from the Town, and payment from people for services rendered to them. The rescue squad has a facility on 21 First Street in Swanton. This facility was constructed in 1976 and has space for storage and classroom training.

MVR currently has 25 paid employees and volunteers. The total number of employees and volunteers includes 6 paramedics, 6 EMTs and 11 Advanced EMTs, including those in training.

In 2012, the rescue squad responded to 422 calls from Highgate. The quality and ability of MVR to provide service at this time is excellent. MVR purchased a new ambulance in 2010. However, the ability of MVR to continue providing quality services is hindered by the size of the current facility.

The nearest hospitals are the Northwest Medical Center in St. Albans, and UVM Medical Center in Burlington.

### ***AMBULANCE AND RESCUE SERVICES GOAL***

1. Maintain the excellent service presently provided by the Missisquoi Valley Rescue, Inc.

### ***AMBULANCE AND RESCUE SERVICES ACTIONS***

1. Obtain more volunteers and equipment as required to meet the needs of the community.
2. Seek additional sources of funding to increase paid rescue staff.

## **WATER SUPPLY, WASTEWATER DISPOSAL AND STORMWATER**

Water is primarily supplied by individual wells and wastewater disposal is handled on an individual, on-site basis. There is no municipal water supply or wastewater treatment system in the Town. There are state regulations that must be met for proper waste disposal. Compliance with these requirements is crucial to the health and well-being of the community. Sewage disposal systems that do not function properly pollute groundwater, contaminate drinking water sources, provide breeding grounds for disease, and cause noxious odors.

Water and sewer infrastructure can serve to direct community growth and settlement patterns. A delivery system, if feasible, should provide for current and future growth objectives. Currently the only buildings serviced by water and sewer lines are municipal hall and library. Highgate has undertaken two recent planning efforts related to water and sewer service.

### ***Highgate Center***

The Town received a Municipal Planning Grant and DEC Wastewater Planning Advance to examine wastewater and water supply solutions for the Highgate Village Core area. The goal of this effort was to identify a variety of alternative systems to provide water and wastewater services for Highgate Center with the goal of allowing growth in the village core. The top identified solution was an offsite sewer and water system because the well and septic isolation areas in the Village have too much overlap for an on-site system. The Town has secured \$1.285 million dollars for a community wastewater system that will serve the new library and up to 15 existing residences. The Town continues to look

for additional funding to implement the plan and allow for appropriately scaled development in Highgate Center Village Core area.

*Franklin County Airport/ Highgate Commercial/ Industrial District*

State level improvements to the Franklin County Airport and private development plans for a 7 lot commercial park have led the Town to plan for an expansion of water/wastewater services in the airport area. Access to water/wastewater services will ensure that the land is used to its highest and best purpose, increasing the value of the Town’s Grand List and providing employment opportunities for Highgate residents.

The Town completed an initial water/wastewater feasibility planning effort funded by a Vermont Community Development Program grant in 2019. The study found that it would be highly advantageous to develop both water and sewer to the Commercial Industrial District. Water and sewer infrastructure could be extended from Swanton’s existing utility by Missisquoi Valley Union High School. This infrastructure is estimated to cost of \$1.81 million for sewer and \$1.69 million for water. In 2021, Town voter approved a \$500,000 bond and to move forward with a \$2.2 million dollar funding request from EDA. The Town has already secured funding from VTrans and NBRC. If constructed, an economic analysis has shown that the project could create 1,200 jobs in Highgate over the next 20 years.

**Map 7.2 Proposed Water and Sewer Expansion**



The protection of watersheds is important in every community. Drinkable water needs to be made available to all persons in the Town. Steps should be taken to ensure that the water will remain safe for drinking.

Highgate's stormwater drainage system consists of a network of culverts and ditches along the town highway system. Stormwater refers to the rain and snowmelt that runs off impervious surfaces like roofs, driveways and paved streets, rather than infiltrating into the ground and natural water cycle. As it flows into streams and lakes, stormwater runoff often picks up pollutants such as oils, fertilizers and sediment. Excess stormwater also contributes to erosion and increases stream volumes during peak storm events. Increasing areas of impervious surfaces has the potential to create more stormwater runoff since the water cannot be absorbed into the ground.

As development occurs in Highgate, the current infrastructures' ability to handle the volume of stormwater should be monitored. Larger municipalities may attempt to mitigate the negative impact of excess stormwater runoff through the creation of storm sewers, and even stormwater treatment plants. If stormwater runoff is not managed properly it can impair water quality in local watersheds by carrying more sediment and pollutants into streams, rivers and lakes.

The Planning Commission encourages new residential and commercial development to implement stormwater mitigation strategies, otherwise known as Low Impact Development (LID) and Green Infrastructure. Common LID techniques that mitigate the adverse impacts of stormwater runoff include on-site rain gardens and grass swales; the utilization of cisterns and rain barrels; and the installation of pervious pavement and sidewalks. Information on these practices can be found by contacting the Vermont Agency of Natural Resources stormwater division.

#### ***WATER SUPPLY, WASTEWATER DISPOSAL AND STORMWATER GOALS***

1. Support expansion of municipal water and wastewater systems in Highgate Center and the Industrial/Commercial District.
2. Reduce the environmental impact from stormwater runoff and wastewater disposal systems, especially those systems in densely settled and environmentally sensitive areas.

#### ***WATER SUPPLY, WASTEWATER DISPOSAL AND STORMWATER OBJECTIVES***

1. Include gauging cost of expanded water and sewer facilities to proposed development in the capital budget and plan; consider initiating an "impact fee" schedule to assess developers the cost to the Town of servicing a particular development.
2. Promote clustered developments that share wastewater disposal systems to maintain the Town's agricultural image of undeveloped open land,
3. Promote the use of alternative treatment systems for both primary and replacement service in order to allow for the safe disposal of wastewater on existing lots with substandard and inadequate soil conditions.
4. Any public investment in wastewater disposal should be planned to minimize development pressure on agricultural and forestry lands.
5. Support the implementation of low impact development and green infrastructure to manage stormwater on public and private properties.

#### ***WATER SUPPLY, WASTEWATER DISPOSAL AND STORMWATER ACTIONS***

1. Develop a municipal water and/or wastewater system in the Highgate Center Village Core.
2. Extend existing water and wastewater infrastructure to the Industrial/Commercial District.

## **SOLID WASTE DISPOSAL**

State statute requires all municipalities to adopt a Solid Waste Implementation Plan (SWIP) that identifies a strategy for recycling and disposal services. The Town of Highgate is a member of the Northwest Vermont Solid Waste Management District (NVSWMMD) which has an approved SWIP and serves the majority of the Northwest region with the exception of Fairfax.

In 1987, the Town opened a sanitary landfill on Town owned land. The landfill remained open until July of 1992. At this time, the State of Vermont directed the closing of all unlined landfills, which applied to Highgate, and many other towns. The landfill has been monitored for 20 years and now is classified as “custodial care”. During this same time, the Highgate Transfer Station and Recycling Center (HTS) opened. The Town signed a ten-year contractual agreement with Waste USA (WUSA) in June of the same year, which privatized solid waste management. Waste USA left the facility and contract at the end of 1994 and Casella began operating the facility in early 1995 and continues to operate the facility under contract.

The Town receives a host fee of \$2.50 per ton in lieu of any charges for the operation of the facilities. Voters approve all expenditures through the Town Budget at the Town Meeting. At the HTS, the Town owns the building and land while Casella operates all daily business. The transportation of solid waste to the HTS is done by residents contracting a private hauler or by bringing the solid waste to the site in private vehicles. Casella then transports the product from the station to the lined landfill in Coventry in their trucks or those under contract. Recycling is offered free of charge at the HTS for the duration of the Casella contract. The HTS is also used by other towns under separate contract with Casella.

It is the intent of the Town of Highgate and the NVSWMD to improve solid waste management programs. This commitment will be aided by Act 148, the Universal Recycling law, that was passed in 2012 that aims to further reduce the amount of waste going to landfills by banning recyclables, food scraps and yard or leaf debris to be landfilled. The 2020 Plan NVSWMD addresses these new requirements.

Illegal dumping of garbage continues to be an issue on rural roads in Highgate. Illegal dumping causes environmental, health and safety issues. Highgate supports efforts to reduce illegal dumping.

### ***SOLID WASTE DISPOSAL GOAL***

1. To provide the best solid waste management facilities and programs that are cost effective, efficient, and environmentally correct for all the citizens and businesses of Highgate in accordance with applicable State Statutes.

### **SOLID WASTE DISPOSAL OBJECTIVES**

1. Prohibit and prevent the improper storage and disposal of hazardous wastes.
2. Increase recycling, composting and solid waste diversion by educating public.

## **TOWN OFFICES**

The Municipal Office is a two story 44.4 feet x 79 feet building which contains office space for the Town Administrator, Town Clerk, Listers, Town Zoning Administrator and the Town Treasurer. Also located inside the building are a vault, a research area, a community center room, two bathrooms, and space for storage. Built in 1978, the building is ADA (Americans with Disabilities Act) compliant and also houses the Highgate Volunteer Fire Department. The building is used for public meetings & group gatherings.



**Highgate Town Office**

The Municipal Community Center Room is a meeting room in the rear of the Municipal Office Building. The room is used for all public meetings except the school board meetings and the Town Meeting. The room can accommodate approximately fifty chairs and four long tables. It is well lit and is carpeted. The room is also used by community groups and may be reserved by contacting the Town Clerk's Office.

There have been several improvements made to the building over the past 13 years. Energy efficient windows were installed in place of all of the original windows in the Town Office along with efficient lighting upgrades and a new HVAC system. New propane heaters were installed in five office rooms. An ADA compliant door was installed in the rear access to the Community Room. And the Town Clerk's Lobby and Listers' Room were remodeled. Most recently, the offices were reconfigured, the roof was replaced, the floors were replaced, and the upper floor was insulated. However, the Town decided against adding an elevator and meeting space to the second floor, as the space was not needed.

### ***TOWN OFFICES GOAL***

1. Maintain Town Office and meeting space to meet the ever-expanding needs of the community.

## **PUBLIC LIBRARY & COMMUNITY CENTER**

The Highgate Public Library & Community Center, originally built in 1941, is located at 17 Mill Hill in the center of Highgate. Renovations in 1997 included a new roof, windows, and ADA compliant ramp. With a growing Town population and increased use of the library, there is a need for a new library space.

In addition to the books and computers, the library also runs many programs within the building, including weekly story time, adult craft nights, puppet shows and more. Programming can interfere with regular patron visits because of overcrowding in the small space.

The Highgate Library & Community Center meets the standards set forth by the State of Vermont for public



**Highgate Public Library & Community Center**

libraries, which allow the library to take advantage of several services offered by the Department of Libraries as well as making them eligible to apply for more grants. The status of compliance to these standards is reviewed each year. The Highgate Library & Community Center has consistently met the standards since the late 1990's.

The library is staffed 34 hours a week by a certified, salaried librarian and an assistant librarian. Support staff for programming is also included in the budget and is necessary for the continued success of the programs.

The Highgate Public Library & Community Center continues to be an activity center for the town. Despite challenges such as staff turnover and the need for the library to close during portions of the COVID-19 pandemic, usage of the library remains high. The Library has put on a number of in-person, virtual, hybrid and outdoor events, and ran a book drop-off service in 2020.

Programs are well attended especially summer programs which, as mentioned earlier, exceed the comfortable capacity of the library building. Due to limited shelf space, books that are not circulated within the past 5 years are often removed. With greater shelf space the Library's collection could contain more volumes of interest to readers. Additionally, there is insufficient space for parking. The library is an important asset to the town, its residents and even neighboring communities.

A Village Core planning effort in 2019 identified several different possible configurations of a new library and private business space as part of the re-development of the town-owned Stinehour Hotel parcel at the intersection of Route 78 and St. Armand Street. In 2022, the Town received a VCDP Planning Grant to further develop a schematic design for a new library space and determine a water source for the parcel. Town residents approved a grant to support the development of a capital campaign for the library improvements. The Town's ultimate goal is to construct a new library building that has sufficient space to serve Highgate residents.

***PUBLIC LIBRARY GOALS***

1. Maintain library and operations as efficiently and economically as possible.
2. Provide library services that meet the needs of the community.
3. Improve or relocate the Library to better accommodate the demand for programming and library services.

***PUBLIC LIBRARY OBJECTIVES***

1. Continue to pursue various sources for funding for library improvements.
2. Maintain current computers and expand the technology available at the library.

***PUBLIC LIBRARY ACTIONS***

Year	Total Library Visits	# Programs Offered
2021	2635	170
2020**	1450	120
2019	3552	180
2018*	3697	-
2017	9568	196
2016	9572	193
2015	8885	198
2014	8574	184
2013	7373	198
2012	7380	116
2011	7777	137
*Library operated part-time due to staff turnover		
**Library closed most of year due to COVID-19		
Data Source: Highgate Public Library		

3. Continue planning efforts to assess the feasibility of developing a new library location at the Stinehour Hotel parcel.

## RECREATION

Recreational facilities are an important aspect of community life. Facilities range from a boat launch and fishing access, to hiking trails and bike paths, to a baseball diamond. As the Town's population increases, it becomes necessary to provide more sites for recreation and to protect future recreation sites.

The Highgate Recreation Department provides a variety of cosponsored activities throughout the year. During the summer, you will find hundreds of youth participating in the Little League Baseball program, which is led by a host of community volunteers. Practices and games are held on four athletic fields, which convert to practice soccer fields, and one game field in the fall. Youth programs such as summer camp are a large part of the recreation schedule but there are many other activities for people of all ages. Many events such as company parties, bingo, raffle dinners, casino nights, wedding receptions, take place throughout the Town. Recent expansions to programming have included partnering with the library for paddleboard rentals and installing a kiosk and bike repair station just off the Lamoille Valley Rail Trail.

### *Sports Arena*

The Highgate Sports Arena is a multi-use facility designed primarily as an indoor hockey rink, but it converts to a community recreation center during the warmer months. The Arena boasts a fully operational snack bar, six team locker rooms, a pro-shop, and maintenance areas. The parking lot has been paved and the arena complies with ADA requirements.



**Highgate Sports Arena**

The Town is in the process of completing a multi-phase list of construction projects for the Arena area. In the early 2000s, the arena underwent energy conservation repairs, as well as a new restroom and locker rooms. In 2010, a Tri-Town Recreation Committee was formed to explore the feasibility of developing a year-round, multi-generational facility; this effort was comprised of three municipalities (Franklin, Town of Swanton, and Highgate). The outcome of this effort was the commitment of the Town of Highgate to upgrade the existing facility. In 2014, the Town approved a bond vote to replace the ice system. In addition to the new ice system, a number of smaller renovations including upgrading the well, new interior walls, new doors and cleaning and painting work was completed.

Maintaining and improving the arena remains an important priority for the Town. Currently, the Town is examining options for addressing remaining building deficiencies, which include needing a new roof, HVAC system and lobby alcove.

The Arena is an asset to the town, providing many opportunities for recreation and a place for area hockey teams to practice and host games. The Missisquoi Valley Union High School (MVU) Thunderbirds call the Sports Arena their “home ice”. Also on the ice during regular season is the



Missisquoi Amateur Hockey Association. Both of these groups host games at the arena. Teams come from all over Vermont, New York and Canada to play. The Arena also sponsors ice skating lessons and a full-scale public skating program. Part of the schedule contains hours dedicated to other organizations that rent the arena for non-scholastic hockey games. The Men's Hockey League and Broomball League for example, consume many available hours of ice at the Arena. The Highgate Elementary School conducts a six-week ice skating program at the Arena as part of the physical education program.

### ***Other Facilities***

Highgate also has other recreational facilities and sites such as the Highgate Springs Boat Launch Rock River Boat Launch, the Riverwalk Trail, the Missisquoi National Wildlife Refuge, Highgate Cliffs Natural Area, Northern Forest Canoe Trail, and the Tyler Place. The Town owns and maintains the single launch boat facility on Shipyard Bay Road next to the Tyler Place. The launch serves small craft during the summer months and it has an area to get shanties out onto the ice during the ice-fishing season. Capitalizing on the lake's recreational potential by increasing public access areas and developing recreational activities that relate to tourism will benefit everyone both economically and recreationally.

In summer of 2004, volunteer efforts led to the construction of a one-mile walk/run/bike path around the perimeter of the elementary school property and the ice arena. In addition, a canoe access area has been prepared by the Missisquoi River Basin Association and the State of Vermont Fish and Wildlife Department has built a small boat launch off the Waugh Farm Road.

The Tyler Place is a private family resort on Shipyard Bay of Lake Champlain. The family geared resort has drawn families from across the country to Highgate for summer vacations for over 70 years and is a vital part of Highgate's small tourist economy.

### ***Natural Areas for Recreation***

The Missisquoi National Wildlife Refuge was established in 1943. It is located on the eastern shore of Lake Champlain near the Canadian border in Franklin County. The 5,839-acre refuge includes most of the Missisquoi River delta where it flows into Missisquoi Bay. The Refuge consists of quiet waters and wetlands that attract large flocks of migratory birds. Protecting and managing wildlife habitat is the primary goal of the Wildlife Refuge; therefore, care must be taken when visiting the area. Many types of recreational and educational activities exist at the refuge. Boating, fishing, wildlife observation, hiking, photography, and hunting, are just some of the activities one can enjoy at the refuge.

Highgate Cliffs Natural Area is located in Highgate State Park above Missisquoi Bay on Lake Champlain. It is approximately thirty-seven acres in size with elevations ranging between 100 and 252 feet. This natural area includes three significant natural communities and supports several uncommon or rare plant species. There is also a hiking trail located in the State Park. Visitors to the trail can observe panoramic views of northern Lake Champlain. The three natural communities include the following: a warm calcareous cliff community, a calcareous talus (rock fall), and a lakeside cobble shore. The Town is currently working with the state to develop long range management plan for the area.

The Lamoille Valley Rail Trail will be completed in 2023. This 96-mile corridor runs from St. Johnsbury to Swanton, and crosses the Missisquoi Valley Rail Trail in Sheldon. As of 2022, a section

of trail from Swanton to Sheldon is complete and open to trail users. Highgate should work with VAST and the Friends of the LVRT as the trail is finished to ensure the community maximizes the benefits brought by the trail.

The Northern Forest Canoe Trail (NFCT) also provides a unique recreational opportunity in the region. The Trail connects lakes, rivers and streams from Canada into New England and New York State. The NFCT brings a variety of paddlers into the region. Supporting the recreation and tourism industries along the route is part of the mission of the NFCT.

Other recreational opportunities in the town include aviation at the Franklin County Airport, horseback riding, bicycling and hiking. In the winter snowshoeing, cross-country skiing and ice fishing can all also be enjoyed in Highgate.

### ***RECREATION GOALS***

1. Maintain existing and encourage additional healthful recreational opportunities for the residents and visitors of Highgate.
2. Increase community support and participation in recreational programs.
3. Acquire and develop more outdoor active and passive recreational space.

### ***RECREATION OBJECTIVES***

1. Protect public access to beaches and other shoreline recreation.
2. Identify and promote the development of recreational and tourist activities, services and facilities placing emphasis on the use of natural and existing man-made resources and on development which does not contribute to pollution of the lake.
3. Promote energy conservation and efficiency in recreational facilities.

### ***RECREATION ACTIONS***

1. Establish a strategic plan for the Ice Arena with support of surrounding towns to keep the facility open and in good condition.
2. Add signs and maintain trails in natural areas, particularly Highgate Cliffs to offer more recreational opportunities for hiking.
3. Create a town map of walking paths and hiking trails.
4. Develop a marketing and informational brochure on Highgate's recreational opportunities.
5. Work with the school on co-op programs for the Cassidy Field, twenty acres by the school.
6. Develop more outdoor active and passive recreational space.

# CHAPTER 8

## All Hazards Resiliency

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Hazard Mitigation is any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. Communities can engage in opportunities to identify mitigation strategies and measures during all phases of Emergency Management including Mitigation, Preparedness, Response and Recovery. Hazards may not be eliminated, but it is possible to determine what the hazards are, where the hazards are most severe and identify local actions that can be taken to reduce the severity of the hazard.

Hazard Mitigation strategies and measures **alter** the hazard by eliminating or reducing the frequency of occurrence, **avert** the hazard by redirecting the impact by means of a structure or land treatment, **adapt** to the hazard by modifying structures or standards, or **avoid** the hazard by stopping or limiting development.

The Town of Highgate is actively engaged in hazard mitigation planning. The community is represented on the Local Emergency Planning Committee District 4 serving Franklin County and is a member of the Franklin County International Firefighters Mutual Aid Association. Additionally, the Town of Highgate has adopted a Local Hazard Mitigation Plan (LHMP). The LHMP evaluates potential risks to the community and the strategies that address those risks. The LHMP evaluated just those natural and human made hazards that are likely to affect the community. The following are a list of hazards that present a high risk to the community, including:

- Flooding
- Fluvial erosion/landslides
- Severe Winter Storm (Ice Storm)
- High Winds
- Structure Fire
- Thunderstorms/Lightning/Hail

This chapter focuses upon identification and mitigation of the most common hazards in Highgate. The chapter is particularly focused upon flooding and fluvial erosion to ensure compliance with 24 V.S.A §4382(a)(12).

### FLOODING

Flooding is a natural occurrence and happens when water rises and inundates the adjacent low-lying land. Proper land use management should be used to ensure that critical floodplain areas are being used appropriately. Development within floodplains poses significant risks and should generally be avoided. River channels and floodplains function as a single hydrologic unit, periodically transferring floodwaters and sediment from one to the other. Appropriate uses of floodplains are those that can accommodate this cycle and allow for areas where the rivers can access the floodplain during high flows. Examples of uses that are appropriate to floodplains include agriculture, open space, and recreation.

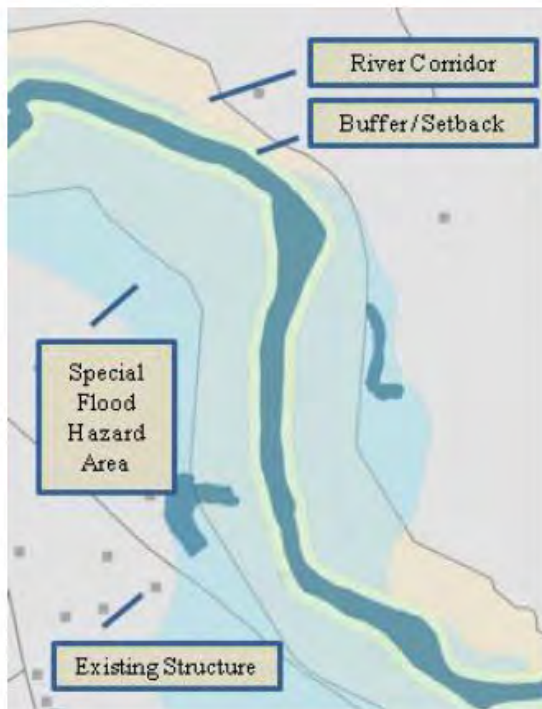
Flooding in Highgate is caused by rainfall, rainfall mixed with snowmelt, ice jams, or by a combination of the three. Flooding is most likely to occur during the spring when snowmelt and

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rainfall cause water levels to rise. Major floods have occurred on the Missisquoi River during all seasons of the year. Ice jams usually occur during the late winter, and early spring, but have occurred in the early winter months as well.

The Missisquoi River, Rock River, Hungerford Brook, Kelly Brook, Saxe Brook, Carmen Brook and Youngman Brook flow within the Town of Highgate. Floodplains in Highgate follow along the brooks and creeks of undeveloped areas of forest lands, marshes, and land that is in agricultural use. The town has an excellent history of road maintenance including culvert upgrades in addressing flooding problem areas. Flooding on the Missisquoi River, within the boundaries of the Missisquoi National Wildlife Refuge, is controlled by the floodwaters of Lake Champlain. Since this area is primarily wetland, the water levels do not rise rapidly, but disperse into a wide floodplain.

There are approximately 3.5 miles of developed Lake Champlain shoreline in Missisquoi Bay. Much of the lakeshore is densely developed with a mix of year round and seasonable residences. There are notable open sections at Highgate Cliffs Natural Area, the Missisquoi River Delta, and the Rock River outlet.



**Figure 8.1 - Depiction of the Special Flood Hazard Area, River Corridor and Riparian Buffers.**

in the 500 year floodplain in Highgate. Of the structures located in the 100-year floodplain, seven (7) are mobile homes, one (1) is classified as a commercial farm, twenty-nine (29) as single family residential units, one (1) as industrial, nine (9) as camps, one (1) as gated with no building and one (1) as “other”. This represents 3% of E-911 surveyed structures within the community.

Transportation facilities that parallel the Missisquoi River are subject to periodic flooding, such as the sections of State Route 78 near East Highgate. Public Utilities such as water mains and electric lines as well as bridge crossings are also vulnerable to flooding damages.

The Town of Highgate is a participant in the National Flood Insurance Program (NFIP). The Town has adopted FEMA Flood Insurance Rate Maps (FIRM) and NFIP minimum standards as a part of the Town’s development regulations. Such standards guide development with the 100-year floodplain, commonly referred to as the “Special Flood Hazard Area.” Enrollment in the NFIP enables all town residents to purchase flood insurance.

A GIS based overlay analysis was conducted using FIRM data with the Vermont E-911 data of structure locations. The results found that there are forty-nine (49) structures within the 100 year floodplain and none

Estimating flood damage of the 3% of structures with 20% damage is \$2,411,854. Cost of repairing or replacing the utilities, roads, bridges, culverts, and contents of structures is not included. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

There have been several instances of severe flooding in Highgate:

- November 3, 1927 The flood of November 3, 1927 is documented as the most severe flood in the town. Within the Missisquoi River Basin upstream from the Town of Highgate, the Village of Enosburg Falls recorded 6.35 inches of rainfall. The Missisquoi River rose 17 feet over the Highgate Falls Dam. Several bridges along the Missisquoi River were swept away and various businesses were damaged by the flood.
- March 6, 1979 In addition to free-flowing flood events, there is documented history of ice jams. On March 6, 1979 an ice jam event resulted in a flood elevation 3 feet above the November 3, 1927, flood. The impact of ice jams affects primarily from the Highgate Falls dam to areas downstream.
- 2004 There were three flood events in 2004. The Burlington Weather Service reports that 2004 was the third wettest summer on record. On September 23, 2004 a disaster declaration (FEMA-1559-DR) was declared due to severe storms and flooding from August 12th through September 12th, 2004. Franklin County was included in the disaster declaration. Flooding occurred as a result of heavy rain produced from Tropical Storm Francis.
- March 31-April 5, 2005 An ice jam occurred on the Missisquoi River which resulted in minor flooding of Route 78 in East Highgate. Route 78 was closed to through traffic. There was minor flooding of low-lying areas and fields. There was an estimated \$1,000 in damages.
- January 18, 2006 A powerful storm tracked northeast across Ontario and Quebec provinces on January 18, 2006. Ahead of this storm, brisk south winds caused temperatures to rise into the 40s creating snow melt. Widespread rainfall of 1.5 to 2.5 inches fell during the night and continued through the early afternoon of the following day. Increased run-off caused widespread field flooding and ponding of water on local roads. Localized ice jams along the Missisquoi River near East Highgate caused flooding and left large ice chunks along Route 78 and Route 105 between Enosburg and Berkshire. There was an estimated \$10,000 in damages.
- April/May 2011 It was a record year for flooding in the state of Vermont. The first floods occurred over a two-week period in April and May of 2011 (DR 1995, 4043). These floods impacted the northern half of the state, including the counties of Addison, Chittenden, Essex, Franklin, Grand Isle, Lamoille, Orleans, Washington, and Windham. The damage totaled over \$1.8 million in FEMA assistance. In the spring, heavy rains in late March/early April on top of a deep late season snowpack resulted in riverine flooding and sent Lake Champlain well over the 500-year flood elevation. Additional spring runoff events resulted in Lake Champlain being above base flood elevation for more than a month. High lake levels coupled with wind driven waves in excess of 3 feet resulted in major flood damages for shoreline communities.
- June 9-10 2015 A cold front was stalled across the Adirondacks in New York and central Vermont producing repeated periods of heavy rain. Early morning rainfall, of one to two inches, saturated the ground and brought streams and ditches to bankful. An additional inch or more later in the day exacerbated conditions. Morey Road at intersection with Brousseau Road was washed

January 13, 2018

out from flooding. The Town accessed AOT Emergency Funding to make repairs to the road in compliance with Town Road Standards.

Rapidly rising water from an ice jam on the Missisquoi River caused some serious flooding for residences along Monument Road in Highgate. A rapid winter thaw on January 12 caused snowpack and ice on the Missisquoi River to rapidly melt creating an ice jam in East Highgate and just downstream from Highgate Falls. In the early morning hours of January 13th, the ice jams caused the river to back up thus spilling icing waters on to Route 78 in Swanton and Monument Road in Highgate. Multiple agencies and departments worked together to save 35 people in Swanton and Highgate stranded from their homes as water rose. Many of the properties were damaged and several received substantial damages on Monument Road. No one was injured or killed. A similar event occurred in mid-February and many of the properties that were flooded on the 13th, were flooded again. One homeowner considered a buyout but decided against it due to the timeliness of the process.

Additionally, flooding and fluvial erosion caused by Tropical Storm Irene was catastrophic, destroying property and taking lives, and again eliciting a disaster declaration (DR-4022). It is important to underscore that the majority of damages resulting from Tropical Storm Irene were due to flooding and fluvial erosion.

The Town has identified numerous projects to mitigate the impacts of flooding on the community. These projects are identified in draft LHMP Plan that is currently being reviewed by FEMA.

### **FLUVIAL EROSION & LANDSLIDES**

Fluvial erosion is erosion caused by the lateral and vertical movement of streams and rivers. Fluvial erosion and landslides are becoming more common within the Northwestern region of Vermont, particularly Highgate. The VT Department of Environmental Conservation recommends that the community identify River Corridors, or the area along the larger tributaries and rivers, that are susceptible to stream channel adjustment in order to reduce the risk of erosion damage. Historic land uses along the river and its streams including floodplain encroachments and vegetative debris removal have increased the risk of erosion and landslides. Such practices included armoring, dredging, gravel mining and channelization, for the purpose of containing high flows and to protect infrastructure built in the historic floodplains. This has resulted in an increase in the streams' power and has direct effects on the rocks and vegetation that make up the channel boundary. The effects can be varied and may lead to channel instability and increased damages from flooding.

There are many areas throughout Highgate where stream bank erosion is causing in-stream sedimentation. It is noted in the 2007 Geomorphic Assessment of the Rock River and its tributaries that stormwater runoff and sedimentation would be decreased following road maintenance practices such as stabilization of road surfaces (different gravel materials), improvement of roadside ditches (excavation, stone lining and/or seeding and mulching), alternative grading practices (turnouts, check-basins); re-orientation of culvert crossings; and protection of culvert headers. In agricultural settings, increased flows from drainage tiles, ditches and erosional gullies can be addressed through design and retrofitting of tile networks to provide for energy dissipation at tile outlets; gully stabilization; and consideration of crop rotation or alternative farming practices that reduce the need for drainage tiles.

The Town of Highgate has not mapped fluvial erosion hazards. Such data could be used in a GIS overlay analysis to estimate potential losses similar to flood losses. The town is considering incorporating a landslide overlay district as part of the zoning bylaws. Fluvial erosion and landslide hazard maps could be used as a tool for the Town to guide development away from areas that pose a high risk of erosion and landslides. The Town will be working with Northwest Regional Planning Commission on identifying areas in town susceptible to landslides with a state funded hazard mitigation grant.

Additionally, to mitigate the rates of erosion, riparian buffers of woody vegetation could be cultivated along stream banks. Selective armoring of the lower portions of stream banks would very likely be needed until a dense root system develops. Currently, several working farms within Town utilize buffer strips to mitigate erosion along streams. Missisquoi River Basin Association (MBRA) and Friends of Northern Lake Champlain have also completed extensive work on riparian buffers and erosion control in Highgate.

In 2018, the Vermont Department of Environmental Conservation (DEC) developed the Municipal Road General Permit (MGRP) which requires municipalities to inventory hydrologically connected road segments, prioritize them and improve road segments to reduce erosion and stormwater runoff. Highgate has completed all of its required improvements by 2022, ensuring compliance with the MGRP.

Local interviews conducted during the writing of the LHMP noted that extensive bank erosion occurred in selected locations along the Missisquoi River and Rock River. Bank erosion was reported to have undermined the few remaining trees on the bank and many large trees have been lost into the river. Associated with bank erosion, the channel has become wider and shallower in recent years. Deep holes are now rare, and the shallower river bottom material is described as “muck”.

The most severe instances of fluvial erosion in Highgate’s past include:

- |                 |  |
|-----------------|--|
| July 14-16 1997 | Flooding in northern Vermont caused severe local damage and resulted in a Presidential disaster declaration (FEMA-1184-DR-VT). The erosion and deposition were significant at numerous locations. Local officials and residents are concerned that the accumulation of sand, gravel, and cobbles in stream channels magnified the severe flooding.   |
| 2003            | In 2003, the transfer station experienced bank erosion along 100 feet of bank. The erosion threatened some of the buildings. The town hired an engineering firm and contractor to stabilize the bank in 2003 through rip rap, erosion matting and planting vegetation. In May 2011, a landslide at the ravine located on the northern edge of the landfill road near the northern side of the existing closed landfill occurred. The slope was stabilized and drainage was installed to prevent future landslides along the slope. |
| June 2008       | During a prolonged rain event in June 2008 (DR 1778), flooding occurred along many streams and tributaries. Evidence of stream bank scouring near bridges along the Missisquoi River and Rock River were identified by the   |
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town's highway department. The transfer station experienced 100 feet of bank erosion. The erosion threatened some of the buildings. The town hired an engineering firm and contractor to stabilize the bank in 2008 through installation of rip rap, erosion matting and planting vegetation.

May 2011 Northern Vermont experienced record rainfalls during the spring of 2011 (DR1995 and DR4043). High precipitation combined with snowmelt resulted in prolonged saturated conditions and significantly elevated and/or perched water tables. The saturated ground and high water table conditions contributed to slope instability and landslides at several locations throughout northern Vermont.

In Highgate, the saturated conditions combined with steep natural terrains and unique geologic conditions, resulted in three landslides. The slides occurred on and after May 4th following a period of prolonged rainfall. The landslide activity occurred on a slope adjacent to the Town Landfill along Transfer Station Road, at the power line corridor adjacent to Route 207, and on a northerly slope (100 feet wide x 45 feet wide with a top thickness of approximately 10 feet) adjacent to Brosseau Road (TH6).

August 2011 In August 2011 (DR-4022), flooding during Hurricane Irene caused a massive landslide around the landfill. The slope was built back with stone and graded. The stream at bottom is blocked by sediment. The town used excavators to channel the stream, but the stream flow has been greatly restricted. A tile drain was installed. Water flows off the parking area down the southwestern bank, causing gully erosion.

2013 Three new areas of potential erosion around the transfer station were discovered. The town expended approximately \$73,000 to address landslide issues around the transfer station.

June 10, 2015 Flash flooding from heavy rainfall occurred along the western slopes of the Green Mountains in northwest Vermont. Repeated periods of heavy rain (2-3") through the night on June 9<sup>th</sup> into early morning (1") on June 10<sup>th</sup>, brought streams and ditches to bankful. Brosseau and Morey Roads in Highgate VT were damaged and closed due to washouts.

January 13, 2018 Above average temperatures on January 12 caused rapid snowmelt across northern Vermont. Rapidly falling temperatures overnight into Saturday morning accounted for rain changing to freezing rain, sleet then 4-8" snow in NW Vermont. The conditions caused a large ice jam to form along various point of the Missisquoi River. A large ice jam formed on the Missisquoi River in the Village of Swanton, VT, extending from below the Route 78 bridge upstream for several miles. Numerous structures were impacted with dozens of homes evacuated. State Route 78 was closed for nearly 24 hours due to high water. Several of the impacted homes were heavily damaged.

The Town has been working with the Vermont Agency of Natural Resources to address the slope stability problems with the parcel of transfer station that encompasses the closed Highgate Landfill and the Highgate Transfer Station. Due to sandy soils and groundwater discharges, the steep slopes

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have been prone to erosion and landslides. According to the Agency of Natural Resources, “Estimating a cost of corrective action should the Highgate Landfill be damaged by continued unmitigated erosion is contingent on a host of variables and assumptions and, in the end, will result in a large dollar range.” The Town has received funding from FEMA to stabilize a portion of this bank near the landfill.

The Town has identified numerous projects to mitigate the impacts of fluvial erosion on the community. These projects are identified in draft LHMP that is currently being reviewed by FEMA.

### **SEVERE WINTER STORM (ICE STORM)**

Winter storms affect the entire town and generally cause disruptions to public and private services. In northwestern Vermont, a severe winter storm can last for several days and can be accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, severe drifting, and dangerous wind chill. Strong winds, accumulations of ice and heavy snow can knock down trees, utility poles, communication towers and power lines. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. People have been trapped at home for up to two weeks, without utilities or other services. Vulnerable populations such as the elderly, those dependent on medical equipment and specialized health or physical care are at risk to winter storms. Also at risk are farms and associated structures and livestock. Barns can collapse due to heavy snow loads. Dairy cattle are susceptible to mastitis if they are unable to be milked.

The Town’s recent history has not recorded any loss of life due to the extreme winter weather. These random events are difficult to set a cost to repair or replace any of the structures or utilities affected. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to remain the same.

Some of the worst historical storms in Highgate have left snow depths of 14” (March 2001), wind speeds up to 40 mph (January 1998), and ice accumulations of 2-4” (January 1998 and December 2013). The following is a review of the history of severe winter storms that have impacted the Town.

January 5-9, 1988 (FEMA-1201- DR-VT)	Intermittent freezing rain developed over northern New York and New England. The freezing rain and drizzle became steadier on January 7 and continued through January 9. The overall weather pattern of the ice storm was caused by a low pressure system that developed in the Gulf of Mexico. The low pressure had moved northward to the Great Lakes area and then into Quebec by the morning of January 10. In Highgate, snow turned to freezing rain. Intermittent freezing rain, freezing drizzle, rain, drizzle, and snow persisted during the 5-day period before skies cleared. This storm is referred to as the Ice Storm of 1998.
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March 5-6, 2001	A major snowstorm resulted in 14 inches of snow in Highgate. The storm began early Monday morning with a brief burst of snow then transitioned during the midday hours to intermittent light snow, sleet, freezing rain and rain. The storm developed into a nor’easter during the afternoon and continued through the evening.
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October 25, 2005	A rare autumn Nor’easter struck Franklin County on October 25, 2005, fed by the remnants of Hurricane Wilma. There were reported snowfall amounts in the
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County varied from 6 to 14 inches. Trees still laden with fall foliage were downed due to the weight of heavy, wet snow. There were many reports of snapped power lines from downed trees and branches. Many homes serviced by Vermont Electric Cooperative were without power for several days.

February 14, 2007 A winter storm with snowfall rates of 2 to 4 inches per hour and brisk winds of 15 to 25 mph caused near whiteout conditions at times, along with considerable blowing and drifting snow, making roads nearly impassable. Temperatures in the single numbers combined with brisk winds created wind chill values of 10 degrees below zero or colder in Highgate.

December 20-26, 2013 (DR-4163) A wide-spread low pressure system that brought snow and freezing rain through Ontario, Quebec, and Northern New England. These areas experienced an ice storm that brought wide-spread power outages. Many Towns throughout Franklin County, Vermont were affected by the ice storm. Vermont Electric Cooperative responded to over 60,000 customer outages during the week and estimated costs of restoring power at \$7,400,000.

In Highgate, the highway department was active keeping roads open and removing ice damaged trees and limbs from local roads and the Fire Department assisted with evacuating residents to the Highgate Elementary School which was opened as a community shelter. Several residents were without power for several days.

November 27-28, 2018 Precipitation moved into the North Country on the afternoon of November 26th, falling as snow at elevations above 1500 feet and rain at lower elevations. By early morning of November 27th, the atmosphere cooled enough to allow for precipitation to changeover to snow. Highest snowfall totals at elevations above 1500 feet, where more than 12-15 inches fell. In Franklin County, snow accumulated 4 to 8 inches. The heavy wet snow accounted for more than 40,000 outages, effecting 100,000 customers without power due to snow loading on power lines.

### ***ALL HAZARDS RESILIENCY GOALS***

1. Encourage and foster an all hazards disaster resilient community.
2. Prevent the loss of life and injury that result from flooding and other natural disasters.
3. Reduce damages to public infrastructure resulting from all hazards events through hazard mitigation planning and project implementation.

### ***ALL HAZARDS RESILIENCY OBJECTIVES***

1. Encourage the protection and restoration of floodplains and upland forested areas that attenuate and moderate flooding and fluvial erosion.
2. Implement resiliency measures that are compatible with natural features (including floodplains, river corridors, wetlands, and upland forests), historic resources, character of neighborhoods, and the capacity of the community to implement them.
3. Incorporate mitigation measures when developing improvements or expansion to municipal infrastructure.
- 4.

### ***ALL HAZARDS RESILIENCY ACTIONS***

1. Continue to implement high priority projects identified in the Local Hazard Mitigation Plan.
2. Adopt annually the Local Emergency Operations Plan.
3. Participate in the Franklin County Mutual Aid Agreement.
4. Adopt the most recent VTrans Town Road and Bridge Standards.
5. Work with State and local Emergency Management, and the town highway department, to plan improved emergency response capacity (operations, training, equipment) during natural disasters.
6. Evaluate the flood hazard regulations for opportunities to incorporate measures to increase public safety, and reduce future damages.
7. Adopt and implement river corridors and buffers to prohibit future development in high risk areas for flooding or erosion hazards and enable the town to seek additional state matching funds from the Vermont Emergency Relief and Assistance Fund (ERAF).
8. Consider adopting a setback standard to reduce landslide hazards.

# CHAPTER 9

## Land Use

### EXISTING LAND USE

Land in Highgate is used primarily for agriculture or is considered forestland. The Town covers 59.8 square miles (38,279 acres), 11.5 square miles (7,291 acres or 19 percent) of which are covered by water. Of the 38,279 total acres, the number of acres in agricultural use is 16,057 acres, or 42 percent of the total. The number of acres of forested land is approximately 9,559 acres, or 18 percent of the total. Wetlands, shorelines and other non-buildable locations account for 14 percent of the land area in Highgate. The remaining 7 percent of the acreage in the Town is used for residential purposes, as either available for residential development, or for transportation purposes.

Land Use	Acres	Percent
Residential	1,633.87	4.27%
Transportation/Utilities	965.97	2.52%
Commercial	22.99	0.06%
Industrial	8.21	0.02%
Other Urban	2.15	0.01%
Row Crop	10,790.41	28.19%
Hay/Pasture	4,947.52	12.92%
Other Agricultural	319.56	0.83%
Deciduous Forest	2,665.51	6.96%
Coniferous Forest	1,526.65	3.99%
Mixed Forest	2,706.71	7.07%
Forested Wetland	2,660.60	6.95%
Non-Forested Wetland	2,718.06	7.10%
Barren Lands	20.26	0.05%
Water	7,291.01	19.05%
<b>Total</b>	<b>38,279.47</b>	<b>100%</b>

The Town of Highgate has four areas of State owned land covering a total of 668 acres. These areas include Highgate State Park (which is within the Highgate Cliffs Natural Area) covering 37 acres, the Rock River Access Area covering 7 acres, the Rock River Wildlife Management Area covering 296 acres and the Franklin County Airport covering 348 acres. The boundaries and locations for all of these can be found through the Survey Section of the Vermont Department of Forests, Parks, and Recreation and are identified on the Facilities and Utilities Map.

Settlement in the Town is typically spread out either along the existing roadways or along the shoreline. The overwhelming majority of development since 1980 has followed this pattern. Commercial and

industrial development is primarily located along VT 78 and within the village areas. A small number of individual enterprises are scattered throughout the Town, and many home occupations are operating as well, although the exact number is unknown. Commercial "strip" forms of development have been occurring along State Road 78 west of Highgate Center, particularly near the Franklin County State Airport. The Missisquoi Valley Union High School is also in the area, and combined with adjacent commercial development, has created serious traffic conflicts along this stretch of roadway.

Residential development is by far the greatest growth industry in Highgate, making it somewhat of a "bedroom" community in many respects. The great majority of residential land use occurs within about two miles of Highgate Center, particularly east and west along State Route 78. Increased residential land use is also developing near U.S. Route 7 in the southwest quadrant and north of the State-owned airport. Other lesser areas of existing and growing residential land use are Highgate

Springs and East Highgate. Mobile homes on single-family lots are a substantial land use, and offer an affordable option to conventional single-family homes.

The population centers of Highgate Center and Highgate Falls contain the most dense residential use, consumer services, and public/semipublic buildings. The Public Library, School, Town Offices, and facilities all lie in Highgate Center.

The village of East Highgate is a somewhat static residential community with no commercial services. The village of Highgate Springs is also characterized as a residential enclave but is affected by the seasonal resort activities along the Missisquoi Bay shore.

The recent increase in residential use is due primarily to the demand for new homes by Franklin and Chittenden County commuters. The rate at which agricultural and forested lands are being developed appears to be closely related to employment growth in both counties.

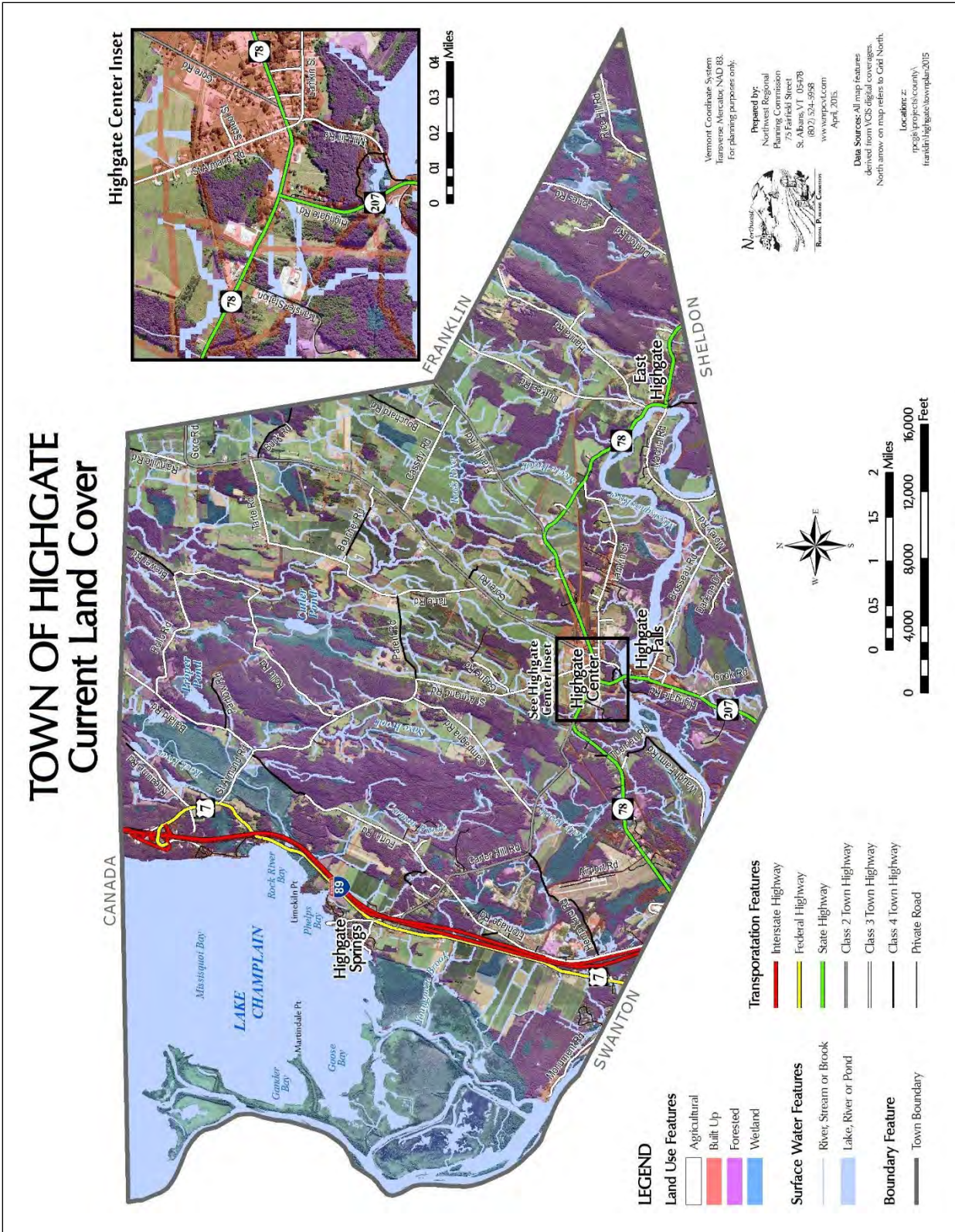
The mineral extractive industry also consumes a large portion of land use in the Town of Highgate; sand, and gravel deposits were once abundant in the area but are being depleted with increased demand. This industry has been used to support rapid development in Northwest Vermont over the years. The rise and fall in this industry should be assessed as it will affect both the land use and the economic development in the region.

Several overriding goals for future land use and development are outlined below. Specific policies are contained within each section.

### ***EXISTING LAND USE GOALS***

1. To provide adequate, safe and affordable housing for all segments of the population.
2. To provide for a diversified economy by the development and expansion of appropriate industries and commercial and recreational businesses.
3. To protect and encourage the continuation of agriculture and production of value added goods.
4. To enhance environmental quality, preserve the rural, agrarian character of Highgate, and protect its natural assets.
5. To ensure that development occurs at a pace consistent with the Town's ability to provide services.

Map 9.1 Land Use and Land Cover of Highgate as of 2003



## **COMMERCIAL AND INDUSTRIAL DEVELOPMENT**

The number of small-scale businesses in the community that provide employment, goods, and services to local residents is limited. This encourages residents to work and shop in neighboring towns and discourages new businesses from opening. While the number of commuters may be a concern for the Town, it represents an opportunity for attracting business and industry which will lead to retaining resident's spending within in the community. Businesses that serve and employ Town residents will add to the sense of community by limiting the need to travel to neighboring towns for basic necessities.

It is possible to encourage industrial and commercial growth without harming Highgate's quality of life by targeting environmentally sound industry. The Franklin County Airport and access to Interstate 89 are important resources for attracting industrial and commercial development. Currently, existing businesses are located along VT 78. To maximize economic and tax benefit to the Town while minimizing the impact to landscape and environment, land use in the Commercial/Industrial District should be as compact and efficient as possible and minimize sprawl & strip development characteristics. Planned municipal investments in water and sewer infrastructure in the Commercial/Industrial District will further support this goal, ensuring the highest and best use of land. While increased economic activity and well-paying jobs are an important goal, development must be in accord with the character of the community, landscape, and environment.

Tourism is a constantly growing industry in the County. Recent efforts in the tourism industry have included the concept of "Countryside Tourism" , also known as agritourism. Countryside Tourism promotes the unique resources of a community as the main attractions. It is characterized by locally owned businesses, traditional patterns of development, utilization of existing vacant or under-utilized structures, diversity, and uniqueness. Highgate has several farms and sugaring operations that provide tours. Expanding this agritourism and recreational tourism can attract many visitors to Highgate. The Town should examine how tourism can be promoted as part of a diverse local economy.

Businesses in Highgate should be a mix of small-scale businesses that promote locally produced goods and services to maintain the community's rural character and larger businesses that bring employment opportunities to Highgate. Additionally zoning for home businesses and small-scale business within residential areas should be encouraged. Infrastructure that attracts and supports these opportunities such as internet and other communication services should also be encouraged. Planned unit developments that combine the traditional mix of residential and commercial uses should be encouraged.

### ***COMMERCIAL AND INDUSTRIAL GOALS***

1. Encourage clean and environmentally sound light industrial and/or commercial development in appropriate districts.
2. Continue economic planning for new locally owned and operated businesses, and promote businesses that offer year-round employment and which utilize the local labor and materials.
3. Promote the importance of the Village as the Town's social, cultural, and economic center.

### ***COMMERCIAL AND INDUSTRIAL OBJECTIVES***

1. Promote further planned unit development (PUD) within village areas.
2. Promote the clustering of commercial activities near village center and high density residential districts to make development more energy efficient and to maintain rural character of the Town.
3. Ensure zoning discourages suburban sprawl and strip development by allowing for PUDs and Mixed Use development as well as adjusting parcel size and frontage requirements.

## **AGRICULTURAL DEVELOPMENT**

The Town of Highgate lies in a fertile and agriculturally important part of the Champlain Valley. Dairy farming, maple sugaring, commercial orchards, and produce farming are the primary agricultural activities still being practiced in the Town. Prime agricultural soils are an important Town resource. In Highgate, the number of acres in active agricultural use is, approximately 42 percent of the total (based on 2003 Land Use and Land Cover data).

According to the 2020 Grand List, there are approximately 55 parcels with farm buildings in Highgate, representing 51 different landowners. This number has decreased by 10 since 1987 when the State Property Valuation and Review reported that there were 65 farms in Highgate. The number of farms in Franklin County has continued to decrease from 770 farms in 2002 to 729 farms in 2017. While in some areas the number of farms has decreased, the total acreage in production may not have due to the consolidation of agricultural land into fewer owners who work larger parcels of land. However, it is likely that in Highgate the number of farms as well as the acreage have both decreased over the past two decades.

The loss of productive agricultural land may be due to the development of existing farmland for residential use which is currently more profitable for the individual landowners. This creates strong pressure for development, presenting landowners in Highgate with difficult decisions to make. It is important to remember that agricultural and forestry landowners provide a public benefit by not developing their property, and cost the Town little in terms of municipal services. Keeping land in production provides pastoral scenic vistas, important wildlife habitat and other services, which contribute positively to the Town and region. These aspects of farmland that help maintain the rural character and high quality of life in the community cannot be overlooked.

The State of Vermont offers programs that tax agricultural and forestry property according to its use value. The purpose of these programs is to keep agricultural and forested land in production, and to slow development on these lands. In each program, the property must remain in agricultural or forestry use in order to receive benefits. A large proportion of property tax revenue lost to the Town is reimbursed by the State. The programs, administered by the Property Valuation and Review Division of the Vermont Department of Taxes, are Agricultural Land Program, Forest Land Program, Farmland Program, and Working Farm Tax Abatement Program. The State Legislature constantly threatens to eliminate or reduce funding for these programs. As of 2020, 93 parcels are part of one of these current use programs, with a total of 13,731 acres.

On-farm businesses are increasingly important to the viability of the local farms. Expanded retail sales and agritourism opportunities such as farm stays, tours, and tastings can be important sources of revenue for farms. To promote these businesses, the Vermont State Legislature passed Act 143, which requires that municipalities allow for on-farm sales and/or events that meet the definition of an accessory on-farm business.

By state statute, accessory on-farm businesses must be clearly subordinate to the primary use of the property as a farm and meet one of the following two standards:



- 1) Businesses that involve the storage, preparation, processing or sale of qualifying agricultural products, provided that more than 50% of total annual sales are from products that are principally produced on the farm at which the business is located.
- 2) Businesses that involve educational, recreational, or social events that feature agricultural practices or qualifying products, or both.

Act 143 enables municipalities to regulate accessory on-farm businesses through site plan review and performance standards so long as the standards do not have the effect of prohibiting accessory on-farm businesses. The definition of accessory on-farm business encompasses a wide variety of types and scales of uses. Adopting a municipal bylaw addressing accessory on-farm businesses would allow Highgate to determine the appropriate level of review for different types of accessory on-farm businesses.

### ***AGRICULTURAL GOAL***

1. Protect and strengthen agricultural and forestry operations in Highgate.
2. Promote diversified farming operations, the sale of value added products, and agritourism to increase the success of the agriculture industry in Town.

### ***AGRICULTURAL OBJECTIVES***

1. Work with farmers to provide assistance in maintaining viable business models in order to keep agricultural livelihoods profitable in Highgate.
2. Ensure that zoning bylaws allow for proper safeguards and conditions for permitting various types of accessory on-farm businesses in the community.
3. Support continuation of the current use-value taxation programs.

### **VILLAGE GROWTH CENTER DEVELOPMENT**

Highgate Center is already the location of many municipal buildings and services. The Library, school and ice arena are all within the close proximity. These, in addition to the high and medium density residential development in the area make it a good location for a village growth center. The concept of a growth center can centralize development which will be cost efficient by saving the town additional expenses by keep services and infrastructure in a smaller area. Clustering development can also allow greater accessibility to services by foot or bicycle as well as for the elderly.

Over the past 5 years, there have been significant efforts focused on revitalizing the Highgate Center Village Core, primarily focused around the redevelopment of the Machia/Stinehour hotel parcel. The Town received a Municipal Planning Grant to develop conceptual designs for a library and private business space on the parcel in 2018. In 2019, the Town received an additional MPG and a Planning Advance to study water and wastewater solutions that would enable this development. Most recently, the Town has received a VCDP Planning Grant to further develop conceptual design plans for the new library space, and \$1.285 million dollars from the Vermont Clean Water State Revolving Fund for a community wastewater system that will have the capacity to serve the new library and up to 15 existing residences. Implementation of the redevelopment and water/wastewater plans would further enhance the village and allow for new growth. Below is a village growth center concept map that has been drawn up by the Highgate Planning Commission.

In 2012, the Town applied for Village Center designation from the State of Vermont for the core village area in Highgate Center. Highgate received Village Center designation in November 2012; this designation provides support for the revitalization of the existing traditional village center. The identified Village Center area is the location of the town’s institutional core that comprises the Elementary School, Public Library, Town Offices, Fire Department, Highway Department and the Highgate Arena/Sports Center (Map 9.2). This area is composed of an interconnected core of residential, civic, religious, and commercial buildings arranged along Route 78 and the adjacent areas.

In 2018, the Town applied for and received Village Center designation status for the Town’s two smaller villages: Highgate Springs & Highgate Falls. The Highgate Falls Village Center consists of a historic church, a post office, several businesses and a few residences. The Highgate Spring Village Center contains a historic manor, village green, a church, a historic lenticular truss ridge, and an access point to the Northern Forest Canoe Trail.

Village Center designation supports the goals of the community by gaining access to several benefits such as receiving priority consideration for state grants, access to tax credits, priority consideration for state building and general services when leasing or constructing buildings, and allows for the creation of a special assessment district within the Village Center to use funds for operating costs. The Village Center designation also aligns with the statewide planning goals of compact development and maintaining the historic settlement pattern as stated in 24 V.S.A. § 4302.

#### ***VILLAGE GROWTH CENTER GOALS***

1. Contain development within a boundary for cost and energy efficiency, to increase access to services and preserve the rural working landscape outside of the village.

#### ***VILLAGE GROWTH CENTER OBJECTIVES***

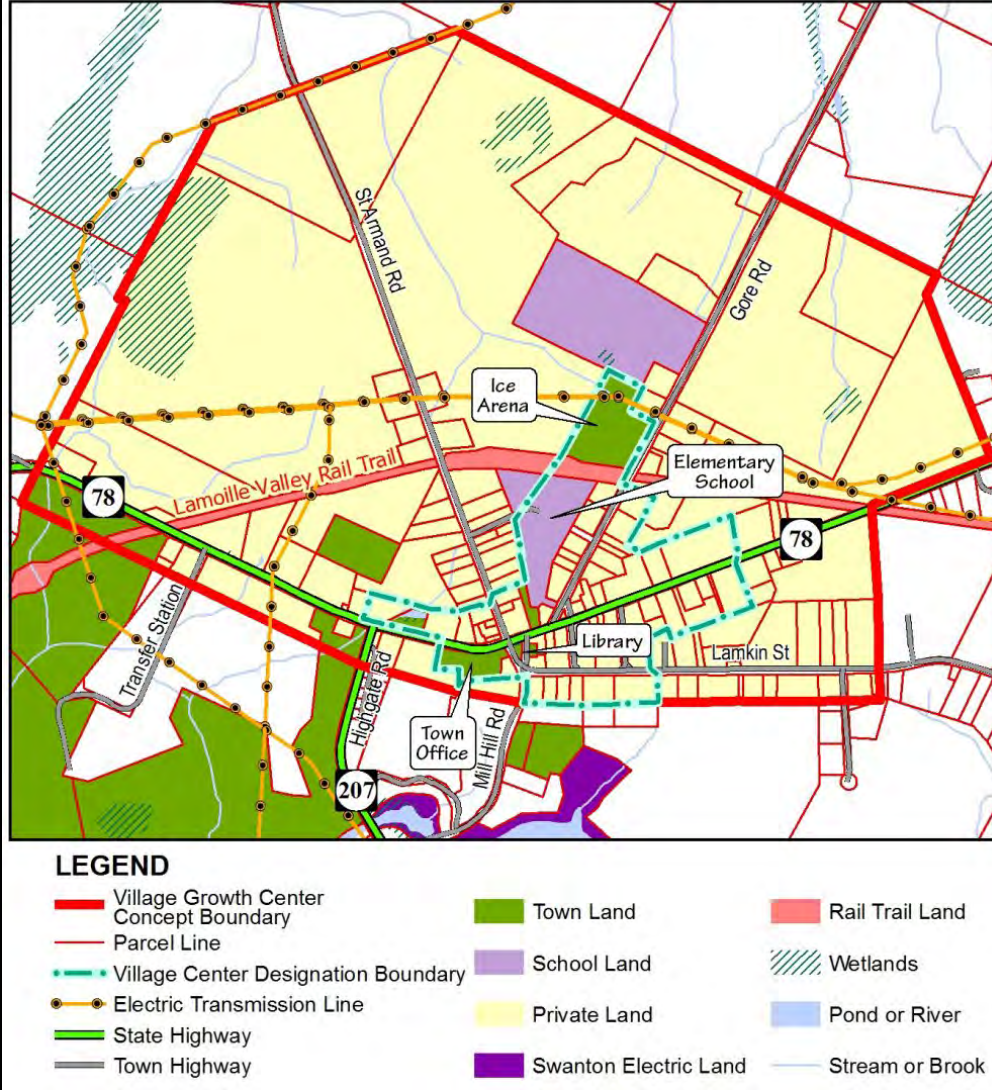
1. Continue to support planning and implementation of existing plans for the Highgate Center Village Core.
2. Maintain village center designation for Highgate Center, Highgate Spring and Highgate Falls.

#### ***VILLAGE GROWTH CENTER ACTIONS***

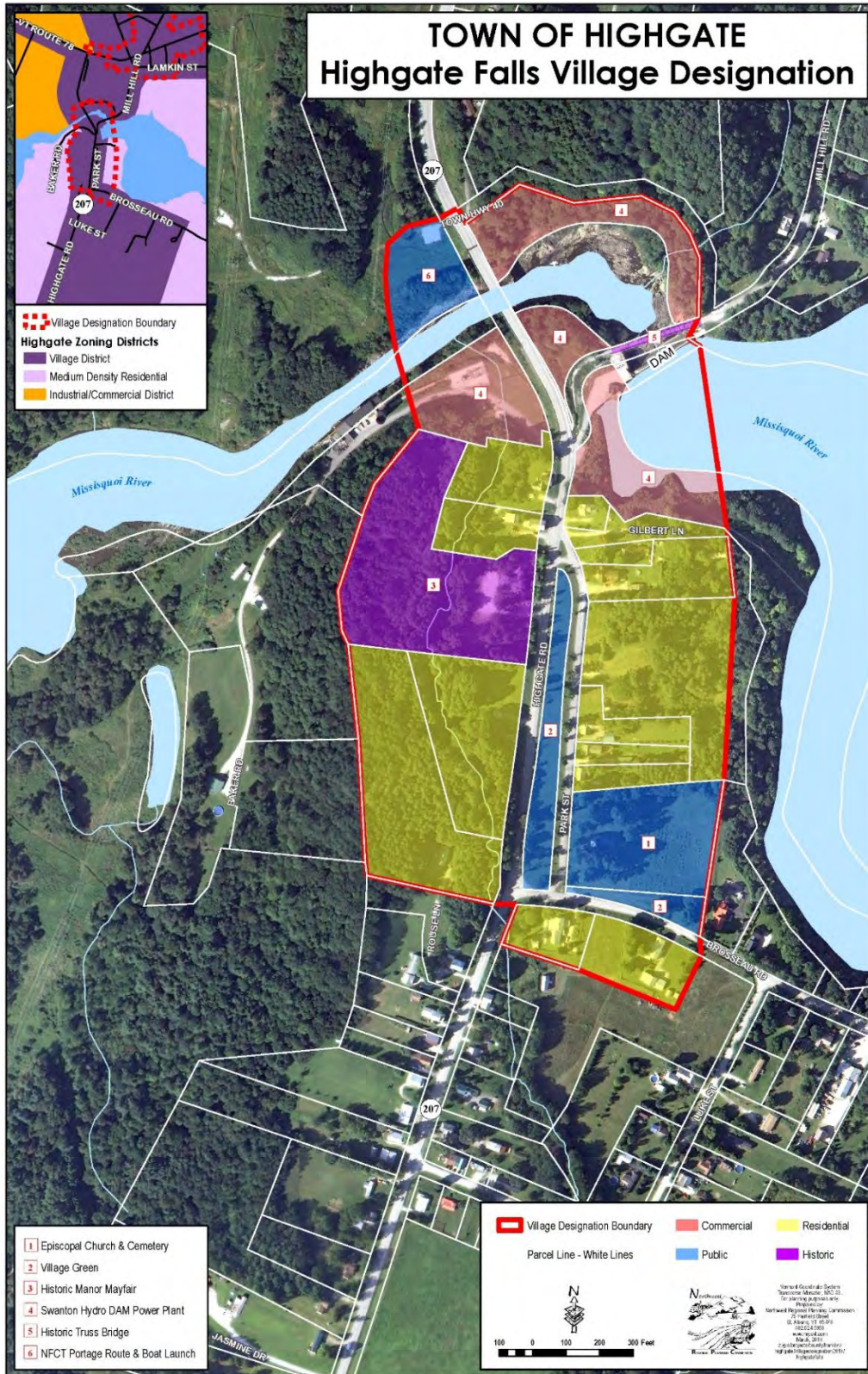
1. Continue to pursue grant funding to implement the Highgate Center Village Core redevelopment effort.

Map 9.2 Village Growth Center Concept Map and designated Village Center

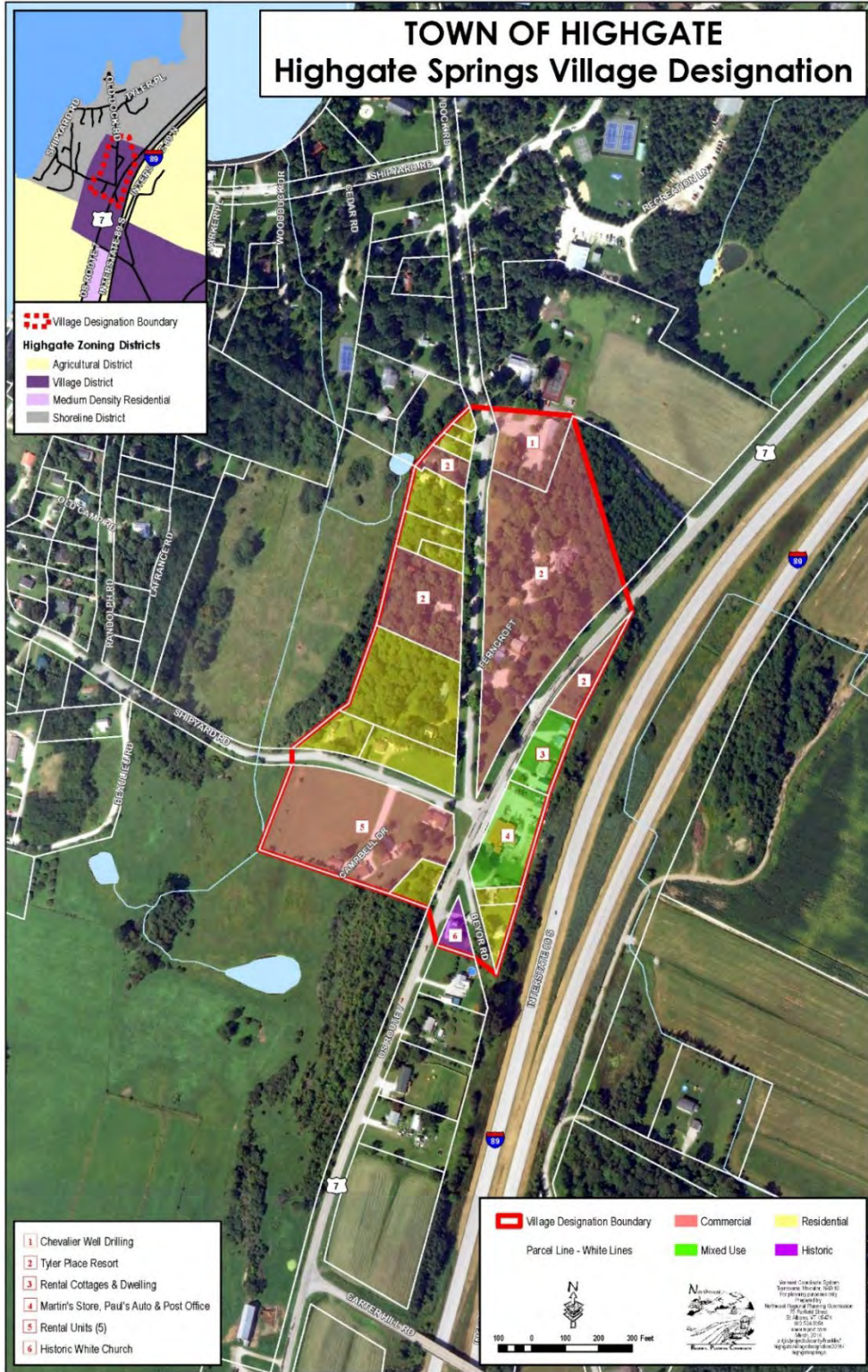
# Village Growth Center Concept Highgate Center



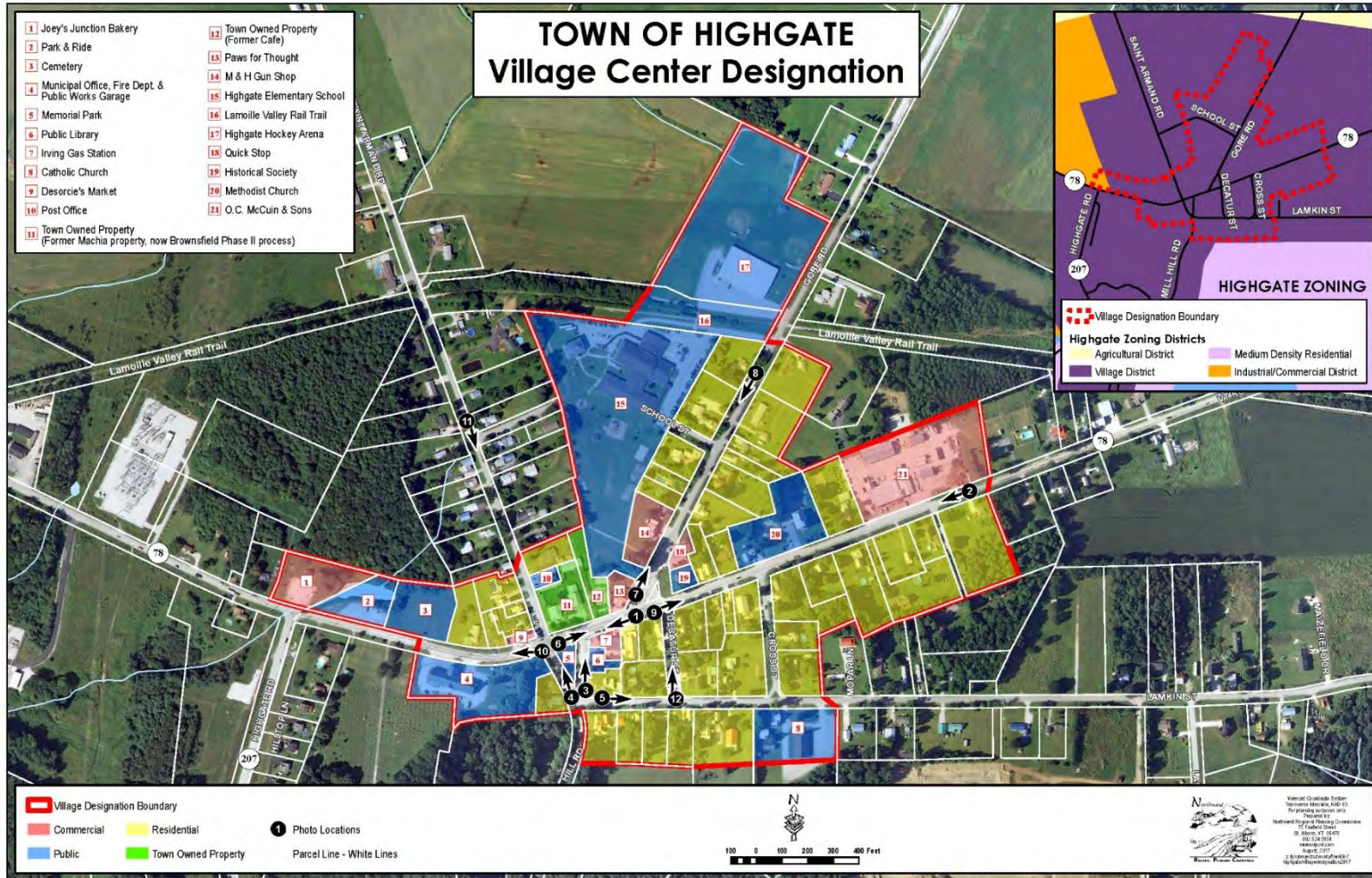
Map 9.3 Highgate Falls Village Designation



Map 9.4 Highgate Springs Village Designation



# Map 9.5 Highgate Center Village Center Designation



## **PRESERVATION STRATEGIES**

Highgate strongly values the rural character of its Town, including its natural and cultural resource base and its traditional working landscape of small village areas surrounded by farms, fields, forests, and shoreline. In an effort to preserve the Town's rural character and beautiful resource areas, it has established a Protected Area District and a Forest Reserve District. Other strategies for preserving the rural character of Highgate include a resource inventory, conserving land through conservation easements, development of a conservation commission, and development of a local land trust.

A thorough inventory of a community's natural resources and land uses is a crucial step that furthers a town's land use planning efforts and especially is useful in backing up its regulatory effort. There are funding options available to towns for doing extensive natural resource inventories, which can identify and prioritize land with its most suited use according to the community's values and natural resource constraints. Inventories are also used in open space and conservation plans and/or to modify zoning regulations to have more effect in protecting resource areas.

One of the most popular and effective methods that Vermonters use to conserve land is the conservation easement, most commonly through the Vermont Land Trust (VLT). As of March 2010, Highgate has 5,006 acres of land conserved through VLT and encourages landowners to continue placing land in trusts this way. VLT's mission is to conserve land for the future of Vermont and they do so for land that meets certain requirements in four categories: farms and farmland conservation, managed timberland and forestland conservation, land important to local communities, and family lands. The Vermont Housing and Conservation Board and the American Farmland Trust are two of many other organizations that also have conservation opportunities for landowners.

Conservation commissions and local land trusts are two other methods that further conservation efforts. Vermont Statute authorizes towns to create conservation commissions, whose authority is mainly advisory. They usually work with the town's legislative body and planning commission on a variety of issues related to land conservation, natural resources, and environmental protection. In many communities, the conservation commission takes on a leadership role for natural resource and open space planning and drafts those portions of the municipal plan.

A local land trust works to secure funding for conserving and then managing land in that community. Local land trusts are usually funded through local support and through a variety of other funding sources including grants from the State and federal government and through help from larger land trusts, such as VLT.

### ***PRESERVATION STRATEGY GOAL***

1. Continue efforts and programs to preserve the rural character of Highgate.

### ***PRESERVATION STRATEGY OBJECTIVES***

1. Promote the use of easements and the current use program to keep working landscapes and preserve the rural character of the Town.
2. Plan for an identify preservation strategies to further protect the Town's resources.
3. Encourage landowners to pursue conservation easements through the Vermont Land Trust.

## THE LAND USE PLAN

Future land use in the Town of Highgate has been established by the Planning Commission, and is based on natural resources and other data provided through the Northwest Regional Planning Commission. The following policy criteria were used to approach the land use plan:

1. Locations poorly suited for development
  - Development will avoid areas with steep slopes or be carefully controlled to avoid unnatural erosion.
  - Development will generally avoid areas with shallow soils.
  - No housing units would be permitted in areas where depth to seasonal high-water table is 0 to 1 1/2 feet.
2. Resource Lands and Natural Areas
  - Development within shoreline areas of streams, lakes, or ponds, will be compatible with the natural beauty of the area, protect existing vegetation, and be set back sufficiently to prevent erosion or pollution. Where possible, visual and physical access to the water bodies will be retained.
  - Unique natural areas will be protected or reserved for their aesthetic and recreational value.
  - Wildlife habitats as identified are protected from development.
3. Areas Potentially Hazardous to Human Life and Health
  - No land alteration that interferes with the natural flow of waters to surface waters will be allowed.
  - Development in an aquifer protection area, which will contaminate a public water supply, will not be permitted.
  - All development other than uses and structures essential to the operation of agriculture, forestry, outdoor recreation, and wildlife protection will be restricted in floodways.

## PROPOSED LAND USE DISTRICTS

Land use districts were delineated for the Town of Highgate. The Districts are conceptual (not necessarily site specific) and will become the basis for the zoning districts; zoning bylaw updates closely follow the District delineation in the Plan. Referring to the District land use map, the intent of classification is as follows:

**Agricultural District (A.D.)** - The Agricultural District is designated for land best suited for, and primarily used for, agricultural purposes. This district includes the prime tillage areas, pastureland, and farm woodlots. Due to soil conditions and the district's location with respect to existing and anticipated land use patterns, much of this district remains economically viable for agriculture and should, to the extent possible, be preserved for agricultural use. Agriculture business (agribusiness) and limited residential uses are permitted so as not to interfere with, or materially alter, the primary character and designated uses of the Agricultural District.

**Medium Density Residential (M.D.)** - This district is intended to accommodate traditional country living characteristics. Due to the soil characteristics, terrain and highway access, the land in this zone must be put to a lower intensity of use than the high density zone. A medium density of development should manage to preserve the environment and character of this zone, even though Planned Unit Developments are permitted as a conditional use. The highest densities in the classification should be



located closest to village centers, where public water and sewer facilities can be provided most efficiently. Residential development should provide for a variety of dwelling types and for the needs of people of all income levels and ages.

**Village District (V.D.)** - This district of high residential density consists of the locations within the Town where it is desired that development occur which can accommodate the majority of the population growth in Highgate. These districts have been selected because of existing settlements, anticipated patterns, existing and future public facilities and services, suitable soils and other physical characteristics. The development of these districts with urban uses affords the best opportunity for the existing and future provision of economically feasible public facilities and services while providing an orderly separation of these uses from other legitimate land uses within the Town. High density residential, commercial and many public and quasi-public facilities and services are intended to develop in these districts. This provides for the highest level of access to shopping for persons living in a multifamily housing environment, i.e. senior housing complexes. This district also provides the more concentrated forms of commercial use in village centers and restricts the tendency toward roadway "strip" development.

**Industrial/Commercial (I/C)** - This district is intended to afford the opportunities of increased municipal tax base and employment opportunities in manufacturing, warehousing, and service functions for the citizens of Highgate and the entire region. It enables commercial uses that specifically serve the industries or their employers. The district needs to be serviced by good transportation facilities and public utilities. Single family dwellings and duplexes have been approved as conditional uses in this district. To service the industrial potential, Highgate may consider developing and maintaining adequate water supply, sewage disposal facilities, and roads for this district.

**Shoreline (S.L.)** - The shoreline district in Highgate is shoreland along Missisquoi Bay. The purpose of the Shoreline District is to provide management policies reasonably consistent with existing development and use, to provide for the beneficial use of public waters by the general public, to provide a balance between the bay resource and bay uses including the protection of habitat and water quality, and to protect areas unsuitable for development. New residential development within this shoreline district should protect public access to the bay, be compatible with the visual quality of the area, protect existing vegetation, and not cause any water pollution problems. Outdoor recreation uses are encouraged. Expanding or new commercial development should not be permitted.

**Protected Areas (P.A.)** - Protected areas are so designated to control development in unique and irreplaceable areas of natural beauty, where shallow soils, steep slopes, fragile vegetation, wetlands, or wildlife habitat may occur. Areas providing significant recharge to the ground and surface water supplies lie in this district. Because of the fragile resources and limitations to development, no community facilities and services (water and sewer) are provided to these areas. Limited compatible land uses could be permitted in this district, such as outdoor recreational activities that do not involve large structures and forestry that does not create erosion problems or harm unique and fragile areas.

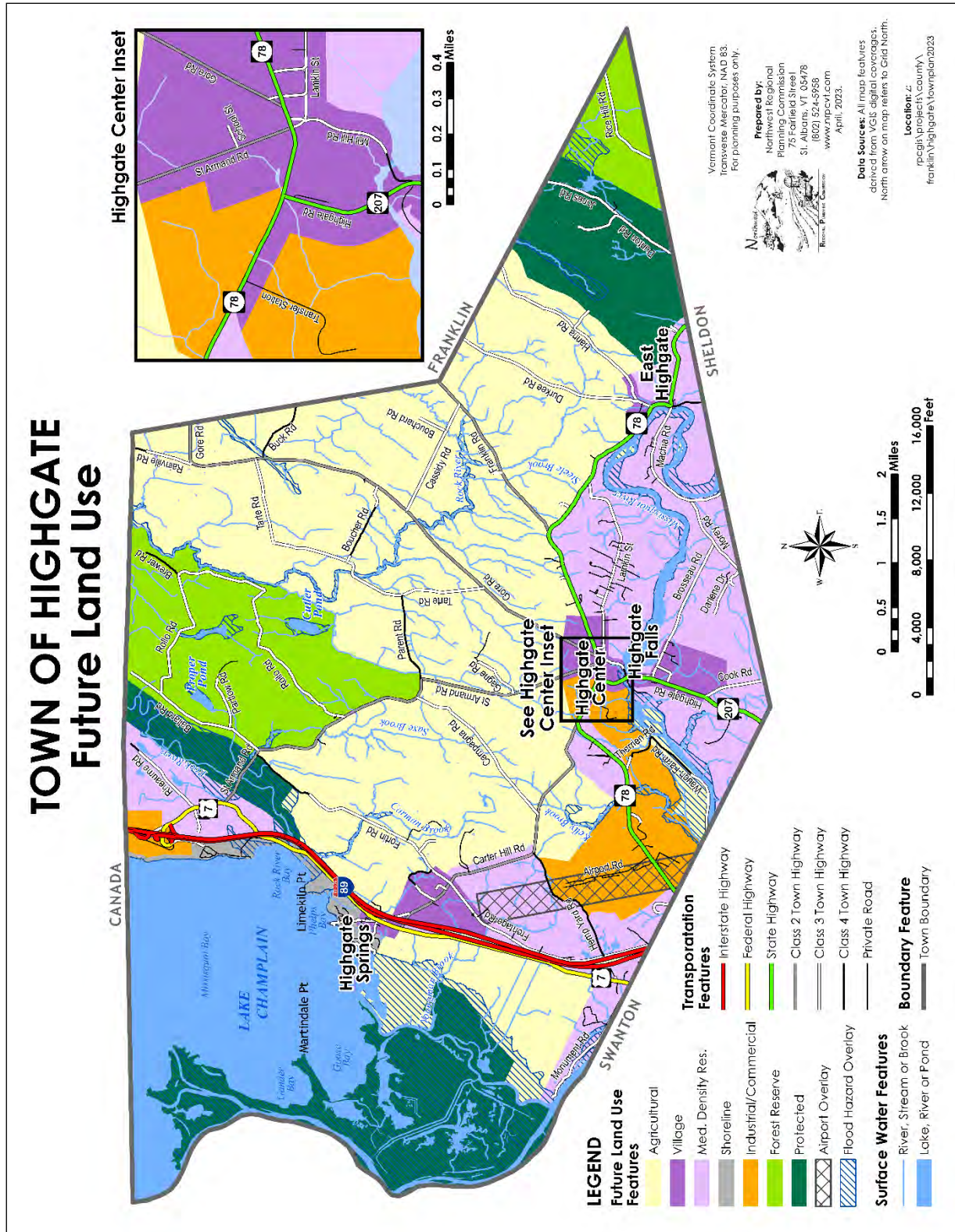
**Forest Reserve (F.R.)** - The purpose of the Forest Reserve District is to protect the natural resource value of a portion of Highgate that is essentially undeveloped, lacks direct access to arterial and collector roads, is important for wildlife and wildlife habitat, has potential for commercial forestry use, has one or more physical limitations to development, and includes significant natural, recreational, or scenic

resources. Class III roads in the district are to be maintained but no Class IV roads are to be upgraded for at least the next five years. No further facilities or services should be considered for this district other than what has already been planned or established. This limits the residential development to only what can be accommodated by existing infrastructure. Outdoor recreational uses, conservation uses and forestry practices that are compatible with the district purposes and do not require additional facilities and services are permitted.

**Airport Overlay (A.O.)** - The purpose of the Airport Overlay District is to limit the height of objects in the vicinity of the Franklin County Airport and to prevent their interference with safe and efficient operations of the airport. In addition, the district is created to encourage and enhance the ability to establish associated industry and commercial uses as appropriate, and in conformance with the Airport Master Plan completed by the State of Vermont.

**Flood Plain (F.P.)** - The Flood Plain District is the area delineated on the Flood Insurance Rate Map for the Town of Highgate by the Federal Emergency Management Agency (FEMA). The requirements of this district are promulgated to minimize and prevent the loss of life and property, the disruption of commerce, the impairment of the tax base, and all extraordinary public expenditures required following flood disasters. Establishment of this zone is also meant to ensure that the design and construction of development in special flood hazard areas is accomplished in a manner that minimizes or eliminates the potential for flood damage. This district is to be administered according to the National Flood Insurance Program (NFIP), which is required for community eligibility in the NFIP and thereby ensures availability of flood insurance to property owners.

Map 9.6 Proposed Land Use Districts



# CHAPTER 10

## Neighboring Communities and the Region

The Town of Highgate is a community located in the northwestern part of Franklin County on the Missisquoi Bay of Lake Champlain. Highgate adjoins the towns of Swanton to the southwest, and Sheldon to the southeast, Franklin to the east, and Quebec, Canada to the north.

From 1980 to 2000, Highgate experienced substantial growth at a greater rate than the County as a whole. However, over the last 20 years, Highgate’s population has stayed relatively stable, while neighboring northwestern municipalities have had faster growth rates.

Town	Census Population					Percent Change	
	1980	1990	2000	2010	2020	1980-2000	2000-2020
<b>Highgate</b>	<b>2,493</b>	<b>3,020</b>	<b>3,397</b>	<b>3,535</b>	<b>3,472</b>	36.3%	2.2%
Swanton Town	5,141	5,636	6,203	6,427	6,701	20.7%	8.0%
Sheldon	1,618	1,748	1,990	2,190	2,136	23.0%	7.3%
Franklin	1,006	1,068	1,268	1,405	1,363	26.0%	7.5%
Franklin County	34,788	39,980	45,417	47,746	49,946	30.6%	10.0%

Source: 1980, 1990, 2000. 2010 US Census; 2009-2013 American Community Survey 5-Year Estimates

The towns of Highgate, Swanton, Sheldon, and Franklin all have compatible land use goals with the land use goals of Highgate.

### **A COMPARISON WITH THE TOWN OF SWANTON**

The Town of Swanton is located to the southwest of Highgate. These two towns share several natural features including Lake Champlain, the Missisquoi National Wildlife Refuge, and the Missisquoi River. Highgate and Swanton are connected by both Vermont Routes 7 and 78, Vermont State Highway 207, and by Interstate 89. The Lamoille Valley Railroad, which has been converted to a multi-use recreation trail, also links these two towns together. Highgate is home to the Missisquoi Valley Union High School, which is located just north of the Swanton town line off Route 78. The school provides educational services to residents of Highgate, Swanton, and other surrounding towns for students in grades seven through twelve. Highgate is also home to the Franklin County Airport, which is used by residents in all of its surrounding communities. Land use patterns for both towns are generally compatible except for some potential conflicts on the Route 78 corridor, which crosses through both towns. Swanton’s land use zoning districts along the Highgate border are R1 (Agricultural/Residential), R3 (Moderate Density Residential), CLI (Commercial/Light Industrial District), R5 (Residential), NC (Neighborhood Commercial) and FED (Federal Land). Generally, Highgate and Swanton’s residential and agricultural zoning districts are compatible, despite there being some differences in expected density. There is one for potential conflict, Highgate’s Industrial/Commercial District abuts Swanton’s R3 Moderate Density Residential District. Highgate will need to carefully monitor development in its Industrial/Commercial District to ensure there is not a conflict of land use.

## **A COMPARISON WITH THE TOWN OF SHELDON**

The Town of Sheldon is located to the southeast of Highgate. Vermont Route 78 and the Missisquoi River connect these two towns. The inactive Lamoille Valley Railroad, which is in the process of being converted to a multi-use recreation trail, also runs between them. The border area between Highgate and Sheldon is predominantly made up of mixed woods; however, there is also some cleared farmland. The western border has soils that experience ponding or have moderate to severe limitations related to soil wetness. The eastern border is comprised of areas where bedrock is near the soil surface. Highgate's Medium Density Residential, Protected Area, and Forest Reserve Districts border Sheldon's Rural Lands II District and Rural Lands I District, which buffer all Town and State highways. There are no potential land use conflicts along the Highgate/Sheldon border.

## **A COMPARISON WITH THE TOWN OF FRANKLIN**

The Town of Franklin is located to the east of Highgate. Various Class II and Class III town highways connect these two towns. Their border is generally comprised of two different types of land cover, including land that has been cleared for farming and land that is forested. Most of the soils along the border are considered "prime agricultural soils"; however, there is a wetland area along a small portion of their southeastern border. Highgate's Agricultural, Protected Area, and Forest Reserve Districts border Franklin's Rural Residential/Agricultural District. In addition, two areas designated as Franklin's Conservation District's correspond to Highgate's Protected Area and Forest Reserve Districts. There are no potential land use conflicts along this border.

Residents and visitors in each town have access to a local lake. Lake Carmi, approximately 1,375 acres in size, is located in Franklin, while Highgate borders Vermont's largest lake, Lake Champlain. Although Lake Carmi is much smaller than Lake Champlain, it is still considered one of the bigger lakes in the State of Vermont.

## **NORTHWEST REGIONAL PLAN**

The Town of Highgate participates in the Northwest Regional Planning Commission (NRPC). The Planning Commission gives technical assistance to the Town on a variety of planning issues, including seeking out grants for funding on local projects, updating the Town Plan, and zoning bylaws, and other issues of regional significance. All municipalities in Franklin and Grand Isle Counties are members of the NRPC and have representation on the Board of Commissioners. Highgate is regularly represented at all Board meetings, and participates in many of the planning efforts taking place in the region.

The Northwest Regional Plan was adopted by the Board of Regional Commissioners on July 29, 2015. The Regional Plan expires in 2023 and is in the process of being updated.

None of the goals, objectives, or recommendations in the Highgate Town Plan will adversely affect the plans or development trends of the neighboring communities or the region. Highgate will continue to work with neighboring municipalities when implementing this Plan to ensure its compatibility within the region.

# CHAPTER 11

## Recommendations for Implementing the Plan

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In order to have an effective Town Plan, it is essential that the recommendations contained within it be implemented. Implementation takes many forms, from amending bylaws and Town ordinances to working with community groups and organizations on new projects. It is important to periodically review the Plan to prioritize implementation steps and to ensure that all recommendations are being considered. In addition, the Town should work to develop a timeline for implementing the goals of the Plan. Although the Plan is set in a eight-year time frame, many of the goals are long-term, and require continuous effort. Each action in the implementation plan includes a goal timeframe of short (1-3 years), medium (4-6 year) or long (6+ years).

<i>Social and Economic Resources</i>		
<i>Implementation Action</i>	<i>Timeline</i>	<i>Entity Responsible</i>
Extend water and sewer infrastructure to the Franklin County Airport Industrial/Commercial area.	Short	Selectboard
Develop a water and sewer infrastructure to the Highgate Village Center Core.	Medium	Selectboard, Village Core Master Plan Committee
Encourage the development of childcare centers and home-based childcare businesses and ensure development regulations support childcare establishments.	Long/Ongoing	Planning Commission
Explore new partnerships and funding options to enhance the supply and diversity of housing options at all affordability levels, with special focus on opportunities to add senior housing to Highgate Village Core.	Long	Planning Commission
Identify the needs of special needs populations including those with disabilities, the elderly and low-income households, and work to ensure the continued provision of appropriate housing.	Ongoing	Planning Commission
<i>Natural and Cultural Resources</i>		
Create a list of Town historic sites including, but not limited to buildings, farm-scapes, archaeological and other historic sites, and features that contribute to the identity of the Town and the broad patterns of its history.	Medium	Planning Commission/Historical Society?
Identify the important vistas and scenic features in Highgate that are worthy of protection.	Medium	Planning Commission
Guide new development away from productive agricultural and forest soils and consider slope and soil characteristics when reviewing individual development proposals.	Ongoing	Development Review Board

Identify important wildlife and plant habitats in the Town of Highgate and work with other groups to maintain their continued protection.	Long	Planning Commission
Improve access and trail maintenance in the Highgate Cliffs Natural Area.	Long	Planning Commission/Highgate Parks & Recreation
Investigate methods to educate people about the importance of protecting historic sites.	Ongoing	Historical Society?
Continue to hold concerts and family activities in the Village Park.	Ongoing	Highgate Parks & Recreation?
Demolish or restore the Stinehour Hotel.	Long	Planning Commission & Selectboard
<i>Transportation</i>		
Study ways to prevent erosion on Machia Road.	Medium	Selectboard
Study the benefits and costs of local control of a portion of VT Route 78.	Long	Planning Commission?
Partner with Northwest Regional Planning Commission and VTrans in developing park and ride facility improvements such as lighting.	Medium	Selectboard
<i>Community Facilities and Services</i>		
Develop a municipal water system in the Highgate Center Village Core.	Medium	Village Core Master Plan Committee, Selectboard
Update the Capital Budget Program as needed.	Ongoing	Selectboard
Continue to request regional approval of the Highgate Town Plan to make the Town eligible for Municipal Planning Grants and enable the Town to assess impact fees, should they develop them.	Ongoing	Planning Commission
Continue to review the Community Facility and Services Plan periodically to assess that community needs are being met.	Ongoing	Selectboard
Identify methods to fund and enhance the police protection in our community.	Medium	Selectboard
Start recruitment program that can further enhance the fire department.	Medium	Fire Department
Adopt new bylaws to enhance fire department objectives training and implementation of Standard Operating Guidelines (SOGs).	Medium	Fire Department
Obtain more rescue volunteers and equipment as required to meet the needs of the community,	Medium	Missisquoi Valley Rescue, Inc. (MVR)
Seek additional sources of funding to increased paid rescue staff.	Medium	Missisquoi Valley Rescue, Inc. (MVR)
Extend existing water infrastructure to the Industrial/Commercial District.	Short	Selectboard
Prohibit and prevent improper storage and disposal of hazardous waste.	Ongoing	Northwest Solid Waste District

Increase recycling, composting and solid waste diversion by educating the public.	Ongoing	Northwest Solid Waste District
Continue planning efforts to assess the feasibility of developing a new library location at the Stinehour Hotel parcel.	Medium	Village Core Master Plan Committee
Establish a strategic plan for the Ice Arena with support of surrounding towns to keep the facility open and in good condition.	Long	Planning Commission/Highgate Parks & Recreation
Create a town map of walking paths and hiking trails.	Long	Planning Commission/Highgate Parks & Recreation
Add signs and maintain trails in natural areas, particularly Highgate Cliffs to offer more recreational opportunities for hiking.	Long	Planning Commission/Highgate Parks & Recreation
Develop a marketing and informational brochure on Highgate’s recreational opportunities.	Long	Highgate Parks & Recreation
Develop more outdoor active and passive recreational space.	Long	Planning Commission
Continue to participate in the Northwest Communications Union District	Ongoing	Selectboard
<i>All Hazards Resiliency</i>		
Consider adopting a setback standard to reduce landslide hazards.	Short	?
Continue to implement high priority projects identified in the Local Hazard Mitigation Plan.	Ongoing	Selectboard
Adopt annually the Local Emergency Operations Plan.	Ongoing	Selectboard
Work with the state and local Emergency Management, and the town highway department, to plan improved emergency response capacity (operations, training, equipment) during natural disasters.	Ongoing	Selectboard, Town Highway Department
Evaluate the flood hazard regulations for opportunities to incorporate measures to increase public safety, and reduce future damages.	Short	Planning Commission
Adopt updated river corridors and buffers to prohibit future development in high risk areas for flooding or erosion hazards and enable the town to seek additional state matching funds from the Vermont emergency Relief Assistance Fund.	Short	Planning Commission
<i>Land Use</i>		
Continue to review, revise, and update the Highgate Development Regulations as needed to bring them into conformity with all Vermont State Statutes, to reflect current conditions and circumstances, and all applicable goals and objectives contained in this Town Plan.	Ongoing	Planning Commission



Review the commercial uses allowed as conditional uses and connectivity and access standards in the Development Regulations. Ensure access standards encourage shared access along VT 78.	Medium	Planning Commission
Review current zoning districts to identify the effectiveness of the density at managing growth.	Short	Planning Commission
Continue to pursue grant funding to implement the Highgate Center Village Core redevelopment effort.	Short	Planning Commission, Village Core Master Plan Committee
<i>Neighboring Communities and the Region</i>		
Continue to participate in regional planning efforts including transportation planning.	Ongoing	Selectboard, Planning Commission
Continue to work with neighboring communities throughout Plan implementation.	Ongoing	Selectboard, Planning Commission
<i>Enhanced Energy Plan Implementation</i>		
Coordinate with Efficiency Vermont and state low-income weatherization programs to encourage residents to participate in weatherization programs available to Highgate residents	Medium	Planning Commission
Promote the use of the residential and commercial building energy standards by distributing code information to permit applicants.	Ongoing	Zoning Administrator, Development Review Board
Create an Energy Committee and/or appoint an Energy Coordinator to coordinate energy related planning and projects in Highgate.	Long	Selectboard
Investigate a revision to the zoning bylaw that would incentivize compliance with the state's stretch code, or similarly high environmental standard, through the issuance of a bonus density.	Long	Planning Commission
Conduct an energy audit of municipal buildings to identify weatherization retrofits and incorporate the recommendations into the municipal capital budget.	Short/Medium	Selectboard
Identify areas that may be appropriate for a wood-fired district heating facility.	Long	Planning Commission
Promote and provide information about the GoVermont website which provides information citizens about ride share, vanpool, and park-and-ride options.	Ongoing	N/A
Support expansion of public transit in Highgate, including a new route.	Long	Planning Commission
Plan for and install electric vehicle charging infrastructure on municipal property.	Long	Planning Commission/Selectboard
Review municipal road standards to ensure that they reflect the "complete streets" principles.	Long	Planning Commission, Town Highway Department

Review local policies and ordinances to limit water and sewer services to those areas of town where additional development will not contribute to sprawl.	Medium/Long	Selectboard
Continue to power municipal building using solar energy.	Ongoing	Selectboard
Investigate installation of a community-based renewable energy project.	Long	Planning Commission
Provide firefighters with training in fighting fires on structures that have solar panels installed.	Long	Fire Department
Support the development of methane digesters and investigate opportunities for methane digesters on smaller farms.	Long	Selectboard, Planning Commission

## Appendix A- Enhanced Energy Maps

As required per 24 V.S.A. 4352, the Highgate Town Plan contains the following maps. For additional information about the methodology used to create the maps, or for more information about how these maps shall be used, see Chapter 5 – Energy.

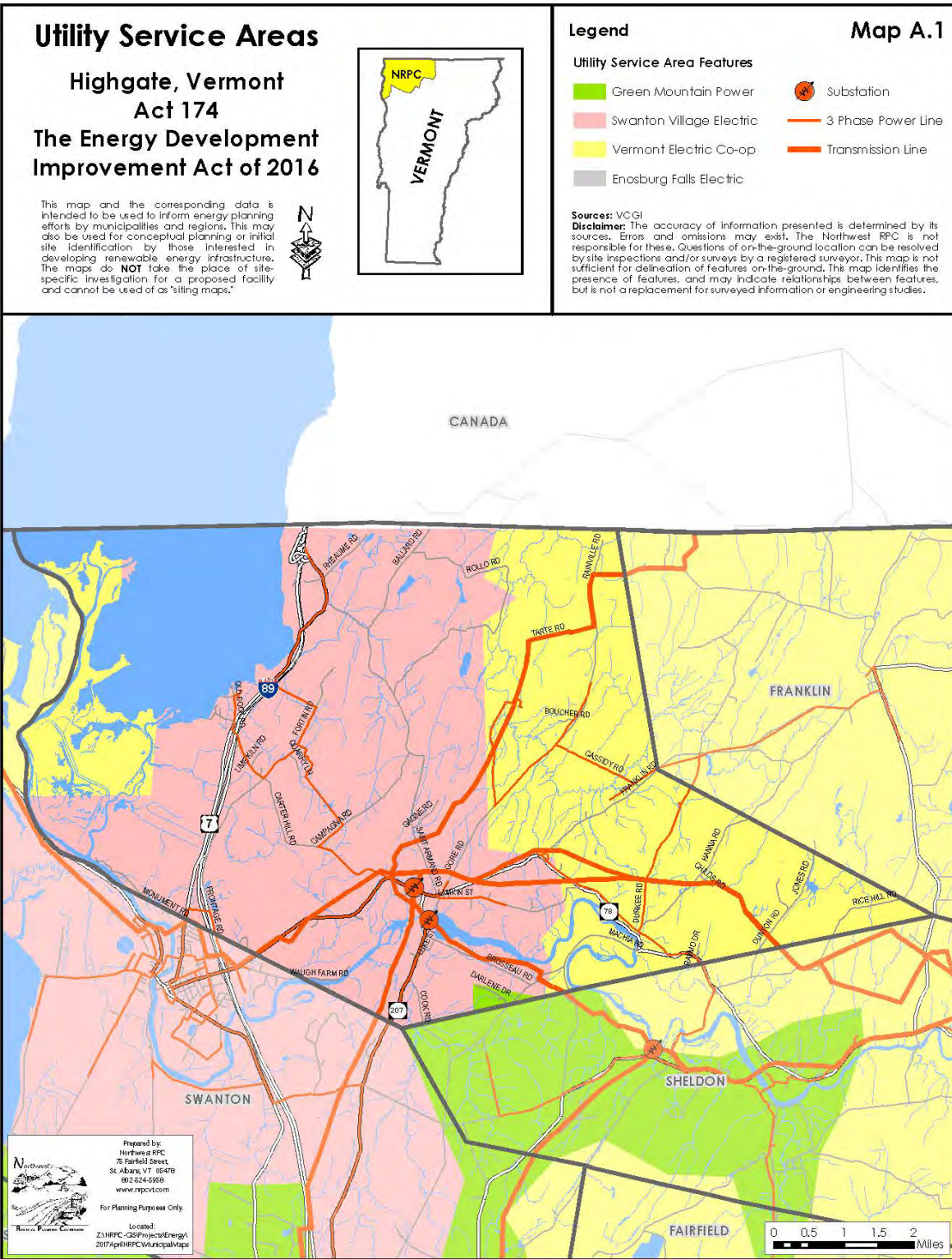
<b>TABLE A.1 – MAPPING CONSTRAINTS</b>		
<b>Solar, Wind and Biomass Maps - Known Constraints</b>		
<b>Constraint</b>	<b>Description</b>	<b>Source</b>
<b>Confirmed and unconfirmed vernal pools</b>	There is a 600-foot buffer around confirmed or unconfirmed vernal pools.	ANR
<b>State Significant Natural Communities and Rare, Threatened, and Endangered Species</b>	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
<b>River corridors</b>	Only mapped River Corridors were mapped. Does not include 50 foot buffer for streams with a drainage area less than 2 square miles.	VCGI
<b>National wilderness areas</b>		VCGI
<b>FEMA Floodways</b>		VCGI/ NRPC
<b>Class 1 and Class 2 Wetlands</b>		VCGI
<b>Designated Downtowns, Designated Growth Centers, and Designated Village Centers</b>	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 constraint is consistent with goals and policies of the Northwest Regional Plan.	NRPC
<b>FEMA Flood Insurance Rate Map (FIRM) special flood hazard areas</b>	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.	NRPC
<b>Ground and surface waters drinking protection areas</b>	Buffered Source Protection Areas (SPAs) are designated by the Vermont Department of Environmental Conservation (DEC). SPA boundaries are approximate but are conservative enough to capture the areas most susceptible to contamination. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan.	ANR

<b>Vermont Conservation Design Highest Priority Forest Blocks</b>	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 Northwest Regional Plan. (Source: ANR)	ANR
<b>Public water sources</b>	A 200-foot buffer is used around public drinking water wellheads. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan.	ANR
<b>National Natural Landmark – Chazy Fossil Reef</b>	The Chazy Fossil Reef in Isle La Motte has been designated a National Natural Landmark by the US Department of Interior.	NRPC
<b>Municipal Conservation Land Use Areas</b>	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 Northwest Regional Plan. Specific municipal land use districts included are outlined in Section D. No land use areas from Highgate have been included in this category.	NRPC
<b>Solar, Wind and Biomass Maps - Possible Constraints</b>		
<b>Constraint</b>	<b>Description</b>	<b>Source</b>
<b>Protected lands</b>	This constraint includes public lands held by agencies with conservation or natural resource oriented missions, municipal natural resource holdings (ex. Town forests), public boating and fishing access areas, public and private educational institution holdings with natural resource uses and protections, publicly owned rights on private lands, parcels owned in fee by non-profit organizations dedicated to conserving land or resources, and private parcels with conservation easements held by non-profit organizations.	VCGI

<b>Deer wintering areas</b>	Deer wintering habitat as identified by the Vermont Agency of Natural Resources.	ANR
<b>Hydric soils</b>	Hydric soils as identified by the US Department of Agriculture.	VCGI
<b>Agricultural soils</b>	Local, statewide, and prime agricultural soils are considered.	VCGI
<b>Act 250 Agricultural Soil Mitigation Areas</b>	Sites conserved as a condition of an Act 250 permit.	VCGI
<b>Class 3 wetlands</b>	Class 3 wetlands in the region have been identified have been included as a Regional Possible Constraint. The inclusion of this resource as a regional constraint is consistent with goals and policies of the Northwest Regional Plan.	ANR
<b>Municipal Conservation Land Use Areas</b>	Conservation Land Use Districts, as designated in municipal plans, that include strict language that deters, but does not prohibit development, have been included as a regional possible constraint. Specific municipal land use districts included are outlined in Section D. The Conservation District and the Forest Reserve District from Highgate have been included in this category.	NRPC
<b>Hydro Map - Known Constraints</b>		
<b>Constraint</b>	<b>Description</b>	<b>Source</b>
<b>National scenic and recreational rivers</b>	Upper Missisquoi and Trout Rivers.	BCRC/ NRPC
<b>Hydro Map - Possible Constraints</b>		
<b>Constraint</b>	<b>Description</b>	<b>Source</b>
<b>“303d” list of stressed waters</b>		ANR
<b>Impaired waters</b>		ANR
<b>State Significant Natural Communities and Rare, Threatened, and Endangered Species</b>	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

**Table A.2 - Existing Generators in Highgate**

Category	Sub - Category	Organization	Address	CPG	Capacity
		Type		Number	kW
Hydro	Large Hydro	Business			11510
Solar	Ground-mounted PV	Residential	451 Dunton Road	17-4933	3.8
Solar	Ground-mounted PV	Residential	3276 Rice Hill Rd	3731	6.84
Solar	Ground-mounted PV	Residential	5679 route 78	18-4288	8.26
Solar	Ground-mounted PV	Residential	1797 Gore Rd	7043	10
Solar	Ground-mounted PV	Residential	73 Frontage Rd	3772	11
Solar	Ground-mounted PV	Residential	649 Tarte Rd	19-0110	13.6
Solar	Ground-mounted PV	Residential	2609 Tarte Rd	18-3555	15
Solar	Ground-mounted PV	Residential	150 Hanna Rd	18-3623	15
Solar	Ground-mounted PV	Residential	1283 Cassidy Rd	19-3842	11.4
Solar	Roof-Mounted PV	Residential	923 Hanna Rd	17-3554	11.8
Solar	Roof-Mounted PV	Residential	96 Hanna Rd	18-0040	6
Solar	Roof-Mounted PV	Residential	7735 VT Rt 78	5769	6
Solar	Roof-Mounted PV	Residential	3308 Gore Rd	3799	6
Solar	Roof-Mounted PV	Residential	474 Brosseau Rd	17-0378	6.21
Solar	Roof-Mounted PV	Residential	253 Mill Hill Road	18-2130	7.6
Solar	Roof-Mounted PV	Residential	219 Mill Hill Road	17-0222	7.6
Solar	Roof-Mounted PV	Residential	2840 US-7	17-4603	10.4
Solar	Roof-Mounted PV	Residential	7473 VT Route 78	5392	14
Solar	Roof-Mounted PV	Residential	1759 Morey Road		10.3
Solar	Roof-Mounted PV	Residential	144 Jedware Circle	18-1872	6
Solar	Roof-Mounted PV	Residential	2188 Carter Hill Road	17-3910	6.6
Solar	Roof-Mounted PV	Residential	2696 Carter Hill Rd	17-4674	18
Solar	Roof-Mounted PV	Residential	57 Maskell Dr	19-3809	5



# Transmission & 3 Phase Power Infrastructure

## Highgate, Vermont Act 174 The Energy Development Improvement Act of 2016

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. This may also be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. The maps do **NOT** take the place of site-specific investigation for a proposed facility and cannot be used as "siting maps."



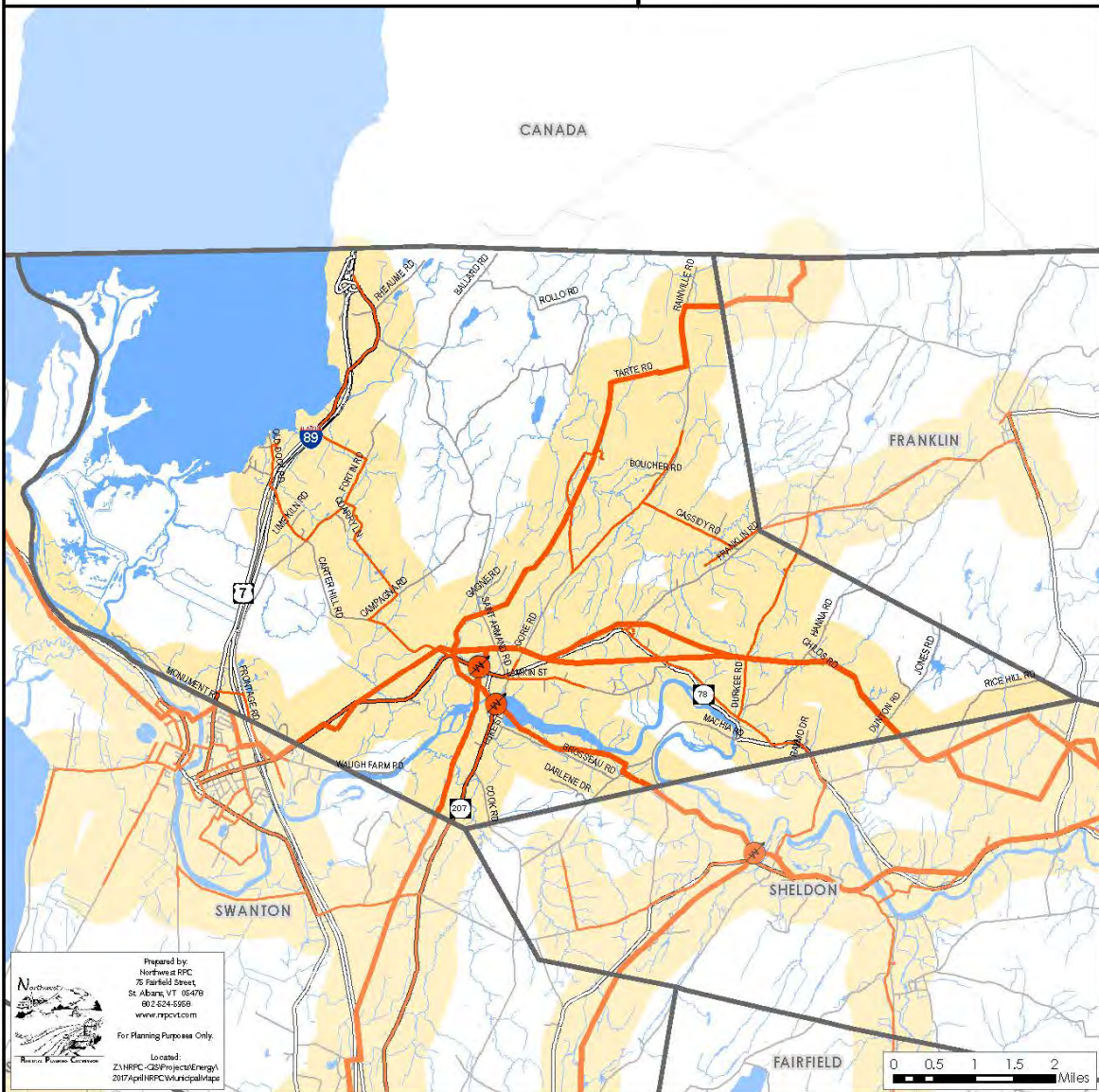
### Legend

- Substation
- 3 Phase Power Line
- Transmission Line
- 1/2 Mile Buffer (3 Phase Power Line & Transmission Line)

### Map A.2

#### Sources: VCGI

**Disclaimer:** The accuracy of information presented is determined by its sources. Errors and omissions may exist. The Northwest RPC is not responsible for these. Questions of on-the-ground location can be resolved by site inspections and/or surveys by a registered surveyor. This map is not sufficient for delineation of features on-the-ground. This map identifies the presence of features, and may indicate relationships between features, but is not a replacement for surveyed information or engineering studies.



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For Planning Purposes Only.

Located:  
Z:\NRPC-35\Projects\Energy\2017\April\RPC\Municipal\Map



# Natural Gas Lines

## Highgate, Vermont Act 174 The Energy Development Improvement Act of 2016

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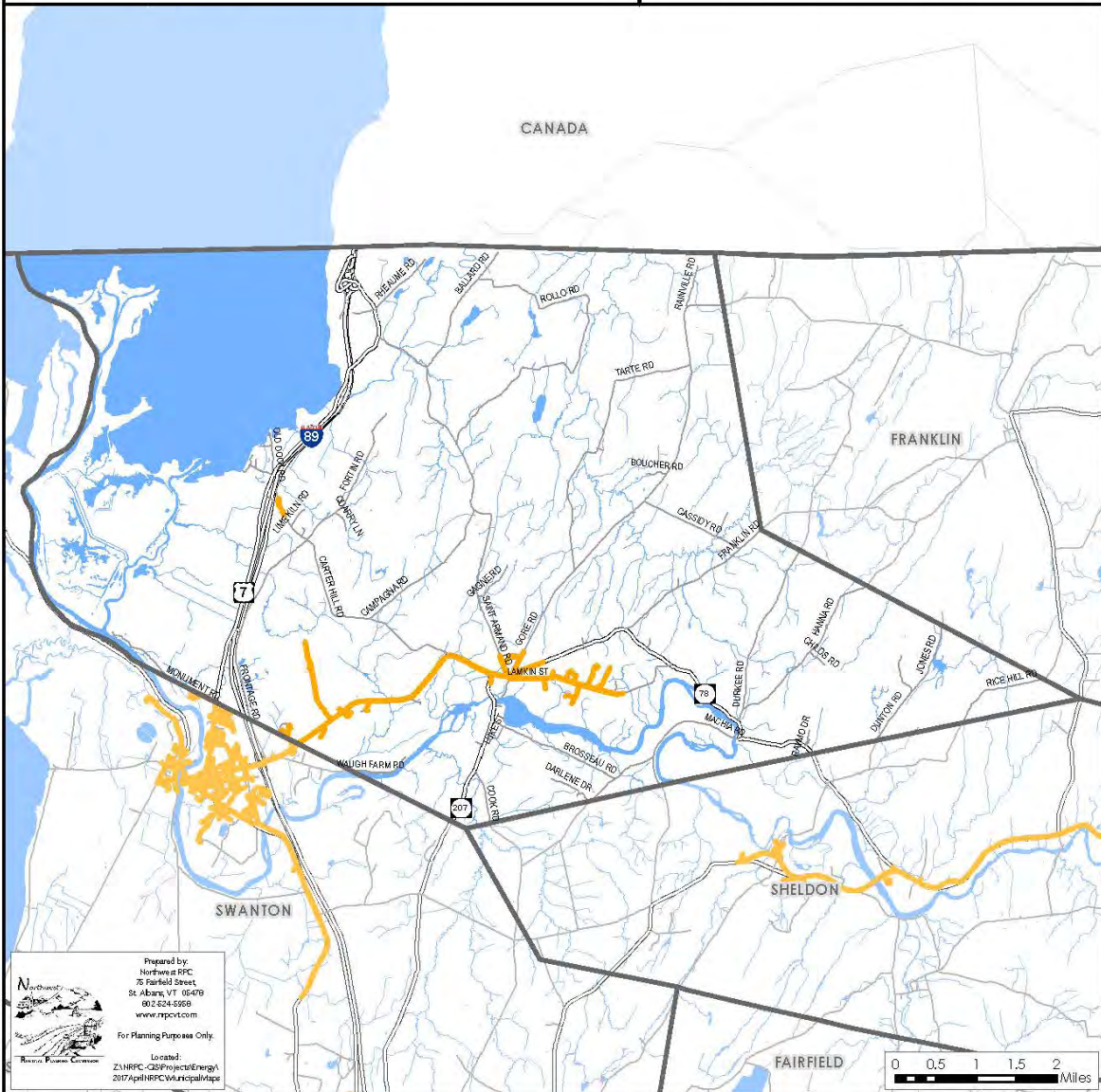
# Map A.3

## Legend

Natural Gas Line

### Sources: VCGI

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# Existing Generation Facilities

## Highgate, Vermont Act 174 The Energy Development Improvement Act of 2016

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### Legend

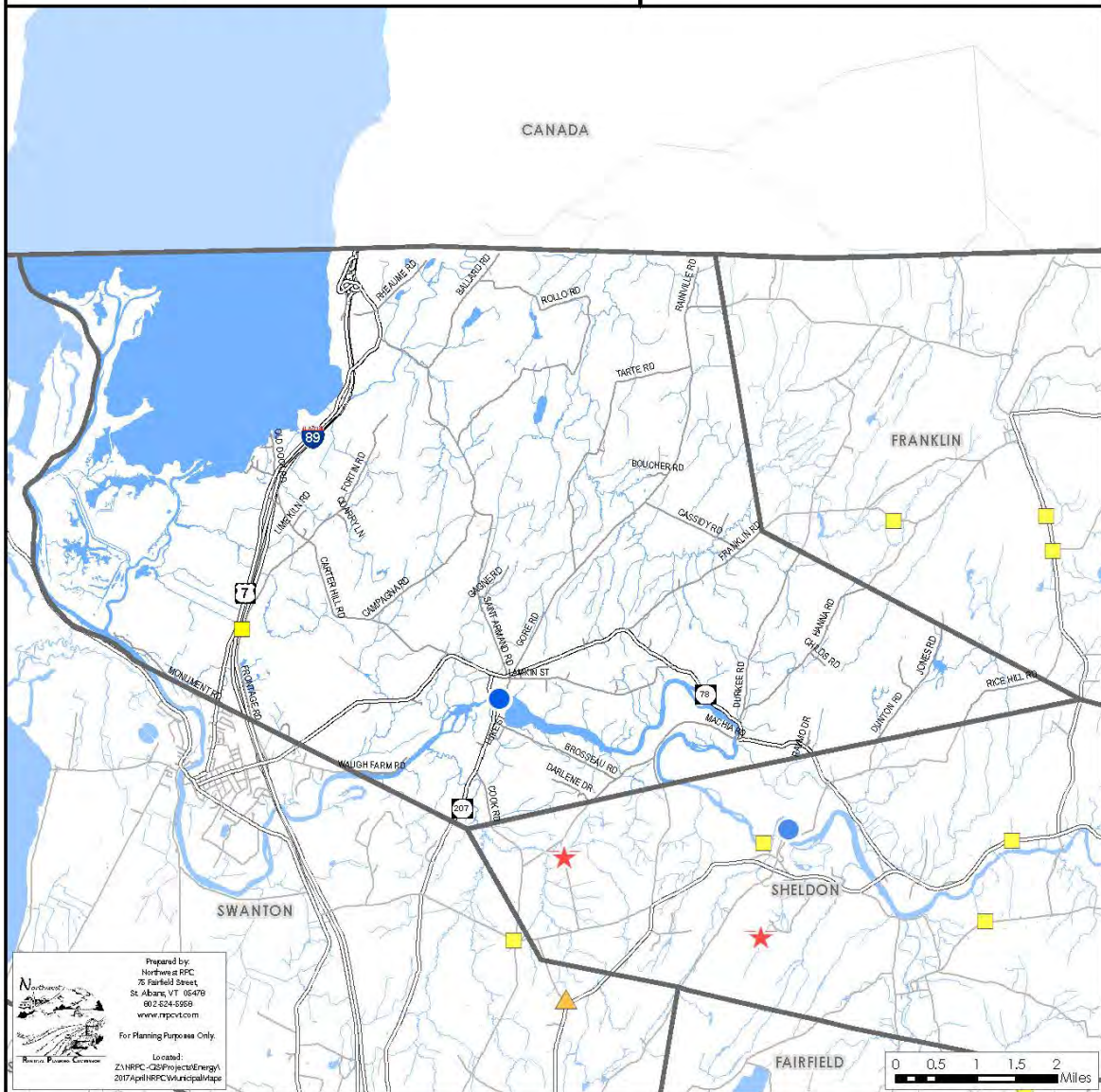
- ★ Biomass Facility
- Hydro Facility
- Solar Facility
- ▲ Wind Facility

### Map A.4

**Note:** Only generators 15kW are shown on the map. A full list of all generators is available.

**Sources:** VCGI

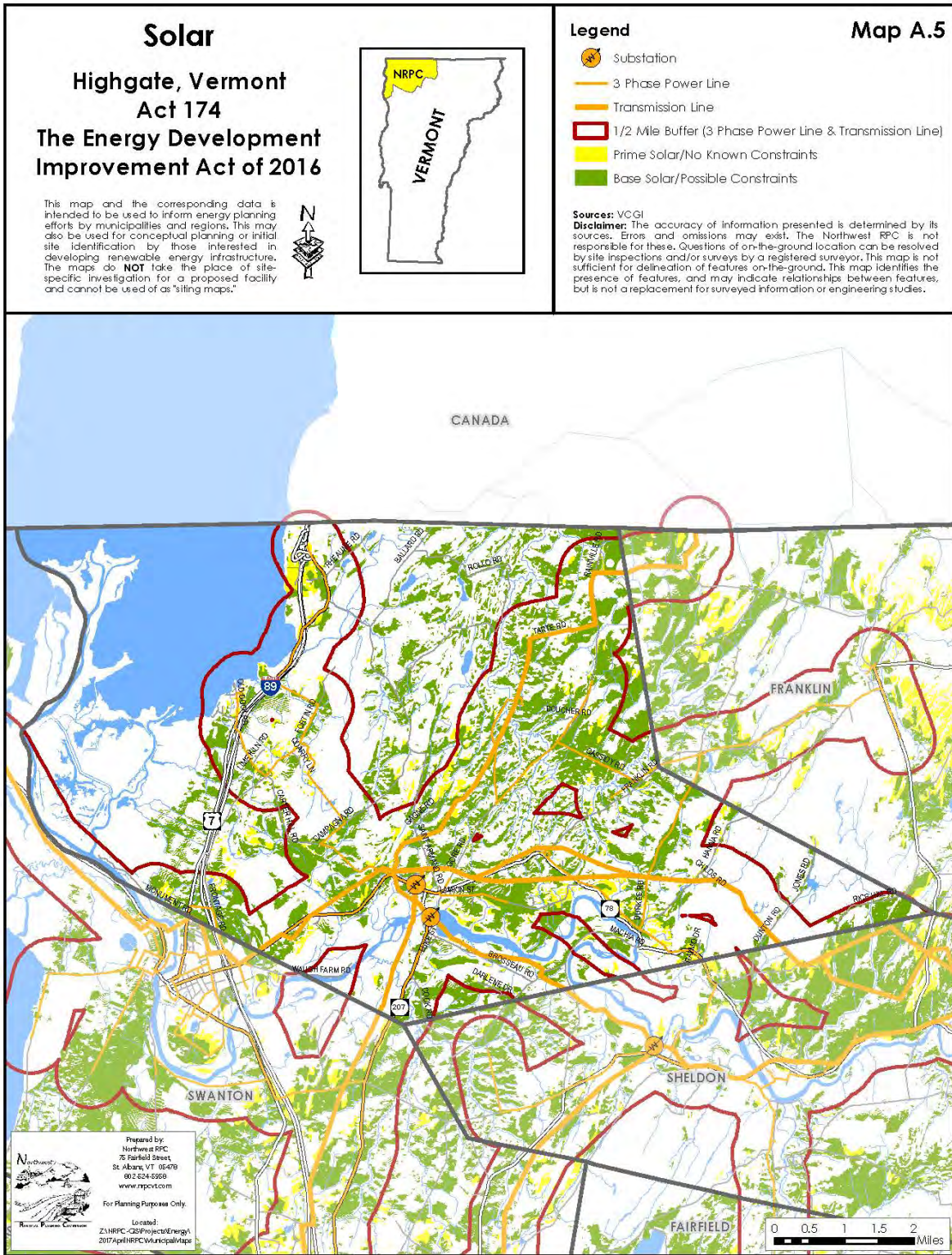
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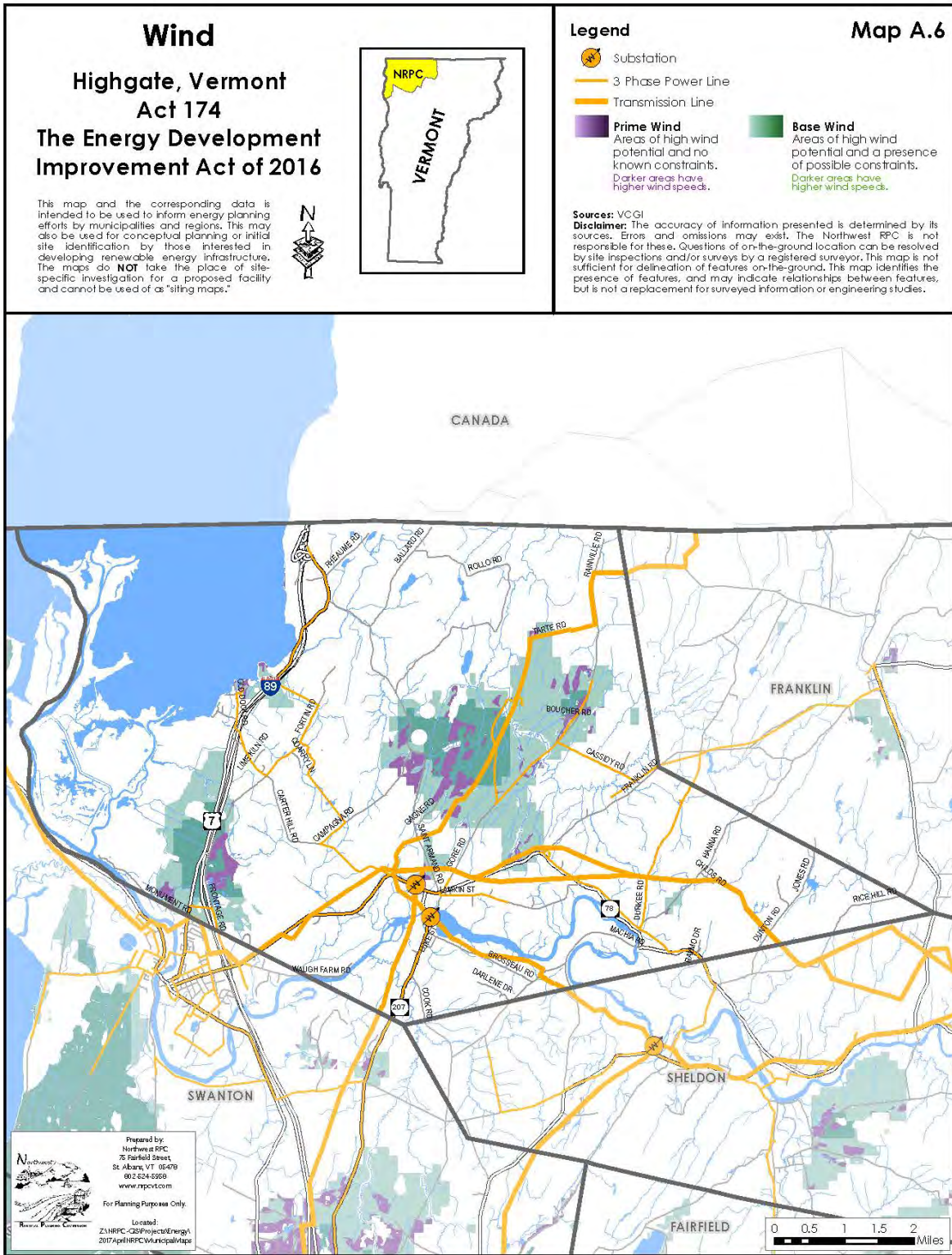


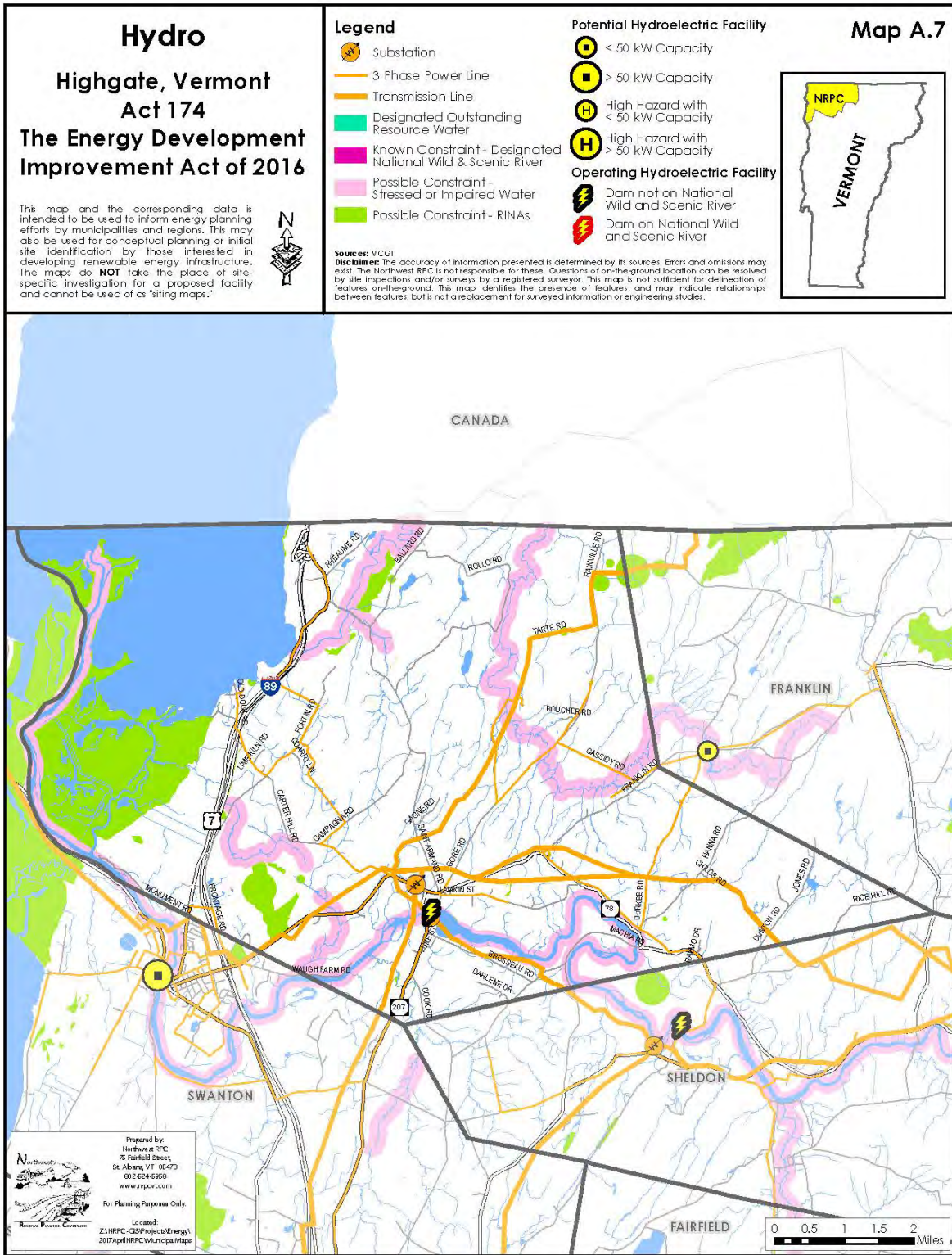
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# Woody Biomass

## Highgate, Vermont Act 174 The Energy Development Improvement Act of 2016

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### Legend

- Biomass System
- Cow Power
- Substation
- 3 Phase Power Line
- Transmission Line
- Prime Woody Biomass/No Known Constraints
- Base Woody Biomass/Possible Constraints

### Map A.8

Sources: VCGI

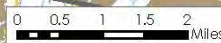
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# Appendix B- Highgate Housing Needs Assessment

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