

# **Town of Eden Town Plan (2018-26)**



**Adopted by Eden Selectboard:  
12-26-17**

**Regionally Confirmed: 1-23-18**

Prepared by **Eden Planning Commission**

With technical assistance from the **Lamoille County Planning Commission**  
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## Chapter 1: Introduction

The Town of Eden maintains a municipal plan, hereafter referred to as the Town Plan. This plan is consistent with the statewide planning goals established in the *Vermont Municipal and Regional Planning and Development Act* (24 VSA §4382 and VSA §4302). Among these goals are the following guiding principles:

- To encourage citizen participation at all levels of the planning process, and to assure that decisions shall be made at the most local level possible;
- To respect and strive to maintain the historic settlement pattern of compact village and urban centers separated by rural countryside; and,
- To provide a strong and diverse economy by providing satisfying and rewarding job opportunities while maintaining high environmental standards.

This is the fourth edition of the Town Plan for Eden. Previous Town Plans were completed in 2002, 2007 and 2013. The accelerated rate of social, economic, and technological innovations underscores the need to update and maintain a Town Plan. Growth and development related issues, from telecommunications to natural resource conservation, are central to the quality of life enjoyed by Eden residents.

### How is a Town Plan Useful to Eden residents?

Although towns are not required to adopt municipal plans, a Town Plan can be beneficial in many ways including potential uses such as:

1. *A source of information:* The plan is a valuable source of information for local boards, commissions, residents, businesses (both current and prospective) and neighboring communities.
2. *A basis for community programs and policies:* The plan can serve as a guide for capital budgeting and other community initiatives, including farmland protection, recreation planning, housing policy and energy initiatives.
3. *A basis for future planning and development-related studies:* Few plans can address every community issue in sufficient detail. Town Plans not only record and analyze what is known about community residents and local resources, but also what is not yet known. Therefore, many plans will recommend further studies to develop a course of action for specific needs.
4. *A standard for review at the state and regional levels:* State land use regulations identify Town Plans as a standard in the review of Act 250, Section 248 and Act 174 applications. Town Plans are also important to the development of Regional Plans and inter-municipal programs. Finally, state proposals, including the purchase of state land for parks, conservation and recreation, are also required to comply with Town Plans.
5. *To fulfill an eligibility requirement for state and federal grants:* Most statewide low interest loan programs and grants require that municipalities adopt and maintain a Town Plan. Grants might help to procure funds for planning, infrastructure, community and recreational development and historic preservation projects. The adoption of a Town Plan generally strengthens the competitiveness of any grant application.

6. *A basis for regulatory implementation:* If desired, the Town Plan can also serve as the foundation for future development bylaws and other local ordinances.

### **What is required of a Town Plan?**

Vermont municipalities are authorized to create development plans under 24 VSA §4381. Statute requires that plans address a minimum of twelve subject areas, but does not mandate specific goals or policies beyond the previously cited statewide planning goals. The required components of a Town Plan include:

1. A statement of objectives, policies, and programs of the municipality to help guide the future growth and development of land, public services and facilities, and to protect the environment;
2. A land use plan and map;
3. A transportation plan and map;
4. A utilities and public facilities plan and map;
5. A statement of the municipality's policies for the preservation of rare and irreplaceable natural areas, and scenic and historic resources;
6. An educational facilities plan and map;
7. A statement of how the plan relates to adjacent municipalities' plans and the regional plan;
8. An energy plan, including policies and programs to implement those policies;
9. A housing element, including a recommended program for addressing low and moderate income persons' needs as identified in the Regional Plan;
10. An economic development element that describes present economic conditions and the location, type, and scale of desired economic development and identified policies, projects, and programs to foster economic growth.
11. A flood resilience plan and map that identifies flood hazard and fluvial erosion hazard areas and designates those areas to be protected. Also recommendations for policies and strategies to protect these areas and mitigate risks to public safety, critical infrastructure, historic structures, and municipal investments.
12. A recommended program for implementing the plan's objectives.

### **How the Town Plan was developed**

The 2002, 2007 and 2013 Eden Town Plans have served as the foundation for this update. Beginning in the spring of 2016, the Eden Planning Commission received a grant to begin meeting regularly with Lamoille County Planning Commission (LCPC) staff to review and update each chapter. All meetings were open to the public and participation in the planning process is always encouraged. This update is focused on incorporating current information from the new American Community Survey and the Eden Community Survey; revisiting previous growth and housing projections as well as ensuring continued compliance with Vermont statutes. Finally, with input from the community and the Eden Selectboard, the Eden Planning Commission has identified goals, policies and recommendations to reflect the changing conditions within the community and throughout the region.

After completing a preliminary draft, the Eden Planning Commission and Selectboard warned hearings to receive public comment before formally adopting the plan. The involvement of local residents is an integral part of the town's continuing planning process. According to Vermont statute, municipal

development plans must be re-adopted at least every eight years (an extension from the previous 5-year interval). This schedule provides an opportunity to re-visit the challenges and opportunities facing a community and to comply with any additional mandates from the State. The 2018 Town Plan update is intended to create an 8-year vision for Eden with the understanding that changing conditions may require the town to re-asses planning priorities in the interim and amend any chapter if needed. Any future changes to the already ratified plan would go through the same process of public hearings before any changes were adopted.

### **Statement of objectives**

Based on a survey of residents in 2016 and additional community input, the Planning Commission identified five guiding principles to be used in the development of the Town Plan. These principles are:

1. All residents must have their property rights both respected and protected;
2. The growth of Eden should occur in such a way as to enable residents to continue to live in town without undue tax burdens;
3. The natural environment should be protected and conserved to ensure that the resources we have today will be available for future generations;
4. A safe and healthy living environment must be maintained; and,
5. Eden's scenic, rural, small-town atmosphere should be preserved.

The first guiding principle of the Eden Town Plan is to respect and protect private property rights. The Eden Town Plan is a visioning document and does not regulate in any way. The only regulatory parameters applied to the Town of Eden are in Act 250, and Public Service Board proceedings (Section 248 and Section 248a). The District Commissions and Public Service Board must give substantial deference to local and Regional Plans in their rulings. This provides Eden with a voice in projects of local and regional significance, without infringing on individual property rights.

Eden is fortunate to have a wealth of natural resources, including a lake, a reservoir, many ponds, forest lands, prime agricultural soils, gravel deposits, wildlife and fisheries. These resources provide residents and visitors with a variety of recreational opportunities; supply valuable raw materials for construction; and support local jobs in agriculture, forestry, and tourism. The local natural resource base is a central part of Eden's past and present prosperity, and these resources should be preserved to afford the same opportunities for future generations.

To maintain a safe and healthy environment for town residents, the town must also take measures to ensure that future development does not endanger individual property owners or the public at-large. For example, development should be accessible to emergency service providers, roads should be safe for both automobiles and pedestrians, and air and water quality should be protected.

Finally, Eden residents also value the small-town atmosphere of the community, including its historical structures, agriculture and forest lands, and compact village centers surrounded by rural countryside. Maintaining this land use pattern is generally accomplished by encouraging and supporting orderly growth through integrated transportation, natural resource, energy, and economic policies.

## The structure of this plan

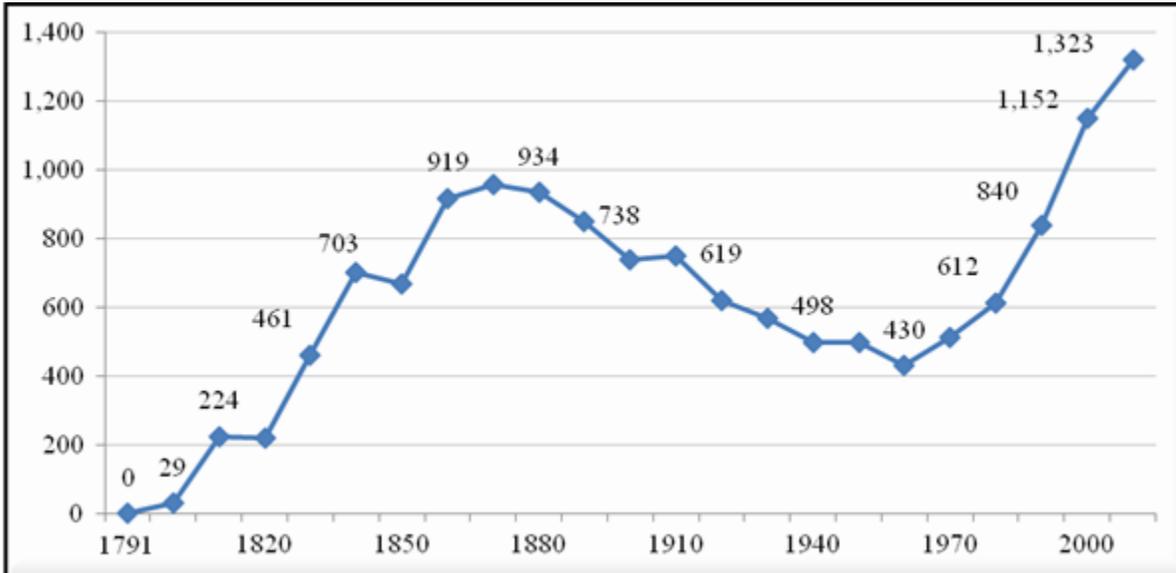
The Eden Town Plan is divided into fourteen chapters that address both the required elements of the *Vermont Municipal and Regional Planning and Development Act* and other areas of local concern. Each of the twelve required elements is discussed, including information on past trends, existing conditions, and future needs. Based on the analysis of that information, one or more of these goals and the policies to work towards implementation of these goals has been identified. *Goals* can be defined as desired future conditions— although some are highly ambitious and may not be attainable for several years. *Policies* describe the conditions or standards by which a development proposal can be evaluated for compliance with a goal. Finally, each chapter concludes with a discussion of the *recommendations* for the implementation of the goals and/or policies. Some involve continuing current actions, while others suggest new initiatives for the future. A strong implementation plan will describe what is needed, who shall take responsibility for the desired response, and when this can be accomplished. By following these guidelines, the course of action associated with implementation items should be clear.

## Chapter 2: Community Profile

The Town of Eden lies in northeast Lamoille County and is comprised of 40,690 acres (63.58 square miles), making it the sixth largest town in Vermont by area. Bordering towns include Johnson, Belvidere, Montgomery, Lowell, Albany, Craftsbury and Hyde Park.

### Historical Census Count

Since 1791, every 10 years, the U.S. Census Bureau has conducted a count of persons living in each municipality in the United States.



**Figure 1:** Population estimates from Census data for Eden from 1791 to 2010

Source: U.S. Census Bureau

According to the 2010 Census, Eden has a population of 1,323 residents— an increase of nearly 15-percent over the prior Census count. Following nearly a century of gradual population decline (1870- 1960), Eden has experienced sharp population growth over the last fifty years. This post-World War II growth roughly mirrors the Lamoille County population trend while outpacing the state of Vermont’s growth during the same time period.

### Components of Population Change

As cited in the previous section, Eden’s population trend has increased significantly in recent decades. This trend, in actual numbers, is shown in **Table 1**. Population change is the result of two primary factors; natural increase (where more people are born than die over any given period of time) and net migration.

Period	Change in Population	% Change
1981-1990	228	37.3%↑
1991-2000	312	37.1%↑
2001-2010	171	14.8%↑

Source: U.S. Census Bureau

## Regional & Neighboring Populations

Eden is surrounded by rural communities, all of which are also growing. **Table 2** shows the population numbers for Eden, neighboring communities, the county and the state from 2000 to 2010. Overall, Lamoille and neighboring Franklin and Caledonia counties ranked third, second, and fourth respectively in rate of growth among the state’s fourteen counties during the same time period. As a basis for comparison, Vermont’s population is estimated to have grown by only 2.8% from 2000 to 2010—down from an 8.2% growth rate during the 1990s.

**Table 2:** Net and percentage population change in Eden, Lamoille County, the State of Vermont, and select neighboring Towns, 2000 to 2010

	2000	2010	% Change
<b>Eden</b>	<b>1,152</b>	<b>1,323</b>	<b>14.8%↑</b>
Albany	840	941	12.0%↑
Craftsbury	1,136	1,206	6.2%↑
Hyde Park	2,847	2,954	3.8%↑
Johnson	3,274	3,446	5.3%↑
Lowell	738	879	19.1%↑
Montgomery	992	1,201	21.1%↑
Wolcott	1,456	1,676	15.1%↑
Lamoille County	23,233	24,475	5.3%↑
State of Vermont	608,827	625,741	2.8%↑
Source: U.S. Census Bureau			

## Future Population Projections

Various agencies in state government periodically supply population predictions based on models that weigh expected fertility, mortality, and net migration. It should be noted that population projections are only expectations of what might occur. As with any prediction, their accuracy depends on the validity of the underlying assumptions. These models can only provide an estimated forecast for population trends. Naturally, mathematical projections cannot anticipate unforeseen events, such as war, recession, natural disasters or affordability, which could drastically alter a community’s growth trajectory.

The latest set of state predictions released in 2013 forecast Eden’s population will be 1,482 people in 2020 and 1,585 people in 2030. This represents a nearly 20% population growth between 2010 and 2030. While all predictions are only estimates, the fact that Eden and Lamoille County have grown at a rate faster than the state for four decades is reasonable evidence to suggest the town will continue to grow into the future. Within roughly an hour drive of Burlington, Eden’s proximity to Chittenden County – the state’s fastest growing county and largest metropolitan and economic center – is at least partially responsible for past and projected growth trends. The Capital region of Montpelier, about an hour drive to the south, is also a job location destination. Recent development in the Jay Peak area to the north may also contribute to population growth in Eden. Over the next five years, as updated Census estimates are released and more information regarding the health of the economy becomes available, the town should have a clearer idea of where development trends are pointing. In the meantime, monitoring new construction will be the most accurate predictor of population growth.

## Results of 2016 Eden Community Survey

The 2016 Eden Community Survey asked residents to share their perspective on development and growth within town. Overall, respondents were supportive of new residential construction, senior citizen housing and single-family housing development in Eden. Conservation subdivision and multi-family housing were desirable and planned mobile home parks ranked lowest in support. Ultimately, as

Eden continues to grow, an emerging challenge will be to balance private property rights, and adhere to the preferences of the community regarding future development.

### **Goals, policies, & recommendations**

*Goal:* For Eden to experience slow to moderate population growth, without placing a burden on existing community facilities and public services. Growth should ultimately not exceed the town's ability to provide services to support the population.

#### *Policies:*

- Eden encourages development that provides economic opportunities and employment for Eden residents.
- The clustering and/or siting of any new development is encouraged to replicate the established traditional patterns within the town, protect rural and scenic character, and to maintain contiguous tracts of resources and open land.
- All development within the town must follow state wastewater regulations.
- Further fragmentation of productive agricultural and forestland should be avoided. Continued access to productive forest and farmland will be encouraged.
- Earth resource operations (sand and gravel pits and stone/mineral quarries) shall comply with Act 250 regulations.
- Development in the floodplain is discouraged.

#### *Recommendations:*

- The Planning Commission should periodically review Eden's population and housing growth patterns, and population projections.
- The Planning Commission should review all Act 250 applications for their impact on the town. Where the application is determined to not conform to this Plan, the Planning Commission or Selectboard should participate in the Act 250 process in order to ensure the concerns of the town are addressed.
- Encourage forest landowners to continue collaboration with the County Forester.
- Encourage participation in Agricultural Extension Service programs.
- Eden should work with LCPC and other organizations to educate landowners about ways to minimize risks for development in Flood Hazard Areas.

## Chapter 3: Historic, Scenic, & Archeological Resources

### Historic resources

Chartered in 1781, Eden has a long and varied history, which is the basis for many of the values and traditions held by residents today. The book ‘*A Walk through the Garden of Eden*’, published by the Eden Historical Society in 1996, presents a comprehensive record of Eden’s unique history. The Eden Historical Society has been recognized by the community for their efforts in recording the town’s history, and in the preservation of local historic resources. The old Town Clerk’s office building was donated to the Eden Historical Society by Fred and Patricia Lentz. The building was re-located to a plot of land next to the Eden Central School. This plot of land was deeded to the Eden Historical Society from the Town of Eden. The building is under restoration with a goal to function as an educational center, showcase artifacts and to provide information on the history of Eden.

Although Eden does not have any structures listed on the National Register of Historic Places, the town does have a considerable number of buildings of local and statewide historic significance. Many of these historic structures have been identified in the Vermont Division of Historic Preservation *Historic Sites and Structures Survey* completed in 1983. This survey identified 48 historic structures in Eden, which are highlighted in the Historic Scenic and Archeological Resources Map. In addition to the inventory of historic structures and districts, there are numerous other historical locations within town, including former mill and schoolhouse sites, cellar holes, cemeteries, and historic roads. With a land grant by the Vermont Assembly following the Revolutionary War, Eden began with 36 square miles awarded to Seth Warner and his regiment as partial payment for wartime service. While many of these sites are not formally recognized, they contribute to the community’s historical fabric and connection to its past.

### Scenic resources

The Town of Eden has an abundance of scenic resources for the enjoyment of residents and visitors alike. A drive on almost any road, a walk on the Long Trail, or an afternoon canoeing on any of the town’s bodies of water provide a multitude of scenic vistas. While the town could conceivably identify every meadow and forested ridgeline as scenic resources worthy for consideration or protection, the Planning Commission has identified priorities for special consideration. The highest priority scenic resources (also identified on the Historic, Scenic, & Archeological Resources map) include:

- **Vermont Routes 100 and 118:** Vermont Route 100 serves as the region’s primary north-south arterial and is the most heavily traveled highway through Eden. Vermont Route 118– which originates in Eden and runs north through Montgomery and Berkshire to the Canadian border– is also a very important travel corridor. These highways provide travelers with a panoramic window into the town. Working to maintain an attractive highway landscape will promote Eden as a desirable place to live, work, and play. The Historic, Scenic, & Archeological Resources Map shows some stretches of highway that are of particular scenic value.
- **Lake Eden, Belvidere Pond (also called Long Pond), and South Pond:** Eden’s three major bodies of water provide immeasurable scenic and recreational value. From the wild undeveloped shores of Belvidere Pond (Long Pond) to the rustic camps and year-round homes around Lake Eden and

South Pond, the town's bodies of water offer picturesque views from the shoreline or on the water.

- The Green River Reservoir: Located in Eden and Hyde Park, the Green River Reservoir is the largest non-motorized body of water in Vermont. Its wilderness-like character is considered a local treasure, to such an extent that the Town of Hyde Park has adopted a view shed overlay district covering private lands within view of the water. The project won state recognition for its creativity and the public involvement in its development. This exceptional view shed extends into the Town of Eden's southern border region. Eden has not adopted bylaws similar to Hyde Park partially due to the fact that the land surrounding Green River Reservoir in Eden is owned by the State.

While Eden's scenic resources remain largely preserved within the rural, small-town character of the town, numerous potential threats exist. Telecommunications towers, industrial wind towers, salvage yards and disproportionately scaled development could all negatively impact Eden's scenic landscape. In recent years, the construction of industrial wind farms, such as the 21 towers of the Kingdom Community Wind project in the adjacent Town of Lowell, have significantly challenged small, rural communities across the state. In response, several municipalities have adopted ridgeline development bylaws to protect local scenic values.

Ultimately, despite their inherent value to the community, Eden's scenic resources are difficult to regulate. Although the community values the town's beautiful vistas, forested hills, and open fields, it would be unfair to deny the right to develop lands based on the visual appearance of private property from a public highway. The Selectboard, Planning Commission, and town residents may establish policies that strike an appropriate balance between the private property rights and the economic, environmental, and aesthetic value of Eden's scenic resources. At a local scale, blighted properties may be regulated through ordinances. However, larger development impacts associated with industrial wind and telecommunications towers require an ongoing public dialogue on how or if the town should review development on the basis of scenic values.

### **Archeological resources**

Archeological sites contain a fragile, complex, and irreplaceable record of past human activities. Such sites differ from historic resources in that the pertinent information is buried. For 10,000 years, Native Americans focused their activities within river valleys and lake basins. Evidence of prehistoric activities and occupations may be contained within soil deposits of a cornfield, a woodlot, or could be buried in a floodplain. Any prehistoric archeological sites constitute an essential link to our past. These sites are often the only source of information for the longest part of human history in Eden.

A National Park Service study of archaeologically significant riparian areas was done as part of the Vermont Rivers Study in 1986. The Park Service findings concluded that the entire length of the Gihon River, from Lake Eden and points south, has an expected moderate-to-high archeological sensitivity (see Historic, Scenic, & Archeological Resources Map). This rating does not necessarily indicate that any archaeologically significant resources have been located in the area; it only denotes that the topography, sun exposure, availability of food and other important natural resources exist in the right combination

along this river to expect that the area could be archaeologically significant. Unlike the large sites found in Highgate and Swanton, any sites, if they exist, will likely be small.

### **Results of 2016 Eden Community Survey**

The 2016 Eden Community Survey asked one question relating to the protection of historic buildings. A majority (66-percent) responded that the protection of historic buildings is a priority. Comments related to scenic resources suggested that Eden should consider addressing the stockpiling of trash and junk cars. The positive appearance of the town is an important asset, especially for visitors. Roadside litter is collected as a community event on Green-Up Day every May.

### **Goals, policies, & recommendations**

*Goal:* To preserve Eden's heritage for future generations.

#### *Policies:*

- Eden supports efforts that record local history, preserve historic structures, conserve scenic resources and preserve Eden's archaeological record. Through these efforts the town's heritage will be recorded, protected and made available for residents and visitors to learn what events have made Eden the place it is today.
- Eden encourages the restoration and reuse of historic buildings and any future development is encouraged to be in character with surrounding architecture.
- Development around the natural scenic resources identified should be sited and constructed in such a manner as to retain the natural scenic beauty of the area. Removal of the natural vegetation on a development site should be minimized and structures should be screened or hidden from view as best as possible.
- Development should avoid ridgelines, especially those visible from roadways and high density developed areas such as the Lake Eden shoreline. Any ridgeline development should be set back from the edge of the hill and have a forested buffer to protect the view from the valley.
- Storage of abandoned vehicles and junk must comply with local and state limitations on such materials.
- Encourage the State of Vermont to include neighboring towns in the decision making process regarding the siting of industrial power generation installations.
- Projects occurring in archeologically sensitive areas should consider the potential impact of the project on these sites during the early stages of development. This will offer the best opportunity to mitigate potential impacts. If at any point in the development of a parcel, an archeological site is discovered, the state archeologist should be given a reasonable opportunity to investigate and suggest a means to mitigate the impact.

#### *Recommendations:*

- Support the Eden Historical Society in their efforts to rehabilitate the old clerk's office as an education center and museum; pursue grant funding to collect oral histories of our residents;
- The Selectboard may follow up with violations of the state abandoned vehicles and junk regulations.

## Chapter 4: Housing

Eden is predominantly a residential and agricultural community without a traditional village center or commercial core. As such, the majority of development throughout the town continues to be low-density, single-family residential homes. The one notable exception is the land surrounding Lake Eden, where both seasonal and year-round homes are clustered along the shoreline. Because there are no public water or sewer systems within the town, there exist limited opportunities for higher density residential and commercial development in Eden.

### Residential growth

According to the 2010-2014 American Community Survey estimates, there were 718 housing units in Eden, an increase of 23 percent over the 2000 Census estimate. In Eden and in several other towns within Lamoille County, the rate of growth in housing units during the 1990s and 2000s was actually greater than the rate of population growth. This trend is attributable to several factors, including a decrease in average household size throughout the United States, an increase in seasonal home construction within the region, and a generally strong housing market through much of the 1990s and early-2000s. A snapshot of housing indicators in Eden, Lamoille County, and the State of Vermont between 1990 and 2014 are shown in **Table 3**:

**Table 3:** A comparison of the growth in number of housing units within the Town of Eden, Lamoille County, and the State of Vermont, 2000-2014.

Geography	# of Housing Units 2000	# of Housing Units 2014	% Increase
Eden	582	718	23%↑
Lamoille County	11,009	13,094	19%↑
Vermont	294,382	324,332	10%↑

Source: American Community Survey and Census

As demonstrated in **Table 3** (above), the growth in housing units in Eden has exceeded the county average and far exceeded the state as a whole over the last fourteen years. During this period, the character of residential development in Eden and throughout Lamoille County has largely been rural and large-lot single family home construction. Due to the fact that the town has vast amounts of undeveloped land and no zoning or subdivision regulations, Eden has an expansive “build-out” potential. In other words, if left unregulated and under favorable market conditions, the town could conceivably support hundreds more housing units built on two to five acre lots. While there are strategic advantages to subdividing land into large lots— including the preservation of open space— it is very expensive to extend and maintain services for a development of this scale. Ultimately, the Eden Planning Commission and Selectboard should closely monitor development trends to ensure that growth does not place an undue burden on the existing tax base or jeopardize Eden’s scenic, rural character or natural resources.

### Household characteristics

The composition of Eden’s housing stock has been largely shaped by net-migration, with younger and middle-age residents fueling new single-family housing starts. As mentioned above, the American

Community Survey reports that between 2010 and 2014, Eden had 718 housing units. A variety of social and demographic trends indicate that communities across the country will experience demand for more diverse housing options in the coming decades. These trends include: families having fewer children; the break-up of extended family households; an increase in the number of single parent households; a larger number of elderly residents who are choosing to remain in their own homes; and the growing popularity of more compact site designs. A comparison of basic household characteristics within Eden and Lamoille County is contained in **Table 4** (below):

<b>Table 4: A comparison of basic household characteristics in the Town of Eden and Lamoille County</b>		
Housing Units	Town of Eden	Lamoille County
% Owner occupied housing units	84.6%	71.2%
% Renter occupied housing units	15.4%	28.8%
Vacancy rate	30.4%	22.7%
Median household income	\$42,875	\$50,447

American Community Survey (2010-14)

As indicated in the data above, the share of owner-occupied housing units in town is higher than the county average. The reported vacancy rates for both Eden and Lamoille County should be viewed in light of the fact that the region supports a large number of seasonal homes, that may be vacant several months during the year. Eden’s median household income (15-percent lower than the county average) has numerous implications for local housing, most notably the need for affordable housing units in town (as discussed in the next section).

**Affordable housing**

The Vermont Department of Economic, Housing, and Community Development (DEHCD) defines housing as affordable when the costs (such as rent and utilities, or mortgage payments and taxes) are no more than 30-percent of the income for a household earning 80-percent of the county’s

<b>Table 5: Residential Sales in Eden, 2016</b>	
Property Size	Average Selling Price
Residential <6 acres	\$147,569
Residential >6 acres	\$182,500
Source: VT Department of Taxes	

median. The data shown in **Table 4** estimates the median household income in Lamoille County to be \$50,447. At eighty percent of this median income (\$40,358), an affordable monthly housing payment for Lamoille County households is approximately \$1,000 per month. Assuming a traditional mortgage, a household with an income of approximately \$40,000 could afford a home valued at ~\$136,000 or less. By comparison, **Table 5** shows the average 2016 selling price of residential properties in Eden. In 2016, the average selling price of a residential property on fewer than six acres (\$147,569) is greater than Eden’s affordability threshold.

**Possible avenues to expand affordable housing**

One avenue to help provide affordable housing is for the town to support projects that create new affordable units. Lamoille Housing Partnership (LHP) in Morrisville is a regional, non-profit

organization serving residents of Lamoille County in funding, managing, and developing attractive and affordable housing opportunities. LHP develops projects in Lamoille County that are financially feasible, meet real or perceived social needs, and serve community interests. LHP is available to work with municipal governments, businesses, and individuals to discuss developing other affordable housing opportunities.

### **Long-term planning considerations**

The Eden Planning Commission has identified the conversion of deer camps and seasonal homes into year-round residences as an area for future inquiry. Many such properties are accessed by private roads that are not typically maintained during winter and are subject to washouts during spring, summer or fall flooding events. Although the Town of Eden is not obligated to maintain private roadways, the Highway Department has, in the past, assisted in emergency situations to ensure the safety and well-being of town residents and those visiting. As more seasonal homes are converted to year-round occupancy, the town and other local service providers may incur additional costs to ensure such roads are safely navigable for residents and emergency service vehicles. Maintaining safe accessibility is critical not only for any emergency response, but also for the daily needs of residents who may rely on assistance and door-to-door transportation services.

In addition to the increased costs associated with maintaining private roadways, there are also environmental considerations related to the conversion of seasonal homes to year-round residences, especially surrounding Lake Eden and South Pond. When converted to year-round occupancy, structures are often renovated, creating larger areas of impervious surfaces and thereby potentially increasing storm water runoff. This runoff may carry pollutants into local water sources, while increasing the potential for flooding and downstream erosion. Year-round occupancy also increases the amount of sewage processed by on-site septic systems that can potentially leach into surrounding bodies of water if they are not properly maintained. Ultimately, these considerations represent an area of interest for future planning and housing studies in Eden.

### **Goals, policies, & recommendations**

*Goal:* Provide options for residential development to accommodate a diversity of ages, income levels, and housing preferences. New residential development should respect the character of existing neighborhoods and provide for orderly growth compatible with the physical capabilities of the land, and existing facilities and services – all without sacrificing water quality, land conservation, or creating strip development.

#### *Policies:*

- Eden encourages land use patterns that are inherently more affordable by nature in cost efficiencies associated with construction, including shorter access roads, clustered units, and proximity to utilities and public services.
- Efforts of regional and non-profit organizations to provide increased opportunities for affordable housing ownership should be supported, provided they are consistent with other elements of this plan.

- Sites for manufactured and mobile homes are allowed in locations similar to those generally used for traditional single family housing.
- Accessory apartments, self-contained additional living units which are built into or attached to an existing single family dwelling, are permitted per state statute.

*Recommendations:*

- The Planning Commission encourages a variety of housing types and densities in Eden. If a project is subject to Act 250 Review, the District Commission should not find a development out of conformance with the Town Plan simply because it contains housing types or densities that differ from surrounding neighborhoods. The District Commission should not impose conditions to meet other Act 250 review criteria that result in increased housing costs.
- The town may work with the Lamoille Housing Partnership and others to investigate the development of affordable and/or senior housing in Eden.
- Private Roads and driveways should be designed to ensure suitable access for emergency service vehicles and conform to all Town policies.

## Chapter 5: Energy and Utilities

### Introduction

This is a new chapter in the Eden Town Plan for adoption in 2018. State Statute provides the guidelines for the writing of Municipal Plans. By amendment to the State Statute, the inclusion of an energy chapter has been added to the Municipal Plan outline since our last Town Plan review in 2013.

Municipalities are authorized, but not required, to develop and adopt Town Plans. If a town does decide to develop a Plan, that Municipal Plan may be consistent with the goals of the State, and must include all required elements. With the writing of this new chapter, we fulfill the requirement for a comprehensive Municipal Plan.

The Eden Planning Commission is learning the complexities of energy, a very diverse topic that affects everyone, every day in many forms. In the writing of this new chapter, we are looking to bring the Eden community along in the educational process. EPC would like to share what we have learned so that together, as a community, we work towards a better understanding and appreciation of energy in its many forms.

### Statement of objectives

As stated in the introduction in Chapter 1, the Eden Planning Commission is looking to follow these five guiding principles in the writing of this Town Plan. They are repeated again here to stress their importance in the writing of this new energy chapter. These principles are:

1. All residents must have their property rights both respected and protected;
2. The growth of Eden should occur in such a way as to enable residents to continue to live in town without undue tax burdens;
3. The natural environment should be protected and conserved to ensure that the resources we have today will be available for future generations;
4. A safe and healthy living environment must be maintained; and,
5. Eden's scenic, rural, small-town atmosphere should be preserved.

### Vermont's Energy Goals

With the reality that climate change is here, the Vermont Legislature took action in 2005. With temperature changes scientifically linked to the climbing levels of carbon dioxide and other greenhouse gases in our atmosphere, the state set some ambitious goals for greenhouse gas reduction with the Vermont Comprehensive Energy Plan.

1. Reduce emissions from the 1990 level by 50% by 2028, and further by 75% by 2050.
2. Goal to have 90% of our energy consumption be from renewable sources by 2050.

With an emphasis on locally produced renewable energy, these goals would reduce our dependence on imported fossil fuels, provide energy security and be potentially beneficial economically. These changes are a significant shift in energy policy, fuel supply, technology and infrastructure. To reach these goals, there needs to be a plan and so the Public Service Department completed a Total Energy Study (TES) in December, 2014. This TES was a multi-phased process that identified the most promising policies and technology pathways to pursue in order to reach Vermont's energy and greenhouse gas reduction goals.

Vermont is looking forward very seriously concerning the level of energy consumption and increasing renewable generation. In the advancement of these established renewable energy generation goals, Vermont's Comprehensive Energy Plan (CEP) went to the next level with the Energy Development Improvement Act or Act 174. Starting in 2016 with Act 174, a new level of community consultation is being offered with the "enhanced energy plan". The enhanced energy plan has a specific set of requirements, one being that all towns need to identify and map potential sites for renewable generation development that will contribute to their fair share of the states 90% renewable energy generation goal by the 2050 timeline.

Prior to Act 174, towns that had an energy chapter as part of their municipal plan were given "due consideration" when an alternative energy generation project was under review. This means that the Public Service Board considers the perspective of the community as expressed in their town plan and factors those opinions and preferences into any determination made.

With the construction of the 21 tower Kingdom Community Wind Project (KCW) in Lowell, the Eden Community is clearly able to see the changes a large renewable energy project has had on our view shed looking north. We have seen how the siting of a project this size may greatly impact neighboring communities as well as the town of origin. As more communities across Vermont saw and experienced the complexities and impact similar projects brought to their region, they wanted to be assured that in the future, their town's individual preferences were heard and respected when proposals go before the Public Service Board.

All proposals to generate alternative energy that will be connected to the electrical grid are submitted to the Public Service Board (PSB) under Section 248. Here in Vermont, the PSB is a quasi-judicial board of three members. Quasi-judicial in this case refers to a public administrative agency with powers that resemble those of a court of law or judge. Vermont's PSB supervises the rates, quality of service and financial management of all public utilities. The PSB also reviews the economic and environmental impacts of all energy purchases. After hearings and the appropriate legal proceedings, a determination is made on proposed energy projects to ensure they will serve the greater public good. Projects approved by the PSB are then given a Certificate of Public Good, the renewable energy project green light to proceed ahead.

Starting in 2016 with Act 174, a new level of community consultation is being offered with the "enhanced energy plan". If towns follow the detailed requirements of the new protocol in the energy chapter of the Town Plan and it is reviewed by the Regional Planning Commission and then approved by the State, the level of community consultation on energy projects in their town will be viewed with "substantial deference". This designation potentially gives towns a stronger voice on the location and approval or rejection of renewable energy projects, both big and small.

In simpler words, the EPC can write a more generalized energy chapter that would comply with State Statute, and the Public Service Board (PSB) would give the community "due consideration" if or when an alternative energy generation project is proposed here in town. Or, the EPC can work towards the much more stringent and detailed "enhanced energy plan" outlined in Act 174, meaning that the Public

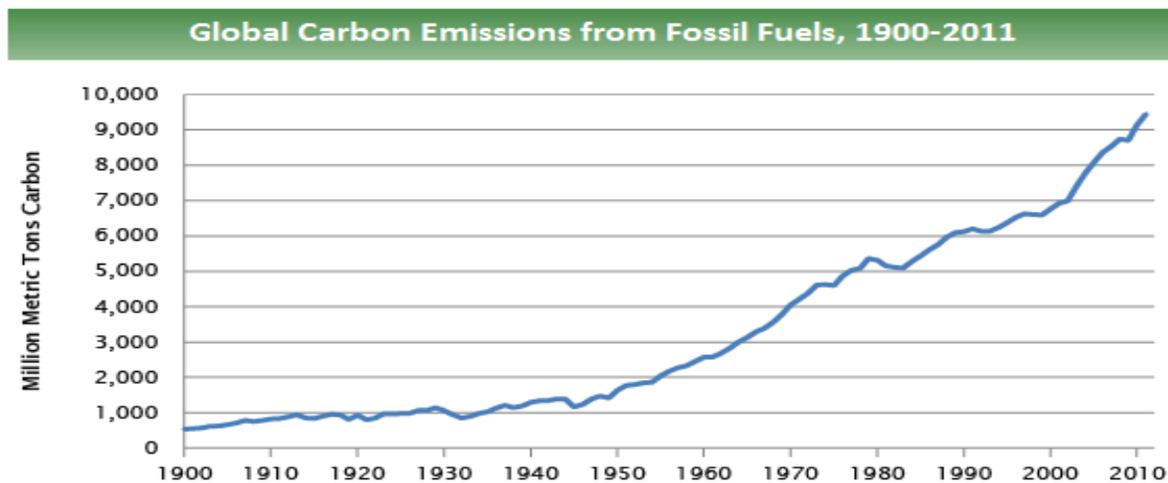
Service Board would give Eden “substantial deference” in the decision making process regarding the siting and approval of any potential alternative energy projects.

Whether the Eden community is given “due consideration” or “substantial deference” as determined by the wording and maps in their Town Plan’s Energy Chapter, neither of these designations provide Eden with a definitive, decision making voice. When the PSB reviews an alternative energy project, the final decision is made solely by the PSB for the public good of the state and Vermont residents as a whole.

This puts the Eden Planning Commission (EPC) in a position to make a decision that will affect everyone in the community in terms of how we proceed. As a Commission, we felt more time, research and input from the community was essential before we could proceed ahead with the “enhanced energy plan.” The EPC thought it was inappropriate to include the required maps that specified where alternative energy projects could be sited. The first and foremost guiding principal the EPC must follow is: All residents must have their property rights both respected and protected. Chapters in the Eden Town Plan may be amended at any time as long as the proper steps for adoption are followed and the “enhanced energy chapter” can be added in the future.

With this new chapter, the EPC would like to take this opportunity to bring the community along on the road to a better understanding and appreciation of the energy we use and how we might be better stewards moving forward. We have chosen to make this an informative addition to the plan without the stringent regulations that the “enhanced energy plan” requires. Let’s look at where we are now as a community, how we compare to other places, the options on getting where we want to go and the potential ways we might reach the goal of 90% renewable energy generation by 2050.

### How Do We Compare?

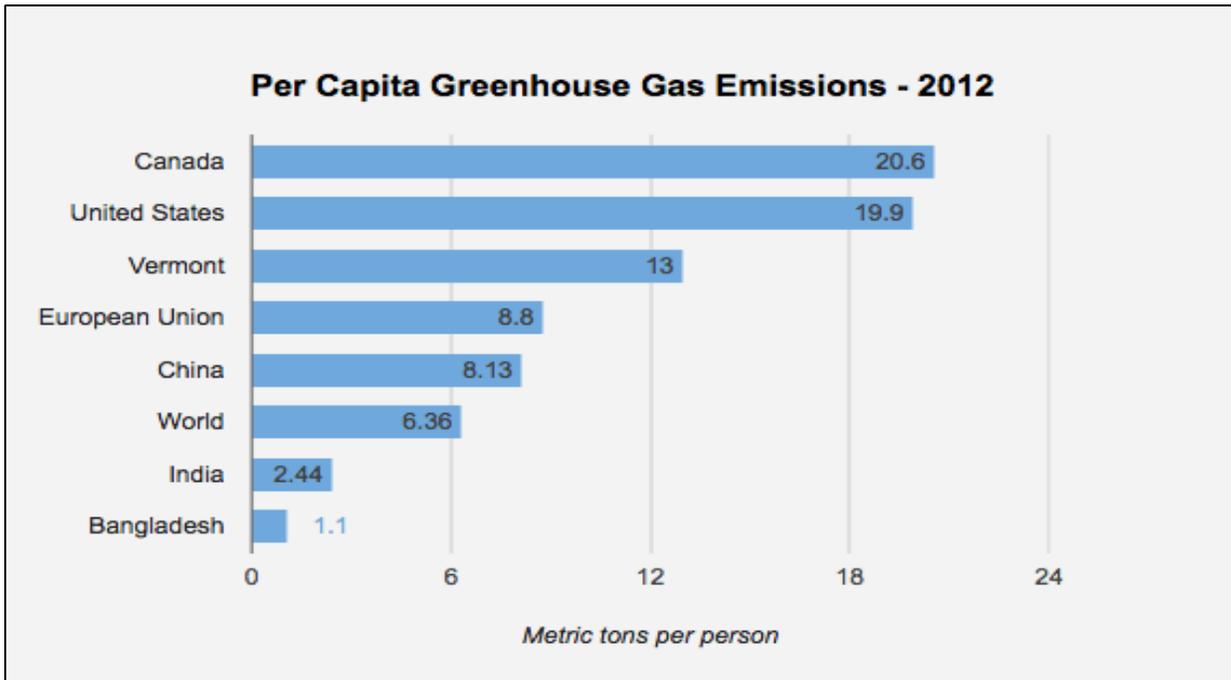


Source: Boden, T.A., Marland, G., and Andres R.J. (2015). [Global, Regional, and National Fossil-Fuel CO<sub>2</sub> Emissions](#). Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, doi 10.3334/CDIAC/00001\_V2015.

Vermont’s renewable generation goals are one way the state is looking to reduce greenhouse gas emissions. Let’s take a step back and view this energy picture from a larger perspective. Setting goals is the first step in any desired change but we need more information for the purpose of comparison.

Let's take a look at the world and where the United States stands in comparison regarding greenhouse gas (GHG) emissions.

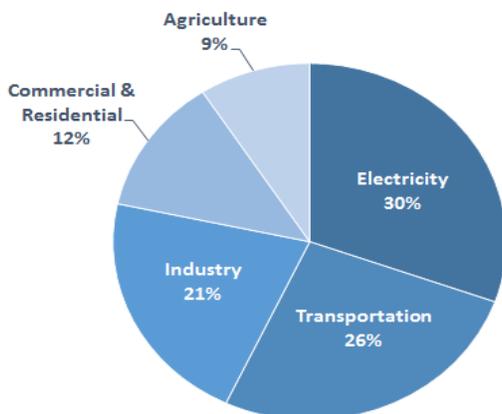
Even if the numbers are hard to comprehend, as in metric tons (as shown on the previous page) there is no question that there has been a significant increase in the amount of greenhouse gases emitted over the last 50+ years worldwide. Below we see how the Green Mountain State ranks with some familiar references.



The bar graph above measures greenhouse gas emissions per person in the individual country (and VT). Although Canada was slightly higher in GHG emissions per capita than the United States in 2012, the countries at the top of the list worldwide, measuring GHG emissions per capita, are the oil producing countries in the middle east such as Qatar, Kuwait and Saudi Arabia.

### Source of Greenhouse Gas Emissions in the United States as a Whole

Total U.S. Greenhouse Gas Emissions by Economic Sector in 2014



This pie chart shows how the production of greenhouse gas emissions comes from different sources.

**Electricity 30%.** Electrical generation is the largest share of GHG emissions nationwide. Approximately 67% of our electricity comes from burning fossil fuels, mostly coal and natural gas.

**Transportation 26%.** The gasoline and diesel used for our cars, trucks, ships, trains, and planes contributes to this total.

**Industry 21%.** The majority of this total comes from onsite industrial fossil fuel combustion. Other contributors include natural gas systems, coal mining, iron and steel production and cement production.

**Commercial and Residential 12%.** Greenhouse gases in this sector come primarily from fossil fuels burned for heat, the use of certain products that contain greenhouse gases, and the handling of waste. **Agriculture 9%.** Greenhouse gas emissions from agriculture come from livestock, agricultural soils, and the use of fertilizer.

### **2012 Gross Greenhouse Gas Emissions % Contribution by Sector in Vermont**

In a recent report, Vermont's 2012 greenhouse gas emissions totaled 8.27 million metric tons, or about 9 million US tons. This is actually an increase from the base level set in 1990 of 8.11 million metric tons. In order to meet Vermont's goal of a 50% reduction from the 1990 level by 2028, we have just 10 short years to try and accomplish this challenging mission. Transportation (primarily cars and trucks) accounted for almost 45% of the state's total emissions, higher than the national average of 26%. Residential/commercial fuel used made up more than 21% of the total, again higher than the national average of 12%. As of 2013, Vermont meets about 16% of its total energy needs with renewable energy generation sources from within the state and also out of state sources such as Hydro Quebec.

### **How Vermont Can Achieve this Goal**

Meeting the 90% renewable energy generation goal by 2050 will require a comprehensive approach to virtually eliminate Vermont's reliance on fossil fuels. This can be done through conservation and enhanced efficiency along with the greater use of clean renewable sources for electricity, heating and transportation.

While there is no prescribed roadmap to reach this goal, we need to ramp up our efforts now to identify the technological pathways, investments, policies, and actions that will help us identify the most cost-effective way forward. Immediate priorities include:

- **Energy Efficiency: Use Less and Save Money:** This helps businesses and residents reduce their total energy use (heating, electricity and transportation fuels) while increasing their use of renewable energy (solar, wind, wood, biofuels, geothermal and others).
- **Transportation Transformation:** About half of the fossil fuels used in Vermont are for transportation, and the transformation of this sector will require greater emphasis on public transportation options, shifting to electric and alternative fuel vehicles, and reducing vehicle miles travelled.
- **Comfortable Homes, Affordably Heated:** In addition to making our buildings more energy efficient, new heating technologies can save money and use renewable energy instead of fossil fuels. These include cold-climate heat pumps, wood pellets and other biofuels.
- **Expanding Renewable Electricity:** This energy transformation will generate greater demand for renewable electricity in the coming years as transportation and heating shift to efficient electric alternatives. As Vermont makes this transition, we will need new sources of renewable electricity through solar, wind, hydro (and more) to meet this shifting demand.

As a large part of the increased GHG emissions are being caused by human activities such as burning fossil fuels for energy, the biggest opportunities to reach the 90% renewable by 2050 are:

energy efficient buildings, reducing vehicle miles travelled, and switching to renewably powered heating, transportation and electricity.

## The Energy We Use

There are certainly homes and camps in Eden that are not connected to the grid, but most of us are, in some fashion, hooked up by pole or underground wire to the electrical network that serves the state and the nation. Electricity is the flow of electrical power or charge. Electricity is both a basic part of nature and one of the most widely used forms of energy.

The electricity we use is called a secondary energy source because it is produced by converting primary sources of energy such as coal, natural gas, petroleum, nuclear energy, solar energy, wind, biomass and hydro energy into electrical power. For many energy needs, using electricity is easier than using a primary energy source. For example, using electricity for lighting is safer than using petroleum in candles or kerosene lamps. Electricity also enables people to use devices like televisions, computers, and cell phones, which cannot be directly powered with primary energy sources. Electricity is also referred to as an *energy carrier*, meaning it can be converted to other forms of energy such as mechanical energy (such as spinning a motor) or producing heat. Whether or not the electrical energy we use is from renewable or nonrenewable generation sources, the electricity itself is not classified as either renewable or nonrenewable.

Our electric bills show the amount of energy consumed measured in kilowatt-hours (kWh). One kWh represents the amount of energy used by a 1000-Watt device such as a clothes-iron or a microwave oven to operate for one hour. Leaving a 100-watt light bulb on for 10 hours consumes 1 kilowatt hour (kWh) of energy. According to the Organization of American States' Office of Sustainable Development, the average American household uses about 10,000 kWh annually. Although electric utilities charge their customers by the kilowatt hour, the rate tends to fluctuate over time and varies dramatically by region. According to the US Energy Information Administration, in 2015, the average cost of a kilowatt hour at the residential rate was 10.4 cents.

It is always interesting to make some comparisons: The following amounts are rounded to the nearest cent (all data from 2015). The highest rate in the U.S. was Hawaii at 26 cents kWh. The lowest rates went to Washington State, Oklahoma and Idaho at or just below 8 cents per kWh. In New England, Maine was the lowest at 13 cents, Vermont at 14 cents, New York State at 15 cents, New Hampshire at 16 cents and Massachusetts and Rhode Island at 17 cents per kWh.

Here are a few examples of electricity consumption for comparison:

One kilowatt of electricity will roughly provide enough energy to:

1. Watch television for 10 hours
2. Vacuum for an hour
3. Do a 12-pound load of laundry in cold water
4. Cook a hot breakfast for a family of 4
5. Listen to the radio for 20 hours
6. Use a computer for 5-10 hours

## Where does our electrical energy come from?

Vermont has three types of electric utilities: investor owned utilities (1), municipal electric departments (14); and member-owned rural electric cooperatives (2). The seventeen electric distribution companies in VT range in size from small municipal electric departments with a few hundred customers to one large investor owned utility (Green Mountain Power which merged with Central Vermont Public Service as of July 1, 2012) with more than 255,647 customers. Eden is served by the member owned Vermont Electric Cooperative with offices in Johnson.

**Table 6** below shows the 10 largest generators of electrical energy in Vermont from data in 2015. The net summer capacity (Cap) or ‘nameplate’ capacity refers to the intended full-load sustained output of a power generation facility, the most that could possibly be generated annually if running 24/7/365 or operating at 100% potential power production. The generation in megawatt hours (MWh) is a measure of the actual energy generated annually.

**Table 6**

Ten Largest Electrical Generation Plants by Potential and Actual Production in VT 2015						
Plant	Town	Energy Source	Start	Cap MW	Generation MWh	%
KCW	Lowell	Wind	2012	65	192,481	34
J C McNeil	Burlington	Wood		52	290,370	64
Bellows Falls	Walpole NH, Rockingham VT	Hydro	1928	47	215,228	52
Harriman	Readsboro, Whitingham VT	Hydro	1925	41	64,713	18
Sheffield Wind	Sheffield	Wind	2011	40	87,516	41
Wilder	Wilder	Hydro	1950	39	138,953	41
Berlin 5	Berlin	Petroleum		35		
Vernon Dam	Vernon	Hydro		32	143,288	51
Sheldon Spgs	Sheldon Springs	Hydro		24	70,633	34
Ryegate	Ryegate	Wood	1992	20	154,634	88
Mcindoe	Monroe NH, Barnet VT	Hydro	1931		43,073	

## What do all these numbers refer to?

Megawatts (MW) is a unit of power, like the size of the engine in your car or truck. MWh is a unit of energy that measures how much was used or consumed, like how many RPM’s the engine was going, distance travelled and how much fuel was used. Power and energy are two words that are often interchanged but do not have the same meaning. Energy is the total amount of work done, and power is how fast you can do it. In other words, power is energy per unit of time and is measured in watts. Energy is watt-hours. One Mega Watt is a million watts and one Mega Watt hour (MWh) is a million watts of power applied over the period of one hour.

Looking at the Kingdom Community Wind Project, the 21 wind turbines have the potential, if the wind was blowing everyday all day at the optimum speed, to generate 65 MW of power over the course of one

year. What was actually generated in 2015 was 192,481 (hours) divided by 8760 hours (the number of hours in a year, [24 x 365 = 8760] which equals 21.97 MW. The wind turbines produced almost 34% of their “capacity” or optimum potential (21.97 MW generated divided by 65 MW potential = % production). The **Energy Information Administration (EIA)**, providing official energy statistics from the U.S. Government, uses an average value of 25% efficiency for land based wind turbines when estimating energy production. The KCW turbines exceeded this baseline with 34% production, above the average. This figure does not however take into account the amount of energy it took to actually operate the turbines to produce electricity at the site. **Table 6** on the preceding page shows that the electrical plant that produced the highest percentage of potential generation was Ryegate burning wood or biomass. Those generators do not have to wait for the wind to blow, the sun to shine or the rains to fill the source of water for a hydro facility. With an ample supply of chips at hand, the ability to produce energy at a biomass facility is more consistent. Then again, it takes energy to harvest the fuel, chip the wood and provide transport to the generation facility.

In 2013 with the closure of Vermont Yankee, VT’s only nuclear power generation facility, Vermont’s independence in keeping generation within its borders decreased significantly. Whether one is for or against nuclear power in principle, nuclear power still plays a part of the state’s energy mix comprising a little more than 12% of the total power used in 2016. That power is committed through Green Mountain Power’s (GMP) contract with the Seabrook plant in New Hampshire and from Connecticut’s Millstone 3, which is partially owned by Central Vermont Public Service (now merged with GMP). The percentage of nuclear power sourced generation in 2016, about 12%, is a decrease from when Vermont Yankee supplied 36% of the state’s electrical generation needs in 2011 according to the Vermont Public Service Dept.

**Table 8** Vermont Electric Coop (VEC) Electrical Generation Sources 2011-2016

Power Source	2011	2012	2013	2014	2015	2016
Hydro	59.6%	58.5%	43.8%	57.8%	58.5%	59.6%
Nuclear	17.9%	26.5%	41.3%	25.4%	7.0%	3.2%
Natural Gas or Oil	17.0%	4.0%			15.9%	17.9%
Wind/Solar/Farm Methane/Wood	5.5%	11.0%	14.9%	17.6%	18.5%	19.4%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Note: This chart shows the fuel sources without consideration of the Renewable Energy Certificates (RECs), which are available for many of the renewable energy sources listed below. RECs are the renewable attributes of the electricity, and if they are sold the energy can no longer be considered renewable. VEC currently sells many of the RECs associated with various renewable energy sources in order to keep rates low for members. How many RECs VEC sells versus how many it retains will change beginning in 2017 as Vermont’s Renewable Energy Standard (RES) comes into effect.*

**Table 8** above shows just how much our source of electricity, that is expected to be there every time we flip a switch or turn on an appliance, can change in just one year. The *Note* also refers to the Renewable Energy Certificates. Prior to 2017, a significant amount of the green energy credits were sold to other states. Not a very popular practice but done so that more money would come back to Vermont utilities, offset the cost of production and reduce the price per kWh to the Vermont consumer.

Hopefully we are beginning to understand that there is no magic formula that will provide the answer to the 90% by 2050 renewable generation goal. It is an extremely complex problem and we are all in the middle of it together. A higher degree of awareness and a better understanding of the many pieces that are at play will lead us in a more positive and carbon neutral direction.

## **Energy and Transportation**

It is no surprise that almost half of the greenhouse gas emissions in Vermont are related to transportation. Eden sits almost exactly in the center of a geographical wheel where the spokes take us to work in every direction. Eden is close to an hour away from the more urban, job concentrated locales of Burlington, St Albans, Jay, Newport, St Johnsbury, Montpelier and Waterbury. The average commute to work from the 2016 Eden Community survey was 26 miles one way and some people are travelling much longer distances.

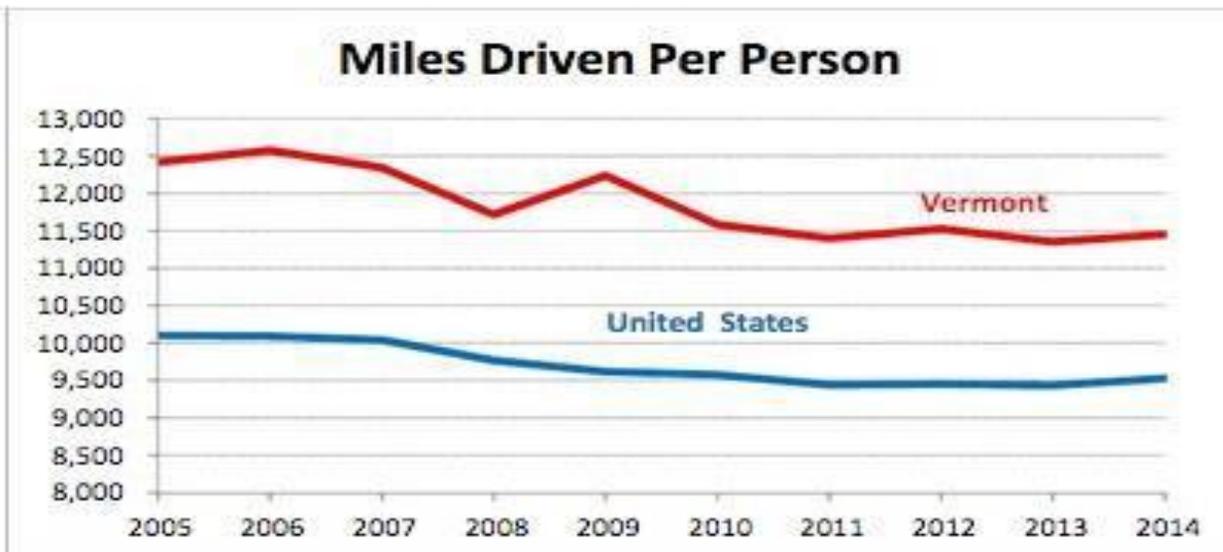
There are various ways to reduce our carbon transportation footprint such as carpooling, driving a smaller, more energy efficient vehicle, buying an electric car, public transportation and of course walking, bicycling or skiing. All are good options on paper but here in Eden, those changes can be more challenging to accomplish.

Carpooling is a win win enterprise on all levels and there are ample and secure spaces to leave a vehicle even if there is no designated “commuter lot” in Eden. Front Porch Forum, Facebook and other social media outlets make connecting with other riders/drivers easier than ever. Now if we were only going in the same direction at the same time.

Driving smaller cars that get better gas mileage is also a great way to reduce our carbon footprint. Unfortunately, that is not always an option. Many people in our rural area are working in the trades or in some other service industry and need a larger vehicle to transport tools and materials or mount a plow to name just a few examples. Eden also seems to be the epicenter for snowfall in the greater area and many people need a larger, heavier vehicle that has 4 wheel drive to travel the gravel roads and simply get home. Electric vehicles are an excellent GHG reduction tool however the cost of a hybrid or a fully electric car is out of the price range of many residents at this time. With more than 20 charging stations in the state, the potential for the use of electric cars is becoming more favorable. In 2013, the town of Stowe became the first town in Lamoille County to offer a municipally owned place to charge vehicles. There are also charging stations in Morrisville near the Post Office, Hyde Park at the McMahon Auto Dealership and in Johnson at the Town Offices.

Fortunately, technology in this area is advancing quickly and electric vehicles, with the ability to travel farther on one charge, is ever closer. Additional advances in types of batteries and the proliferation of electric vehicles in the near future should bring the price down, increase the availability of charging away from home and make this means of economical transportation that much more affordable. Public transportation is also limited here in town. There are no regular bus routes in this rural area.

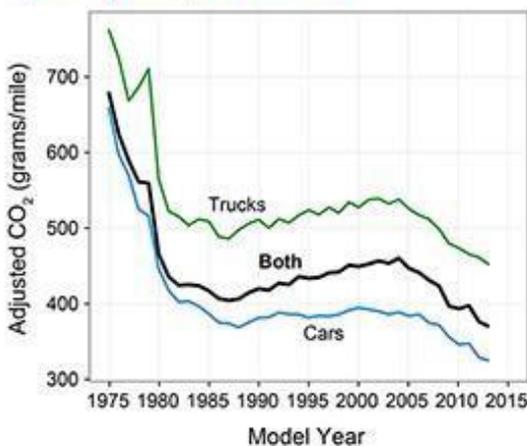
The most recent statistics related to light vehicle energy usage in Eden were provided for this chapter by LCPC (February 2017). The data estimates 986 vehicles in town used 684 gallons of fuel annually totaling 674,424 gallons of fuel for the year. The data also gives an average of 16,000 miles driven per year which works out to an average of 23.4 miles per gallon.



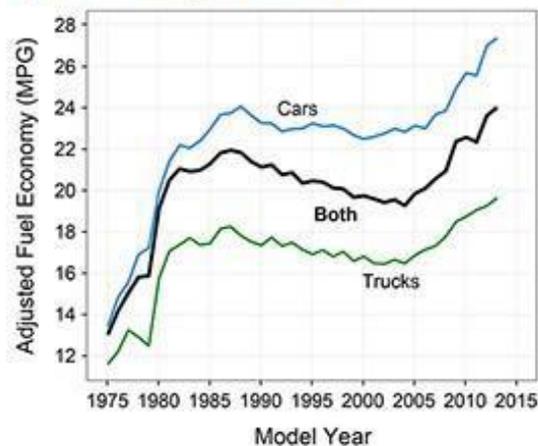
Data from an article in the Burlington Free Press written by ART WOOLF published Sept. 3, 2015

It is interesting to note that Vermonters drive more miles per year than the average American (about 9,500) and drivers in Eden drive more miles per year (16,000) than the average Vermonter (about 11,500).

Adjusted CO<sub>2</sub> Emissions for MY 1975-2013<sup>1</sup>



Adjusted Fuel Economy for MY 1975-2013<sup>1</sup>



<sup>1</sup> Adjusted CO<sub>2</sub> and fuel economy values reflect real world estimates and are not comparable to automaker standards compliance levels. Adjusted CO<sub>2</sub> values are, on average, about 25% higher than the unadjusted laboratory CO<sub>2</sub> values that form the starting point for GHG standards compliance, and adjusted fuel economy values are about 20% lower, on average, than unadjusted fuel economy values.

The chart on the left above, from the EPA website, shows the decrease in carbon dioxide emissions over the last 35 years with more efficient vehicles. An encouraging downward trend. The chart on the right shows fuel economy and looking at the middle line (“Both”), cars and trucks together (an appropriate mix for Eden) shows the average is 24 mpg which is just over Eden’s 23.4 mpg.

## Residential and Commercial Fuel Use

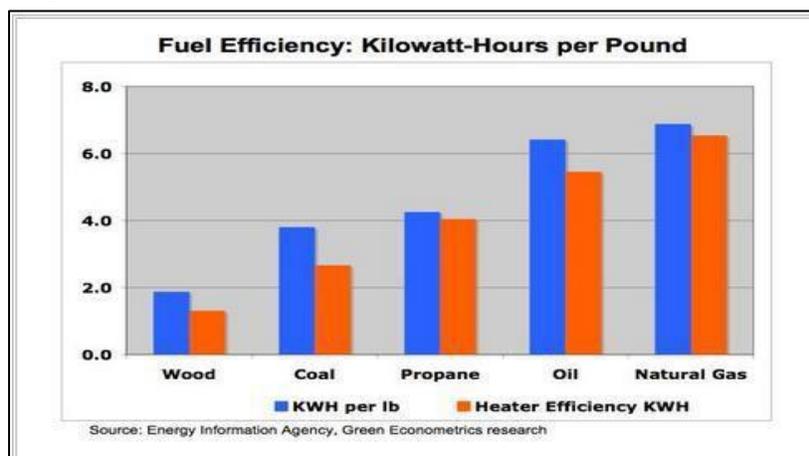
The burning of petroleum products to heat our homes and businesses is second only to the transportation sector in the emission of GHG. In the Chart below, it is interesting to note that the most common fuel for home heating in Eden was oil/kerosene, followed by wood and then propane or LP gas. The most economical fuel was definitely wood followed by oil/kerosene with the most expensive fuel for space heating in homes was propane.

Fuel Type for all Residential Households (Owner and Rental) in Eden						
Fuel Type Space heating	# Households	Total Use in Units	Average # Units Used	% of house- holds using	Total \$\$	% Cost all Households
Fuel Oil, Kerosene	223	201162	902 gal	44%	\$372,149	35%
Bottled, Tank, LP Gas	90	132864	1476 gal	18%	\$325,166	40%
Wood (cords of wood)	181	1220	6.74 cords	36%	\$269,499	25%
Electricity, Coal, Solar	0	0	0	0%	\$0	0%
Utility Gas*	7	500		1%	\$7,123	1%
Other	8			2%	\$0	
	509			100%	\$1,072,937	100%

Survey data provided by the Lamoille County Planning Commission February 2017

\*Utility gas here is probably bottled gas or LP as there is no utility gas (piped in natural gas) in Eden.

When we look at the efficiency of fuels in terms of kWh per pound or the heating ability per unit, (a way to level the playing field between different sources of fuel), wood actually loses that contest as shown below. That however, is not the end of the story on efficiency and GHG emissions. With the closest oil refineries in Montreal, Quebec City, New Jersey and Pennsylvania and the crude petroleum travelling even farther to get to a refinery, the equation is more complicated than that. Though drilling for oil is actually still legal in Vermont even if fracking is not (Vermont was the first state to ban fracking in 2012), there is little chance that the exploratory oil drilling that took place in the 1950's near St. Albans will see a resurgence anytime soon.



The chart above shows the level of efficiency for the different types of fuels used in Vermont. All sources of energy have a lower efficiency rating than their potential kWh per pound. Burning propane yielded the highest efficiency production followed by fuel oil, propane, coal and wood coming in at the bottom when rated by kilowatt hours per pound.

Wood is considered a renewable resource and much of the wood we burn in Eden comes from a local source, our neighbor, or sometimes even our back yard. Wood burning for the primary heating source in homes and other larger buildings has been steadily increasing and this trend is especially evident in the northeast. Between 2005 and 2012, all the New England States were up more than 50%. Rhode Island topped the list with more than a 160% increase. Vermont more than doubled the amount of wood burning households in the 7-year period as noted by the U.S. Census Bureau and the 2005 and 2012 American Community Surveys.

Wood pellet stoves are also growing in popularity with the greater convenience and fuel consistency that a bagged product offers. This type of wood burning heat source is also much more convenient if storage or purchase of a whole season's supply of fuel is a problem. Pellets are available from a Vermont manufacturer, the 802 Softwood Pellet mill located in Windsor, VT as well as many other distributors. Keeping our source of home heating fuel local is one possible contributing factor to a more renewable energy future. History repeats itself many times and although we are a long way from the peak of wood burning in the 1940's in Vermont when close to half the homes burned wood, there is definitely an increase in the use of wood and wood products as a primary or secondary source of space heating.

There are 2 natural gas pipelines in Vermont. One is an interstate line that runs for 120 miles through the most north-eastern corner of Vermont. The second natural gas pipeline runs 41 miles through Addison County and was completed in 2017. Eden does not have access to any natural gas at this time.

### **Electricity and Infrastructure**

Eden has one active transmission line starting at the border with Belvidere in the northwest corner of town, running along Route 118 to a sub-station at 308 Belvidere Road, just west of the junction between Route 118 and Route 100. From there, the transmission line heads south along the side of state highway Route 100 to Hyde Park.

There is an additional leg of the transmission line that was first used when the Vermont Asbestos Group mine was in operation. This transmission line, now owned and maintained by Green Mountain Power, runs from the old mine site along North Road about 1-mile veering south-south-west through a heavily forested area. The line then runs mostly parallel along Shover Road from just north of the junction between Shover Road and Hutchins Lane straight south to the substation, about 2 miles.

There is also a 3 phase power line that starts near the junction of Griggs Road and East Hill Road. This line crosses Route 100 just north of Eden Mills Village and proceeds south along Route 100 to the Eden-Hyde Park town line.

The lines that provide Eden with power for all residents and businesses alike are part of the state-wide network that includes 31 miles of high-voltage lines (>230 kV) and 1,134 miles of low-voltage lines (<230 kV).

## Alternative Generation Sources

As we switch to more energy efficient means such as electric cars for transportation and heat pumps to keep us warm through the winter, the demand for electricity will continue to increase. The shift to renewable electrical generation is a concrete way to start the transformation process and reduce the level of greenhouse gas emissions. Vermont’s Comprehensive Energy Plan, to be using 90% renewable power by 2050, encompasses the whole state. Act 174 is a planned strategy giving Vermont a specific framework that works towards the success of a greater level of energy independence meaning more renewable solar and wind generation installations.

One aspect of the “enhanced energy plan” specified in Act 174 is the mapping, in each town, of potential sites for new wind and solar development. The Eden Planning Commission felt this requirement needed significantly more review, additional research and more input from the community before any maps could be included in this chapter. We do however want to explain the process for further exploration.

The State’s 2050 target for renewable electric energy generation from facilities located in Vermont equals 5 million megawatt hours (MWh). Shown in **Table 9** below, a proportional target for Lamoille County is 4% or about 198 thousand MWh and corresponds to Lamoille County’s share of population in Vermont.

**Table 9:** State and Regional targets for total electric output in 2050

The Lamoille County Planning Commission proportioned the 2050 regional electric generation output target of 198 thousand MWh based on the share of population in each town. **Table 10** on the next page shows that Eden’s share, with 6% of county population, would need to be 11,895 MWh. The output generated by the

Region	Share of Overall In-State Generation Output Target	
	Share of Population	Target Total MWh
Addison	6%	287,452
Bennington	6%	278,833
Central Vermont	10%	511,849
Chittenden	25%	1,265,134
Lamoille	4%	198,249
Northeastern	10%	546,282
Northwest	9%	438,608
Rutland	10%	474,816
Southern Windsor	4%	197,940
Two Rivers	9%	437,895
Windham	7%	362,943
Statewide	100%	5,000,000

existing renewable energy facilities located in Eden is 170 MWh which sets the output to be generated by new facilities at 11,724 MWh. The new projected renewable electricity output can be met by a variety of options that include, solar, wind or hydropower, electricity generated by burning biomass or installing methane digesters at farms.

**Table 10** on the following page shows the projections for all Lamoille County towns. To illustrate the meaning of 11,724 of MWh of electric energy generation and the potential impact of this number on Eden’s land use, let’s see what would happen if Eden chose to meet its new projected generation goal by

focusing on ground-mounted solar facilities only. To generate 11,724 MWh of electricity, Eden would need to build energy facilities with the generation capacity of 9 MW and dedicate about 72 acres of land to these facilities. (This was calculated as new generation output by 2050 (11,724 MWh) divided by annual MWh output per 1 MW of installed solar generation capacity (1,300 MWh) and multiplied by an estimate of 8 acres of land needed to build a 1 MW solar facility).

**Table 10:** Renewable electrical production projections for Lamoille County towns by 2050.

Town	Population	Total output in MWh projected for Lamoille County for 2050	Existing output in MWh as of 1/1/17(MWh)	New output in MWh needed by 2050
BELVIDERE	1%	1,982	31	1,952
CAMBRIDGE	15%	29,737	1,488	28,250
EDEN	6%	11,895	170	11,724
ELMORE	5%	9,912	190	9,722
HYDE PARK	12%	23,790	8,526	15,264
JOHNSON	14%	27,755	717	27,037
MORRISTOWN	21%	41,632	12,406	29,226
STOWE	18%	35,685	2,657	33,027
WATERVILLE	3%	5,947	131	5,816
WOLCOTT	6%	11,895	3,610	8,285
Lamoille County	100%	198,249	29,927	168,322

### Electrical Generation in Eden

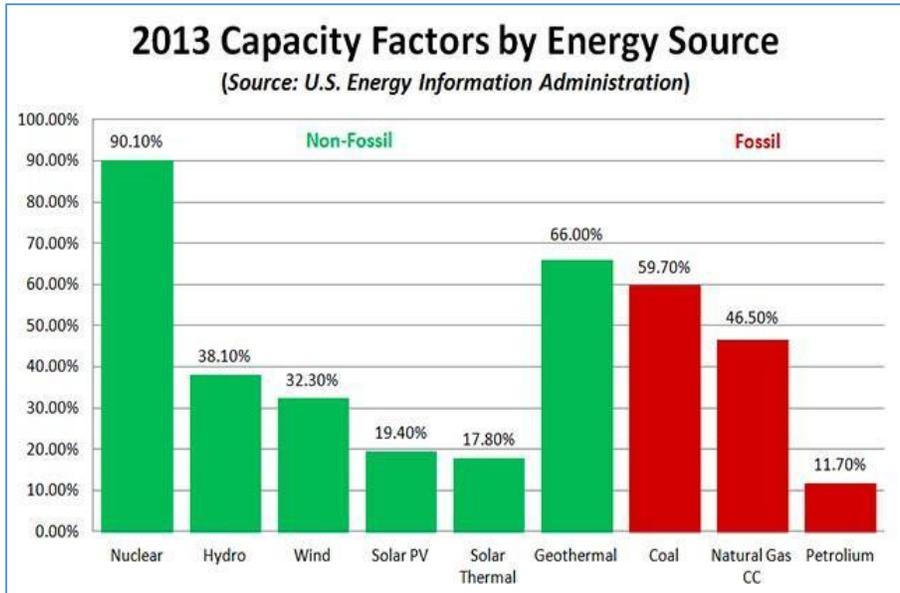
As of February 2017, there were 6 solar generation sites in town. There currently are no wind generation locations in town. **Table 11** below shows the solar installations in Eden and the electricity generated. Five of the projects are residential installations and one is a community based project, Eden 3E. As a member of Eden 3E, the Town of Eden has benefited with cost reductions for electricity at the Town Clerk’s Office, the Town Garage and the Lake Eden Recreation Area. For the 10-month period, from September 2015 to June of 2016, the savings for the town at the 3 locations collectively was more than \$500.

**Table 11**

Existing Solar in Eden	Location	Generation Capacity		Annual Output
Ground mounted fixed rack	Old Deuso Rd	120 kW		144,014 kWh
Ground mounted pole	Knowles Flat	3.8 kW		4,560 kWh
Ground mounted tracker	Shover Road	6 kW		9,356 kWh
Roof mounted	Olin Drive	5 kW	combined	
Roof mounted	North Road	3.0 kW		9,623 kWh
Roof mounted	Baker Road	1.1 kW		
	<b>Total</b>	<b>138.9 kW</b>		<b>167,553 kWh</b>
From the Community Energy Dashboard January 2017				

A little more math here to help make sense of these numbers once again. To relate kilowatt hours (energy actually produced) to the potential generation (if the sun shone 24/7/365) goes like this: Kilowatt hours divided by the number of hours in a year ( $24 \times 365 = 8760$ ) will equal kilowatts generated.  $167,553 \div 8760 = 19.13 \text{ kW}$ . The nameplate or capacity rating for the 6 solar sites in Eden was 138.9 kW.

### Efficiency rating of electrical generation sources



The bar graph to the left shows the average percentage of the capacity or % efficiency for each type of generation. Actual production divided by potential.

Eden’s 19.13 kW of generated solar energy is divided by the capacity, 138.9 k divided by 19.13 = 13.7% efficiency.

Eden’s efficiency rating, for the existing solar installations was 13.7%, below the nationwide average solar efficiency factor of 19.4%.

It is important here to review the difference between the “nameplate or capacity” numbers and the “actual” generation of different sources of power. The ratio of electricity produced compared to the capacity of any generation facility over the course of a year (if it was in operation 100% of the time) is known as the efficiency factor. The efficiency factor is the average power generated divided by its peak generation ability. The source of energy with the highest capacity factor (able to produce an amount of energy that is closest to the power rating of the generation facility) is nuclear at between 85% and 95%. Wind and solar generation have lower efficiency ratings than other types of renewable generation such as hydro and geothermal.

In the bar graph above, nuclear energy generation is included with hydro, wind, solar and geothermal, all non-fossil fuel sources of energy. The generation of nuclear energy is not a high carbon or greenhouse gas emitter. It is neither a fossil fuel nor renewable source but in a category all its own.

### Solar Development at the Vermont Asbestos Mine Site

Looking to include the community in this Town Plan update, the Eden Planning Commission sent out a community survey to almost 800 people who own property in town with their annual property tax bill.

The EPC had also sent out a survey in 2012, just as the Kingdom Community Wind project was under construction with questions on wind development that we will refer to later.

The 2016 survey received 86 responses from the 800 surveys mailed, so just over 10%, a larger response than the previous survey. Two surveys were received after the tally was completed and are not included in the numbers below. Respondents favored small scale projects over larger scale wind and solar and of the 2 options, more favorable responses were to solar development than wind. The survey response for both questionnaires gives the EPC a snapshot of the community but with only 10% of the voting population sharing their perspective, additional input from a larger percentage of the community would be helpful.

Eden Community Survey Alternative Energy Questions	2012 Survey Total of 70 surveys returned % of responses			2016 Survey Total of 84 surveys returned % of responses		
	Yes	No	Un-decided	Agree	Disagree	Un-decided
I support small scale solar development (residential).				82%	13%	2%
I support large arrays of solar panels.				45%	41.5%	13.5%
I support small scale wind (residential).	74%	13%	13%	63.5%	28.5%	8%
I support large scale wind development.	37%	23%	40%	27.5%	60%	12.5%
I would support solar development at the asbestos mine.				74%	10%	16%

The EPC specifically asked the question about the potential of solar development at the closed asbestos mine and 74% were supportive. The mine property straddles the line between Lowell and Eden. After both towns voted against the designation as a Superfund site which would go on the National Priorities List, a feasibility study on solar development was completed in 2013. This project was a collaboration by the EPA and the U.S. Department of Energy’s (DOE) National Renewable Energy Laboratory (NREL) called RE-Powering America’s Land. This initiative encourages renewable energy development on current and formerly contaminated land, landfills and mine sites when it is aligned with the community’s vision for the site.

The study determined that during potential future site remediation, up to 150 acres could be configured to accommodate solar photovoltaic (PV) arrays. Such a project could provide excellent jobs, develop the idle land that cannot be used for other purposes due to contamination, mitigate and minimize any environmental impact of the abandoned mine site and provide this rural area of the state with a clean, renewable source of power and more than meet Eden’s goals for renewable generation by 2050.

The Vermont Asbestos Group (VAG) site has several different locations in Eden and Lowell with potential for installing large solar arrays, including a 2.2 megawatt (MW) array on the waste-rock area, a 4.6 MW array in the areas where there are currently buildings, and/or a 11.6 MW array on the south facing slopes of the

Eden and Lowell piles. This large property is also an advantageous site for potential solar generation as there is an active transmission line already in place.

Although all of the designated areas identified by the feasibility study for development are not in the Town of Eden, solar at the mine could be a big win-win for both towns. This approach to the former asbestos mine could be a positive way for the State of Vermont to address the site and costs of remediation as it would be generating income for continued reclamation. This project alone could easily exceed Eden's share of Vermont's renewable energy generation goals.

The EPC has also recently been notified of a new proposed solar generation project that has been designed and will be reviewed by the Public Service Board. The proposed site, just off of Route 100 south of the junction with Knowles Flat Road, will be a 499.5 kW array. The design is for 1980, 34-watt panels in 9 rows of various lengths on the old gravel pit site and will not be prominently visible from Route 100.

### Wind generation in Eden

During the time when the Kingdom Community Wind (KCW) project was under development, there was also a test tower to measure the potential for additional wind generation on a parcel of property in Eden adjacent to the Lowell site. At the same time Green Mountain Power was developing the Kingdom Community Wind project, BNE Energy, Inc., based in West Hartford, Connecticut was looking into the potential for additional wind towers along the same ridgeline. BNE Energy Inc. was founded for the purpose of developing wind generation in New England with continued growth throughout the country.

BNE Energy, Inc. did not own the property where the test tower was located, did not pursue any additional steps towards developing the site and the test tower fell down. In September of 2016, this same parcel of property, 353.5 acres, owned by Green Crest Inc. out of Essex Junction, was sold to Green Mountain Power. The transfer of property to GMP, the same owners as the Kingdom Community Wind Project in Lowell, brought up some questions regarding the future use of the parcel. Vermont Electric Coop and Green Mountain Power were contacted asking about additional wind development in Eden. Both companies said, as of February 2017, that there was no plan to develop or install more large scale wind towers.

According to Kristin Carlson at Green Mountain Power from an email in January 2017, *"GMP is not planning any more wind turbines for that land. We bought the land solely for the purpose of being able to site a system that will allow us to keep the lights off in the evening when there is no aircraft in the vicinity. This was something that was very important to the community as well as a requirement of our Certificate of Public Good. Siting of this system will still need regulatory review and approval from state and federal agencies, and we are hopeful the whole process will take a year to three years, however there is no firm timeline. We agree keeping the community informed is important..."*

The tower referred to above is called an Obstacle Collision Avoidance System (OCAS) which is a low power, radar tower system designed to alert pilots if their aircraft is in immediate danger of flying into an obstacle. This system allows the visual warning lights on the wind towers to remain passive (off)

until an aircraft is detected and known to be tracking on an unsafe heading. This leaves the nighttime sky free of unnecessary light pollution, decreasing public annoyance issues while improving the environmental habitat.

The potential of additional wind towers on the ridgeline in Eden sparked the community survey sent out by the Eden Planning Commission with the property tax bills in 2012. This questionnaire specifically asked questions to better understand the position of the community on the possibility of large scale wind generation in Eden. Of the 70 responses received, 74% of the community were in favor of small scale wind, 13% were against and 13% were undecided. Regarding large scale wind generation, 37% were in favor, 23% were against and 40% were undecided. The 2012 survey was sent out prior completion of the KCW project. At that time, the wind towers were not visible from any vantage point in Eden.

With the 2016 survey asking some similar questions regarding wind, the community voices a much different perspective regarding large scale wind development. In 2016, 27.5% were now in favor of large scale wind, down from the 37% four years earlier. Respondents that did not support large scale wind went from 23% up to 60% and the undecided also changed significantly from 40% in 2012 down to 12.5% in 2016.

Green Mountain Power, in conjunction with the KCW project, established a Good Neighbor Fund which sends money to the neighboring towns impacted by the 21 wind towers. The amount of money received by each town is proportionate to the amount of electricity generated. Eden’s municipal accounting is on a fiscal schedule, from July 1 to June 30 of each year.

The chart below shows the accounting for the Good Neighbor Fund. There have been 3 major expenditures from this fund. At Town Meeting in March of 2015, \$40,000 was approved to be moved to the Paving and Structures municipal fund and twice, the Eden Selectboard has voted to use \$50,000.00 to offset the tax rate and reduce property taxes for Eden residents.

**Good Neighbor Fund established from the Kingdom Community Wind Project**

Year	Income	Interest	Expenses	Balance
3/14/13 - 6/30/13	\$5,638.00	\$2.13		\$5,640.13
7/1/13 - 6/30/14	\$45,711.53	\$18.80		\$51,370.46
7/1/14 - 6/30/15	\$72,061.00	\$35.65		
green-up day tires			\$279.40	
paving and structures fund			\$40,000.00	
fire department paving			\$6,350.02	\$76,837.69
7/1/15 - 6/30/16	\$77,552.23	\$35.07		
offset tax rate			\$50,000.00	
green-up day tires			\$746.00	
Harland checks			\$19.20	\$103,659.79
7/1/16 - 10/31/16		\$21.72		
offset tax rate			\$50,000.00	\$53,681.51

Wind generation of any kind near the Vermont Asbestos Mine site will not be possible.

### Siting Renewable Energy Projects in Eden

The enhanced energy plan, giving Eden “substantial deference,” the highest level of community input regarding decisions on potential renewable generation sites, would need to include detailed maps of the town. In order to achieve this level of consultation, Act 174 requires that each town needs to identify and map enough land to meet the estimated goals to achieve 90% renewable energy generation by 2050. The Lamoille County Planning Commission has produced some draft maps of Eden for potential wind and solar generation sites. If or when the Town of Eden proceeds ahead with the enhanced energy plan, these maps will need to be reviewed again and carefully edited.

### Land in Eden with special designations or conservation easements

Eden is one of the largest of the 251 towns in Vermont by land area with 64.3 sq. mi. or 41,152 acres. The towns that exceed Eden in size are Chittenden in Rutland County with 74.2 sq. mi., Fairfield in Franklin County with 68.5 sq. mi. and Newbury in Orange County with 64.4 sq. mi. Below is a list of land in Eden owned by the State of Vermont. With more than 6,000 acres (more than 15% of the town) under management of the Department of Forest, Parks and Recreation, the Department of Fish and Wildlife or the Nature Conservancy under the VT State Colleges, Eden certainly qualifies as a very rural, scenic and unspoiled destination point.

Whether or not the State will allow alternative electrical generation projects on the land it owns has not yet been established. Surely one of the reasons the state acquired these properties was to protect and preserve the natural, unspoiled and pristine environment in this part of the State. Identifying these areas as potential for generation sites does not seem to follow with Vermont’s preservation ideals. Properties below were identified from the Eden Grand List with minimal deed research.

<b>Prominent state-owned lands in the Town of Eden</b>			
<b>Agency or Department</b>	<b>Description</b>	<b>Acreage</b>	<b>Use</b>
Dept. of Forest, Parks & Recreation	Long Trail State Forest	~2,525	Recreation (hiking)
Dept. of Forest, Parks & Recreation	Green River Reservoir	~2,226	Recreation and hydro generation
Dept. of Forest, Parks & Recreation	Whitney Lane	~1.0	Former “Roller Shed”
Dept. of Fish & Wildlife	Wild Branch Management Area	~410	Recreation (hunting & fishing)
Dept. of Fish & Wildlife	Lake Eden Dam	~0.25	Dam facility
Dept. of Fish & Wildlife	Eden Access Area	~0.74	Public access to Lake Eden
VT State Colleges	Babcock Nature Preserve	~1,089	Research, natural preserve
Agency of Transportation	District 8 Garage	~2.9	Maintenance, operations
Agency of Transportation	Natural Spring	~0.2	Conservation
<b>Source: Eden Grand List</b>		<b>Total</b>	6,255.09

**Table 12** below lists properties in Eden that may have some restrictive conservation easement either by the Vermont Land Trust or other conservation organization. These properties would need further legal research of the deeds to be able to correctly identify the parcels for any potential alternative electrical generation siting purpose. These 15,000+ acres, with possible development restrictions, represent at least an additional 36% of the land mass in Eden.

<b>Table 12: Properties in Eden with potential conservation restrictions</b>		
<b>Parcel I.D.</b>	<b>Owner</b>	<b>Acres</b>
02.01.01	VT Land Trust	545
04.01.02	VT Land Trust Nature Conservancy	508
05.01.02	Edward Buttolph Trustee	299
05.01.34	Big Muddy Pond, Ritterbush Pond Area	1089.2
09.01.01	Wild Brook Club	358
10.01.01	Forest Legacy State of VT ANR	5173
11.02.57	Faith Realty Trust	557.13
12.01.22	Eden Echo Forest Management	1716
12.01.24	VT Land Trust Nature Conservancy	1573
15.01.15	Bullard VT Land Trust (in process)	1293
17.01.20	Eden Echo Forest Management	151.6
17.01.21	VT Land Trust Nature Conservancy	53.6
20.01.01	VT Land Trust Nature Conservancy	1164.5
20.01.04	Borneman VT Land Trust	53
13.01.01.01	Robert King Trust (Nature Conservancy in Deed)	814.3
<b>Total Acres</b>		<b>15,348.33</b>

The Green Mountain Council’s Mt. Norris Boy Scout Camp is also land in Eden with special characteristics. With more than 900 acres occupying some of the most prestigious lake front property at the north end of Lake Eden, the Green Mountain Council pays no property taxes. The Town of Eden has no jurisdiction to make any assumptions or speculations on this piece of land in the siting of renewable energy projects. Siting large scale wind within the view shed of lake front properties would definitely be detrimental to the value of the properties creating an additional burden on taxpayers in the town as a whole.

### Looking towards the future

The Town of Eden is fortunate to have an energy committee with 5 volunteers working for the good of the town. The Eden Energy Committee, EEC, was appointed by the Eden Selectboard in 2015. The committee adopted the following mission statements:

1. The committee will focus on energy conservation and reduction of our carbon footprint in, and for, the benefit of the residents of Eden.
2. The committee will support regional efforts, in cooperation with other municipalities, for energy conservation and development.

Using the Eden 3E community solar project production data and group net metering guidelines that the Town Office, Town Garage and the Lake Eden Recreation Area participate in, the EEC is developing a model (size and rating) to provide solar energy for Eden Central School. Results of that effort show that a 200 panel solar installation, requiring approximately 10,000 square feet, could produce 100,000 KWH per year. Last year ECS used approximately 108,000 KWH. Because of school energy saving improvements such as the use of digital controls to replace costly air compressor thermostat controls, we can expect that the amount of energy used will be less in the future. An updated review of electrical and fuel usage will be made after a season of using the energy improvements at the school.

Results of surveys, both local and regional, show that solar energy, rather than wind energy is favored as an alternative source. Local surveys also show that the siting of alternative energy is best left to the individual property owner. As with the E3E solar site, the production of solar energy is compatible with farming activities. Since there are many property owners who are willing to invest in solar energy for the purpose of global carbon reduction, it should be possible to recruit Eden property owner investment in more solar arrays that would result in our local school using zero net fossil electric generation through participation in group net metering programs. This will be an ongoing effort of the EEC.

Eden residents interested in energy issues are encouraged to attend the Eden Energy Committee meetings at ECS library on the second Saturday of each month at 9 AM.

## Summary

The energy sector in our world is changing extremely quickly. New innovations in all aspects of energy generation and consumption make possible today what we only dreamed of just a short while ago. In the process of updating this town plan, Act 174 was passed outlining a specific process to reach the renewable generation goals for the state. Green Mountain Power began to test Tesla batteries that store electrical energy with some of their residential customers. A new solar project was proposed in Eden and the Public Service Board adopted new stringent guidelines on the noise levels from wind generation. Renewable energy credits are no longer sold out of state and the cap on net-metering projects was lifted.

We have changed from a governor that was 100% in favor of industrial wind to one that does not want to see any additional wind towers on the mountainous ridges in Vermont. The focus in Washington seems to be moving away from carbon emissions reduction and is definitely not on the renewable energy generation path. Looking towards the future and making plans to reach our goals is extremely important keeping in mind that most likely we will experience some significant changes in the not too distant future regarding energy.

The EPC chose not to pursue the enhanced energy chapter requirements related to mapping until additional community outreach and education is accomplished for the following reasons.

1. All residents must have their property rights both respected and protected.
2. Identifying specific areas for potential solar or wind development by highlighting them on a map before involving the community in the process was not in the best interest of the residents of Eden whom we are appointed to represent.

3. Designation of land areas for specific purposes resembles a type of zoning which did not coincide with Eden's current position on municipal regulations.

The Eden Planning Commission and the Eden Energy Committee encourages our community to participate fully in our part to reduce greenhouse gas emissions and agrees to fully collaborate with the utilities that serve the town. We wish to work together to meet the Vermont state-mandated energy goals in a manner that serves both the utilities and the Eden community.

The Town of Eden would like to work together to:

1. Determine how much electricity generation would be appropriate for the town.
2. Design projects that would help meet state goals, improve reliability and energy independence for Vermont.
3. Identify locations for renewable energy projects in Eden after landowners have agreed, the Town of Eden government is supportive and the placement makes sense for transmission from the perspective of the utility.

### **Goals, policies, & recommendations**

#### *Goals:*

To provide energy, whether for heating, electricity, or transportation, in a safe, reliable, and efficient manner, and to generate energy from local, renewable sources, provided these sources are economically viable and environmentally sound.

To promote energy efficiency and conservation in the design, construction, and maintenance of all municipal, residential, commercial, and industrial buildings.

#### *Policies:*

- Eden supports the use of residential installations of wind and solar to generate electricity, provided scenic and aesthetic concerns are met. The 2016 Community Survey showed that 83% of respondents were in support of residential solar and 64% were in support of residential wind projects.
- Renewable generation development should avoid ridgelines, especially those visible from roadways and high density developed areas such as the Lake Eden shoreline. Any ridgeline development should be set back from the edge of the hill and have a forested buffer to protect the view from the valley.
- Development around the natural scenic resources identified should be sited and constructed in such a manner as to retain the natural scenic beauty of the area. Removal of the natural vegetation on a development site should be minimized and structures should be screened or hidden from view as best as possible.
- Within subdivisions, planning for transmission lines should be strongly weighted in favor of underground placement to achieve the scenic objectives of this plan.
- Energy efficiency will be included as a factor in municipal construction, purchases, and use.
- Outdoor lighting, especially parking areas, should use cutoff fixtures to reduce the amount of light pollution and to allow lower wattage bulbs.

*Recommendations:*

- The Planning Commission encourages the Selectboard and School Board to conduct energy audits of all municipal buildings to identify opportunities for savings.
- Builders and homeowners should check with Efficiency Vermont for energy standards and conservation opportunities for new construction.
- The Selectboard should participate in all Section 248 Public Service Board hearings to ensure local concerns are met.
- Encourage the State of Vermont to include neighboring towns in the decision making process regarding the siting of industrial power generation installations.

## Chapter 6: Economic Development

### Local employment characteristics

Historically, the foundation of Eden’s economy has been its natural resource base, which supported various scales of farming, timbering, and milling through much of the 19<sup>th</sup> and early-20<sup>th</sup> centuries. By the early-1900s, the town also experienced an influx of economic activity associated with the establishment of an asbestos mine along the town’s northeast boundary with Lowell. The asbestos mine was a staple industry of the regional economy for many decades to follow and employed as many as 175 workers by 1981. Mining operations gradually diminished during the 1980s amid health and environmental concerns and the mine closed in 1994. At various points in the town’s history, Eden was also home to multiple factories, hotels and restaurants, as well as a casino.

Today, the most recent data from the Vermont Department of Labor indicates the total number of workers employed in Eden is 90. The largest employer is currently the Eden Central School, with the remainder of the local workforce spread among a small number of retail, agricultural, and construction businesses. In the coming years, as the reach of mobile broadband penetrates further into rural Vermont, there will be a corresponding increase in opportunities for telecommuters and home-based businesses to operate from outlying areas of the state. This will contribute to a more diverse local employment base and likewise increase the potential for entrepreneurship and small business start-ups.

**Table 13** shows that the average wage reported incorporates both full and part-time workers. To protect the confidentiality of individual businesses, more detailed wage data for a population as small as Eden’s is not available. In 2016, the unemployment rate in Eden was 5.7%. Despite long-term instability in labor markets, Eden residents remain employed in a diversity of occupations and professions. The American Community Survey from 2005-2009 (the most current available data) reported the following industries as the largest fields of employment for the town’s workforce, estimated at 651:

- Educational services, and healthcare and social assistance (29.6-percent)
- Construction (16.4-percent)
- Retail trade (13.7-percent)

### Journey to work

Local commuting data is often analyzed to classify towns as job centers, average communities, or bedroom communities. Job centers are those towns with more jobs than members of the resident workforce; bedroom communities are defined as having more than two-thirds of the resident workforce leaving the community for employment. Clearly, Eden can be defined by conventional measures as a

	2015	2010
<b>Private Sector</b>		
Establishments	13	13
Employees	39	27
Average Wage	\$22,956	\$17,645
<b>Public Sector</b>		
Establishments	3	3
Employees	51	60
Average Wage	\$34,838	\$27,205
Source: VT Dept. of Labor		

bedroom community, with the vast majority of residents commuting to other job centers within the region for work.

According to American Community Survey estimates from 2010-2014, Eden's workforce commutes to a wide range of employers scattered across the state. Roughly speaking, about one-quarter of the workforce is employed in Stowe and Morristown; another quarter is employed in other areas of Lamoille County, including Eden; another quarter is employed in Chittenden County; and the remaining quarter is spread across the state, including places as far away as Rutland and Bennington. This data underscores the economic importance of the state highway network in safely and efficiently circulating commuters throughout the region.

In the 2016 survey, there were 42 responses to the question, "How many miles do you commute to work?" The responses ranged from 200 feet to 51 miles with an average of 24 miles to work and then the return trip back home.

### **Poverty**

The U.S. Census Bureau defines annual poverty thresholds for households across the country, based on the Consumer Price Index (CPI). Established by the federal Bureau of Labor Statistics, the CPI is defined as the average price paid for an assortment of commonly consumed goods at a given time. It therefore fluctuates with changes in the price of gasoline, groceries, and other essentials, and is often used as a rough cost of living indicator. While imprecise, the CPI and associated poverty rates provide a useful basis for comparing trends in income and poverty across regions. Estimates from the American Community Survey (2010-2014) indicate the poverty rate in Eden at 13.3% and Lamoille County at 10.1%.

### **Long-term economic development variables**

Ultimately, economic development does not occur within the boundaries of a single municipality, but rather in a broader regional context. Eden residents purchase goods and services in town and from neighboring communities, which in turn create new economic opportunities for other residents of Lamoille County and beyond. To the same extent, the hundreds of visitors who come to Eden to enjoy the serenity of the area also support local businesses during their stay. Planned expansions at Jay Peak and proposed development in the Newport area may create new opportunities for Eden based businesses and residents. Thus while all communities strive for a vibrant local economy, different scales of development are appropriate for different types of communities.

### **Outdoor Recreation**

Outdoor Recreation is an important economic driver within the State of Vermont. The ski industry is a major economic force in nearby communities, notably Jeffersonville, Stowe, and Jay. Expansions at the Jay Peak Ski Resort may provide opportunities for economic development in businesses directly related to recreation, as well as for other businesses that might sell products or provide services to visitors. Smaller scale outdoor recreation based opportunities, such as the Eden Dogsledding Center, VAST trail system, Catamount Trail and Long Trail, are already located within Eden. Lake Eden, the Green River

Reservoir, and other ponds and streams are also attractive areas for visitors interested in bird watching, swimming, boating, fishing, and other recreational activities.

Road bicycle touring is increasingly popular during the summer months. Formal and informal bicycle tours along Route 118 and Route 100 have the potential to connect Eden with Jay Peak to the north, Smugglers Notch Resort to the west and Stowe Mountain Resort to the south. Cyclists would be inclined to stop at businesses along the route for food, provisions, and lodging. Development of such tours could be hampered by the narrow shoulders on some areas of Route 118 and Route 100. Expansion of these shoulders should be considered an important economic development strategy.

A recent survey by the US Fish and Wildlife Service and US Census Bureau shows that Vermont ranks first among the lower 48 states in participation of its residents in wildlife-related recreation, including hunting, fishing and wildlife watching, with 62 percent of our residents enjoying these activities and resources. Residents and nonresidents spend \$744 million annually in Vermont in pursuit of these activities. Hunters alone spend more than \$292 million in Vermont annually, according to a survey conducted in 2013 by the U.S. Fish and Wildlife Service and the U.S. Census Bureau. Wildlife-based recreation represents a potential economic driver for Eden. However, given that a growing percentage of Eden's forestland is in public ownership, Eden will only benefit if traditional activities such as hunting and fishing are allowed to continue on these "conserved" properties.

### **Agriculture and Forestry**

There remains just one dairy farm left in Eden. The low price of milk has been an incredible challenge for the dairy industry for many years. The emergence of new agricultural products however has led some to say that Northeastern Vermont is experiencing an "Agricultural Renaissance." Some new agricultural products include grass-fed beef, direct-to-consumer vegetable farming, seed and nursery production, and specialty products such as cheese and bread. The growth and popularity of "micro-breweries" in the region may create opportunities for producing hops. Both traditional and emerging agricultural products represent opportunities for Eden landowners. Eden farmers can also utilize new, digital tools such as *yourfarmstand* on the [www.vtfarmlate.com](http://www.vtfarmlate.com) website, an online farmers' market that connects consumers with local agricultural producers.

Along with traditional backyard sugaring operations there has been a number of new large scale sugaring operations established within Eden's boundaries.

Eden has a large forested land base. Over the last several decades, many of the large sawmills in Lamoille County have closed, partially due to increased international competition and drop off in the housing market. Currently, while some timber is milled locally, the remainder of the raw timber produced in Lamoille County is exported for milling. Increasing the amount and types of forest products processed in Eden could provide local employment as well as an incentive for landowners to maintain active forestland. While it is unlikely that a large, traditional sawmill would be located in Eden, expansion of small "backyard" mills, portable mills, fire wood suppliers, cottage furniture makers and wood turners all represent opportunities to process timber products. Some Eden based businesses have also begun to market "non-timber" forest products, such as leeks and fiddleheads.

## Construction Industry

As noted earlier in this chapter, many Eden residents are employed in the construction industry. Construction at Jay Peak and other resorts, renovation and expansion of camps and second homes, and new housing development all represent opportunities for Eden residents employed in the construction industry. This industry was particularly hard hit by the decline of the housing market at the onset of the “Great Recession,” in 2007/2008. In the height of the downturn, Eden’s unemployment rate exceeded 14 percent. Identifying new opportunities that utilize the skills of residents in the construction industry should be a priority for regional and state workforce development organizations.

## Home-Based Businesses

The recent initiative to bring hi-speed broadband internet access to Eden could represent an economic boon to the town. Hi-speed internet access is increasingly essential not only for high tech industries, but for all businesses operating in the 21st century. Hi-speed internet is a vital tool for growing the local economic base and will make Eden more attractive to home-based businesses, telecommuters, the cottage software and web development industry, the creative economy, and even manufactures who increasingly rely on broadband for product specifications and advertising.

## Regulatory Environment

Ultimately, the local and state regulatory environment is a determining factor in where businesses chose to locate. To this point, Eden has not elected to adopt any land use regulations. However, development proposals that exceed specified thresholds are subject to state review under Vermont’s land use law, Act 250. Proposals for the installation of various forms of infrastructure, energy generating systems, and telecommunications facilities are also subject to review by the Vermont Public Service Board (PSB), under the Section 248 statute. The Town of Eden has the opportunity to participate in both Act 250 and Section 248 hearings to advocate for the interests of the town and its residents. The goals and policies set forth in this plan are considerations in both the Act 250 and Section 248 processes. Therefore, it is important for the town to maintain a plan that incorporates specific language, expressing the community’s position on how Eden can grow and develop. As the economy continues to evolve, public input should be collected and reviewed periodically so that Eden is prepared to accommodate the character and scale of development desired by its residents.

## Goals, policies, & recommendations

### *Goals:*

To encourage a diverse and sustainable economy, through the provision of essential public infrastructure and participation in state regulatory proceedings.

For Eden to have a balanced and diverse local economy that provides rewarding job opportunities.

### *Policies:*

- The town supports initiatives that will make farming and forestry more economically viable into the future.
- State owned properties and land “conserved” using public funds should be actively managed and remain open to public use. Active management includes, but is not limited to, forest

management (including timber, maple, and other forest products), agricultural production, and recreational uses.

- The Town supports industries that utilize local resources to produce value added products.
- The development of appropriate industries and businesses, that utilize the skills of the local labor force, are encouraged.
- The Town supports proposals that will provide workforce training to improve opportunities for residents in new and existing businesses.
- The Town supports existing and proposed businesses that provide jobs.
- Economic development at the expense of the environment is not encouraged. Businesses and industries shall not degrade or endanger air and water resources.
- The Town supports recreational use of Eden's land base and bodies of water, including, but not limited to, swimming, boating, fishing, snowmobiling, mountain biking, hiking, snow-shoeing and cross country-skiing.

*Recommendations:*

- Eden should lobby the Vermont Agency of Transportation to ensure appropriate maintenance of Routes 118 and 100 commensurate with increased traffic volumes (cross-referenced in the Transportation Chapter)
- In order to support recreational tourism, the Town should advocate for expanded, paved shoulders for cyclists along Route 100 and Route 118. Shoulders should be included in plans for repaving of both routes. (cross-referenced in the Transportation Chapter)

## Chapter 7: Transportation

### State & local highways

In Vermont, state highways bear a route number and are maintained by the VT Agency of Transportation (AOT). Eden’s state highways are Routes 100 and 118. All local roads are classified according to their importance and general use (*Class 1-4*), and usually have a “town highway” number. This system is used to determine the amount of state highway financial assistance provided to each community. *Class 1* roads are extensions of the state highway system, have a state route number and are the responsibility of the town to maintain. Eden does not currently have any *Class 1* roads within its boundaries. *Class 2* roads include major transportation corridors between towns, usually carrying a larger volume of local and regional traffic. Eden’s class 2 roads are East Hill Road and North Road. *Class 3* roads– such as Blakeville Road, Knowles Flat, Shover Road and Warren Road – are classified as secondary town highways that primarily carry only local traffic. Finally, *Class 4* roads are seasonal, unpaved roads that may be impassable in snowy or muddy conditions. In accordance with state statute, towns are only required to maintain existing bridges and culverts on *Class 4* roads. In emergency situations, where residents living on *Class 4* roads are isolated by weather or other obstructions, assistance is possible. **Table 14** provides information about highway mileage in Eden.

<b>Table 14: State and local highway mileage in Eden.</b>					
Town	Class 1	Class 2	Class 3	Class 4	State Hwy
Eden	0.0	8.4	21.6	12.0	13.8
Source: VT Agency of Transportation					

In addition to the road categories described above, the Town of Eden also owns a 0.19-mile segment of right-of-way, officially classified as a “Legal Trail.” This trail, which connects Cemetery Road and Blakeville Road is not maintained by the town and is accessible only by foot or other non-motorized transit.

### Traffic

As the region’s population and tourism sector have grown over the last two decades, traffic in Lamoille County has also increased.

<b>Table 15: A comparison of observed Average Annual Daily Traffic (AADT) counts on major highways in Eden (2012-2015)</b>			
Observation Point	2012	2015	% Change
Rt. 100, Hyde Park town line to VT118 intersection	4600	5200	13.0%↑
Rt. 100, intersection with Rt. 118 to Eden Mills Rd	3800	3800	0%
Rt. 100, intersection with Eden Mills Rd. to Camp Rd	3600	3600	0%
Rt. 100, intersection with Camp Rd. to Lowell town line	2000	2400	20%↑
Rt. 118, VT100 intersection to Knowles Flat Rd	950	1200	12.6%↑
Rt. 118, intersection w/ Knowles Flat Rd. to Belvidere town line	560	700	12.5%↑
Source: VT Agency of Transportation 2015 AADTs State Highways Route Log			

**Table 15** on the previous page shows the traffic counts at 6 sites on Routes 100 and 118. Changes in traffic volumes, both up and down, can sometimes be attributed to changes in the economy and vehicle fuel prices, detours or road closures and may affect where people travel.

As the data in **Table 15** suggests, overall traffic volume increased since the previous Town Plan update. Eden residents have also observed a marked increase in heavy truck traffic, especially along Route 100. Two factors in this change are the growing number of tractor trailers going to and coming from the Casella landfill in Coventry (approximately 22 miles north). Daily between 17 and 20 tractor trailers of trash travel through town from Burlington to Coventry. Two trucks per day come from Hyde Park and 2 trucks per week come from Stowe. Relative to an average automobile, heavy trucks have a greater impact on the community in terms of noise, emissions and road surface deterioration. With these and other changes, the negative traffic impacts— from a financial, safety and a quality of life standpoint— are more pronounced than ever before.

Ultimately, there do not appear to be any highways or intersections in town that fail to provide an adequate level of service from the perspective of circulation and congestion. While Eden’s major businesses and public services are located along Routes 100 and 118, they are generally not cause for traffic congestion. All facilities seem to have adequate, available off-street parking; and are not a cause for concern at this time.

### **Maintenance of the local transportation network**

In addition to approximately 30 miles of town highways, Eden is responsible for maintaining a network of bridges and culverts that assist in the conveyance of storm water runoff and ensure the safe passage of motorists, pedestrians and other travelers. General maintenance of the local transportation network is the responsibility of the Eden Highway Department, staffed by 3 full-time and 4 on-call employees. The Eden Highway Garage is located on Route 100. Additionally, the State of Vermont Agency of Transportation (AOT) District 8 garage – housing equipment and materials for state highway maintenance – is located on Route 118.

Regular maintenance activities in Eden include the grading and ditching of roads, replacement of culverts, and winter snow removal. Due to the high cost of bridge and culvert repairs, the town relies heavily on state aid and grants for such work. Potential funding sources include the State AOT programs such as: Better Roads, District Class 2 Highway Paving, District Structure Assistance, Bicycle/Pedestrian Program, and the Transportation Alternatives Program. Other sources that may have funding for eligible projects include the ANR Ecosystem Restoration Program and various State emergency preparedness and mitigation programs. Highway construction and maintenance practices are guided by the AOT recommended “Codes and Standards,” adopted by the Eden Selectboard in March 2013. These standards have provisions to ensure that all maintenance on town highways is completed with proper drainage, ditching and construction techniques. These standards are also incorporated into eligibility requirements for emergency funding. Eden is familiar with the importance of a resilient transportation network and how highway infrastructure is susceptible to flooding. Eden has received emergency funding to mitigate damages from multiple storm events. The importance of road and bridge standards are also reflected by the rule making process under Act 64 (in progress), specifically the

drafting of the Municipal Road Permit. The permit is currently under development, and anticipated to be required by 2018, with compliance actions planned, documented, and underway by 2020.

### **Alternative and multi-modal transportation**

According to estimates from the Census Bureau’s American Community Survey 2010-2014, more than 89-percent of residents commute to work by personal automobile— 81-percent of which drive alone. As a rural community, Eden residents have limited opportunities to utilize non-motorized transit. However, to the greatest extent practical, the town encourages residents to utilize alternative modes of transportation, such as walking, bicycling, snowmobiling, and riding the limited public transit routes offered in the county. In 2011, Vermont enacted “Complete Streets” legislation, mandating that designs for new and renovated paved roads consider the safe accommodation of motorists, bicyclists and pedestrians of all ages and abilities. Examples of design elements encouraged through the Complete Streets program include:

- Adding and maintaining sidewalks that are connected to public services;
- Improving lighting, signage and pavement markings; and,
- Installing curb ramps and sidewalk seating where appropriate.

Eden is supportive of the concept behind Complete Streets as there is pedestrian traffic along Routes 100 and 118 especially around Lake Eden, Eden Central School and the US Post Office. Presently, these state highways provide only very narrow right-of-ways for walking or bicycling, and pedestrian connectivity and is a major safety concern. To this end, the town strongly encourages the AOT to consider installing wide shoulders to act as bicycle-pedestrian lanes along Routes 100 and 118 as part of any future road surface upgrades. In addition to improving pedestrian safety, bicycle lanes would serve as a tourism amenity, especially to the increasingly popular “bicycle tours,” which bring visitors to Lamoille County throughout the spring, summer and fall months.

### **Air & rail travel**

The nearest passenger rail service for residents of Eden is provided through AMTRAK, with a station in Waterbury and Essex (32 miles and 40 miles respectively) from the town center. The stations are stops on the daily route, “The Vermonter,” which runs from St. Albans to Washington, D.C. with stops in New York, Philadelphia and Baltimore.

Eden residents also have access to private and charter aviation services through the Morrisville-Stowe State Airport on Route 100 in Morristown. Airport Master Plan implementation (a plan for facility improvements) has begun and is expected to continue for the next several years. Commercial airline service is available through Burlington International Airport (BTV) in South Burlington (45 miles from the town center), offering direct flights to destinations across the eastern United States and beyond.

### **Public transportation**

Eden is not directly served by any regular public transit routes. The nearest available service is provided by Green Mountain Transit (GMT), through its Stowe/Morrisville Area routes. Currently, these routes include several circulators between major destinations in Morrisville and Stowe, as well as the Route 100 Commuter bus, connecting Morrisville to Waterbury. GMT also operates a commuter route between Jeffersonville and Burlington. Rural Community Transport (RCT) provides service to Lamoille County (including Eden) with non-fixed routes and on-demand services including programs for elderly,

disabled, and others with transportation needs for medical appointments and shopping. RCT currently has two regular weekly shopping routes: one between Morrisville and Johnson; the other between Morrisville and Williston. On-demand special services are available in Eden upon direct request to RCT. On an as-needed basis, numerous human-service organizations in Lamoille County also provide transportation services to assist Eden residents, including:

- The Central Vermont Council on Aging (CVCOA) provides transportation to health services, shopping and other community programs across central Vermont. They also transport meals to residents who are confined to their homes. CVCOA operates the local Retired Senior Volunteer Program (RSVP), which provides transportation to its volunteers, in addition to reimbursing volunteers for mileage.
- Central Vermont Community Action Council (CVCAC) has contracted with Rural Community Transport (RCT) to administer a ride referral/ride match program in Lamoille County. RCT also focuses on developing and coordinating transit services and cultivating awareness of, and support for, public transportation in the region.
- Lamoille Community Connections (LCC) provides rides for developmentally-disabled clients between their homes and the region's treatment and activity centers.
- Vocational Rehabilitation (VR) provides services to clients with disabilities that create barriers to employment. The VR program works to relocate individuals and provide transportation so clients can work in the community. VR also serves as an advocate of local and regional transportation planning.
- Out and About is an adult day care program that provides transportation to clients through RCT to gain access to-and-from their homes to the day care.

### **Rideshare & carpooling**

According to estimates from the American Community Survey 2010-2014, approximately 9-percent of Eden residents utilize a carpool as a primary means of transportation to work. As previously noted, the commuting destinations of Eden residents are generally clustered along major transportation corridors, such as Route 100 (north towards Jay and Newport, south to Stowe and Morristown) and Route 15 (east towards Hardwick and St Johnsbury and west to Cambridge and Chittenden County). Accordingly, there would appear to be additional carpooling opportunities for Eden residents, enabling commuters to save money, conserve energy and reduce demands on the local transportation infrastructure. To facilitate more ride-sharing, several neighboring municipalities have worked with AOT to construct designated "park-and-ride" facilities. If resident interest exists, LCPC is available to work with the Town of Eden to designate one or more such carpool lots. Although there is no official "park-and-ride" lot, there are multiple places where a vehicle can be parked safely when coordinating transportation with another driver. An additional AOT program, Go Vermont, is able to provide assistance with vanpooling coordination, including the use of a van.

## Recreation and non-motorized travel

Both the Catamount Trail and Vermont Association of Snow Travelers (VAST) trails pass through Eden. The Catamount Trail, a cross-country skiing path that spans the entire length of the State, crosses town north of Green River Reservoir State Park and runs east along the hills of Eden, before entering Lowell. VAST trails also pass through various parts of town. Both systems provide winter recreational opportunities and potential walking or hiking trails during other times of the year.

In 2015, following several years of planning, a 17-mile segment of the former Lamoille Valley Railroad was redeveloped into a year-round, multi-modal recreation path, known as the Lamoille Valley Rail Trail (LVRT). The redeveloped trail passes through the neighboring towns of Hyde Park and Johnson and has already begun to attract new visitors to the region. Eventually, the LVRT will span 93 miles from St. Johnsbury to Swanton and will become the longest rail-trail in New England.

In addition to designated recreation paths, scenic highways also represent a tourism and leisure amenity in Eden and elsewhere throughout the region. Vermont Route 100 is a renowned fall foliage drive, while Route 118 offers stunning views of Belvidere Pond (also known as Long Pond) and Belvidere Mountain. These highways provide visitors with a window into Eden and preserve the scenic, rural image of the town.

## Regional transportation planning

In July 1992, the Lamoille County Transportation Advisory Committee (LCTAC) was formed. The LCTAC is comprised of appointed representatives from each town in the County and several non-municipal members. The purpose of the LCTAC is to provide recommendations regarding regional transportation needs and concerns to the LCPC Board and Vermont AOT. The LCTAC serves as the eyes, ears and voice of communities in the regional transportation planning effort. A Regional Transportation Plan for Lamoille County was last adopted in 2015.

The benefits to Eden of participating in regional transportation planning efforts, such as the LCTAC include: local influence on regional transportation planning and state capital budgeting processes; coordinated planning and project implementation with neighboring towns; and direct access to technical assistance on transportation issues.

## Goals, policies & recommendations

### *Goals:*

To provide a safe, efficient and diverse transportation network for the benefit of all residents and visitors.

To encourage opportunities for residents to access alternative modes of transportation, whether by carpool, public transit, walking or bicycling.

To preserve Eden's scenic highways and transportation corridors, promoting Eden as an attractive place to live, work and play.

To ensure adequate maintenance of important public corridors, especially Route 100 and Route 118.

### *Policies:*

- New road and driveway accesses should have a suitable site distance so as not to create blind or hidden intersections with existing roads.

- All new driveways must have a permit and be constructed to conform to Eden's driveway policy.
- Land use and development must not adversely impact traffic safety and the condition of town roads and rights of way.
- Eden supports efforts to provide transportation services to assist elderly and disabled residents who wish to remain in their homes.
- Carpooling and vanpooling by local commuters to reduce transportation costs and impacts is encouraged.

*Recommendations:*

- The Town should assess road and culvert conditions on a regular basis to establish maintenance and repair priorities and to comply with state standards for funding assistance.
- The Selectboard should update road and bridge standards as necessary to comply with state standards. The Selectboard may periodically review policies that regulate the acceptance of private roads.
- Eden should lobby the Vermont Agency of Transportation to ensure adequate maintenance of Routes 118 and 100. These roads should receive higher priority in the State repaving schedule due to the impacts of heavy trucks transporting waste to the Coventry Landfill.
- In order to provide safe access for various transportation modes, the Town is an advocate for expanded, paved shoulders for cyclists along Route 100 and Route 118. Shoulders should be included in all plans when repaving both routes.
- Eden should continue to support the non-profit services that provide public transit and other transportation services at the regional level.
- The Selectboard should continue to appoint a municipal representative to the Lamoille County Transportation Advisory Committee (LCTAC) to coordinate transportation planning, road maintenance and improvements with adjoining towns, and to ensure that the interests of the town are adequately addressed by the region and the state.

## Chapter 8: Education

### Lamoille North Supervisory Union

The Town of Eden belongs to the Lamoille North Modified Unified Union School District (LNMUUSD), a regional cooperative serving the towns of Belvidere, Eden, Hyde Park, Johnson and Waterville. Students within each town attend one of five local elementary schools. Students then advance to Lamoille Union Middle and High School, which are co-located along with the Lamoille North Supervisory Union (LNSU) district offices on Route 15 in Hyde Park (10 miles south of the Eden town center). The Green Mountain Technology and Career Center, a technical high school, is also located within this same complex in Hyde Park and serves students from additional towns such as Craftsbury and Hardwick.

### Elementary Education

Children of Eden residents, from pre-kindergarten to 6<sup>th</sup> grade, may attend the Eden Central School, located on an 18-acre parcel off Knowles Flat Road, adjacent to Route 100. The school is operated by a 18 member collaborative board from the participating towns of the LNMUUSD. Representatives are voted in at Town Meeting. During the 2016-2017 school year, Eden Central School had an enrollment of 144 students.

The Eden Central School building was constructed in 1990 and has adequate capacity for current and projected near-term enrollments. In addition to classroom space, facilities include a library, kitchen, recreation fields and large multi-purpose room utilized for lunches, meetings, physical education and other activities. In 2010, Eden Central School became an American Red Cross certified shelter. During an emergency situation, the Selectboard can call upon the Red Cross to open the shelter to provide food, bedding and limited medical attention for temporarily displaced residents.

### Middle & Secondary Education

As noted above, students living within the LNSU district may attend Lamoille Union Middle (grades 7-8) and High School (grades 9-12). As of 2016-2017 school year, 95 students from Eden were attending Lamoille Union Middle and High School. Since opening a new wing of the building in 2002, the facilities are considered to have sufficient capacity to accommodate reasonable growth projections across the district. Current amenities at Lamoille Union Middle and High School include an auditorium, library, gymnasium, outdoor athletic fields and the Cricket Hill Trails system— a network of all-season recreation trails adjoining the campus.

Changes in student enrollment for both Eden Central School and Lamoille Union Middle and High School (LUM/HS) are shown in the table below.

School/Year	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Eden Central School	133	140	131	130	144
Lamoille Union Middle and High School	113	111	126	105	95
TOTAL	246	251	257	238	238

Source: Lamoille North Supervisory Union

High school juniors and seniors, as well as a limited number of adult learners also have access to career training and educational opportunities at the Green Mountain Technology and Career Center (GMTCC) in Hyde Park. GMTCC offers technical programs in thirteen areas of study and is accredited through the New England Association of Schools and Colleges. Noteworthy programs include forestry and land management, automotive technology, computer technology, culinary arts and HVAC.

### **Post-Secondary & Adult Education**

In addition to GMTCC, which offers multiple courses eligible for college credit, there are two other local institutions offering college-level instruction in Lamoille County. Johnson State College in neighboring Johnson offers a variety of graduate and undergraduate degree programs, along with other continuing education services. The Community College of Vermont (CCV) also operates a campus in Morrisville, offering Associate Degrees, certificate programs and online instruction in various pre-professional concentrations. Finally, additional adult educational opportunities are available through Central Vermont Adult Basic Education (CVABE) in Morrisville, which offers instruction for students that are not enrolled in public schools.

### **Early Childhood Education & Child Care**

Data tells us more than 70% of Vermont children under the age of six all have parents in the workforce. While families rely on all different kinds of arrangements to meet the care and learning needs of their children, for many families, child care providers play a central role in the care and development of young children and allow parents to attend school or retain their jobs. Data also shows that, statewide, Vermont lacks sufficient licensed child care for infants and toddlers. This lack of access to early care is a significant challenge not only for Vermont's families with young children, but also for Vermont's communities and economy. (Source: Stalled at the Start. Vermont Child Care Challenge Report, June 2016).

In Eden, childcare services are provided by four licensed in-home child care operations and two licensed childcare centers. The licensed child care centers are the Eden Central School Pre-school and Eden After-School program both on Knowles Flat Road. The in-home child care centers are on Belvidere Road, Clifford-Thompson Road, Hilltop Road and Olin Drive. These 4 in-home child care options can accommodate 10 children at each location. All licensed locations for child care will be listed on the Vermont Department of Children and Families online childcare directory under the Bright Futures Information System (BFIS).

Vermont statute mandates that a family child care operation serving six or fewer children is to be treated as a permitted single-family residential use within local development bylaws. While Eden has not elected to adopt zoning or subdivision regulations, the town fully supports early childhood education and child care services in all residential districts as described in the Land Use chapter of this plan. When developing site plans for new facilities, the town encourages property owners to address any potential traffic and pedestrian safety concerns within the neighborhood.

### **Future Concerns**

The quality of instruction and educational facilities offered at local public schools are in many ways a reflection of a community's vibrancy. Eden seeks to balance the need to maintain high-quality

educational services within a tax structure that is not burdensome to current and prospective residents. Therefore, the town must carefully monitor demographic trends to ensure that future residential growth does not overwhelm the capacity of the local school system. In a community survey conducted late in 2016, 57 people agreed that the school/educational services were adequate, 3 people disagreed and 13 respondents were undecided. A group of parents have been actively working to upgrade the playground located on the school property.

### **School Budget Trends**

Overall, the cost of providing education has continued to increase throughout Vermont since the last plan update. Due to a multitude of changes to state funding formulas, it is difficult to make accurate comparisons of local tax assessments and per-pupil costs across school budget years. However, as a point of reference, in terms of Gross Act 68 Budget, the Eden School District experienced an increase of five-percent (about one-percent per year) between FY2008 (\$2,382,793) to FY2013 (\$2,506,590)

### **Goals, policies & recommendations**

*Goal:* To plan for growth in a way that allows Eden to provide quality educational services and adequate facilities, without placing an undue tax burden on residents.

#### *Policies:*

- With the implementation of Act 46, Eden Central School shall continue to be an education center within our community.
- Eden supports efforts to broaden educational and vocational opportunities.
- Eden recognizes the importance to our community of high quality early education and daycare and supports organizations that provide these services.
- Eden supports the GMTCC and their efforts to broaden access to education for adult learners and to provide vocational opportunities for students.

#### *Recommendations:*

- Through its representative Eden should continue to have an active role on the Board of Directors of LUSD and in the new Lamoille North Unified Modified Union School District.

## **Chapter 9: Community Services & Facilities**

As a small rural community, the Town of Eden's primary public service obligations are maintaining local transportation infrastructure and operating Eden Central School. Residents nonetheless have access to a multitude of public, private and municipally-supported service providers to contribute to the health, safety and quality of life enjoyed by town residents.

### **Law Enforcement**

The Vermont State Police (VSP) is the sole source of law enforcement coverage in Eden, providing a limited number of patrol hours, responding directly to emergency calls and offering the services of criminal and investigative specialists, upon request. Starting on January 1, 2017, the town decided to contract with the Lamoille County Sheriff's Department (stationed in Hyde Park) for additional patrol coverage at an hourly rate as needed. This will provide coverage when the Vermont State Police are not available when immediately needed. LCSD serves as the emergency dispatch center for police, fire and rescue services across Lamoille County and a select number of neighboring communities. Eden residents also elect two constables, who have no direct law enforcement authority, but generally respond to domestic issues, such as animal control.

### **Fire Safety**

Fire protection is provided by the North Hyde Park/Eden Fire Department (NHPE), a 25-member volunteer unit collectively serving all of Eden and northern Hyde Park. The NHPE fire station is located on Route 100 in the village of North Hyde Park, approximately four miles from Eden's town center. The department participates in the Lamoille Mutual Aid Association (LMAA), an organization of all eight county fire departments, designed to coordinate shared emergency response resources. Administratively and financially, NHPE is responsible to the Prudential Committee of Hyde Park Fire District #1. However, the department receives the majority of its funding from the Towns of Eden and Hyde Park. In FY16, Eden voters appropriated \$29,000 for local fire protection. Operationally, NHPE is managed by an elected Fire Chief. The Town of Eden is also authorized to appoint a separate Fire Warden, responsible for issuing burning permits and monitoring forest and wildland fire vulnerability.

In addition to oversight of NHPE, the Hyde Park Fire District #1 operates a public water system within the village of North Hyde Park, which serves 48 customers (including the North Hyde Park Industrial Park) and five pressurized hydrants. A small portion of the fire district's wellhead protection area (WHPA) is located along Route 100 on the Eden/Hyde Park town line. There are no pressurized hydrants in Eden; firefighters rely on tanker engines or one of eight "dry hydrants" located throughout town for water. A dry hydrant is a 4.5 to 6-inch diameter pipe with a threaded coupling that a fire hose can be attached to. The other end of the pipe terminates in a near-by pond or stream that the fire department can pump water from. The installation of these hydrants improves overall fire safety by providing a source of water closer to where it might be needed. Insurance companies do not credit dry hydrants as sources of water that would give the property owner any discount on their homeowners' insurance bill as the hydrants are not under any water pressure and the amount of water available may fluctuate.

## **Rescue/Ambulance Service**

Emergency rescue services in Eden are provided by the Northern Emergency Medical Services (NEMS) squad – a division of Newport Ambulance Services – stationed in Johnson. Previously, the town was also served by the Eden Fast Squad, a local non-profit volunteer rescue service. The Eden Fast Squad is no longer active, but does still retain a bank account through the town in the event volunteers would like to re-start the organization.

## **Emergency Coordination**

The 1986 Federal Emergency Preparedness & Community Right to Know Act (EPCRA) established Local Emergency Planning Committees (LEPCs), for the purposes of coordinating hazardous materials, emergency planning and preparedness activities throughout the country. Eden is a member of Vermont's LEPC 11 (serving all of Lamoille County) and is entitled to and has appointed a voting member to the committee. Under Vermont statute, the town must also appoint an Emergency Management Director (EMD) with the responsibility to establish a local organization for emergency management in accordance with the state emergency management plan. Resources for local emergency planning and coordination are available through LEPCs, Vermont Emergency Management and the Vermont Homeland Security Unit.

## **Health Care**

The primary healthcare providers serving Lamoille County and the surrounding region are Copley Hospital and Community Health Services of Lamoille County (CHSLV), both located approximately 14 miles from Eden in Morrisville. Copley Hospital is a 25 bed critical access facility that serves as an emergency care center, along with providing in-patient and out-patient services, a family-oriented birthing center, physical therapy, and rehabilitation programs. CHSLV is a federally-qualified health center, committed to providing quality medical, dental and behavioral health services to residents of Lamoille County, including the uninsured and under-insured.

Additionally, Eden residents may seek health services from among the many private practices and specialists within the region, or from other regional health centers including North Country Hospital in Newport (30 miles), Northeastern Vermont Regional Hospital in St. Johnsbury (52 miles), Central Vermont Medical Center in Berlin (54 miles), The University of Vermont Medical Center in Burlington (56 miles) and the Dartmouth Hitchcock Medical Center in Lebanon, NH (110 miles). A range of additional health and wellness services—including family medicine, chiropractic and counseling—are also available through the Cambridge Regional Health Center (20 miles) as well as many other private medical offices.

## **Recreation**

There are a multitude of recreational opportunities available in Eden in all seasons. During the spring, summer and fall months, residents and visitors enjoy activities such as hiking, bicycling and swimming. Lake Eden, in particular, is a major seasonal attraction, whose shoreline has many permanent homes, rental units and camps. The Lake Eden Recreation Area (owned and managed by the town) offers spaces for tents and camper trailers, a public beach, picnic areas, 2 covered pavilions and a modern bathhouse.

Lakeview Camping is a privately owned campground also on the west side of the lake with many sites for campers.

The Vermont Fish & Wildlife Department maintains a fishing access area at the north end of Lake Eden. This  $\frac{3}{4}$  acre state property offers public access right off of Route 100. The gravel access is used mostly for the launching of small water craft.

The Mt. Norris Boy Scout Reservation, operated by the Green Mountain Council since 1954, is a 1072.5 acre property in Eden offering summer Scout programs at the north end of the lake. Other public recreational facilities in town include the baseball and soccer fields at Eden Central School. Both the Long Trail and Catamount Cross Country Ski Trail pass through Eden.

During winter months, the aforementioned VAST snowmobile network connects Eden to virtually anywhere else in the state. Downhill skiers will also find several resorts only a short drive from town, including Jay Peak (23 miles), Smugglers' Notch Resort (25 miles), Stowe Mountain Resort (30 miles) and Owl's Head Mountain in Masonville, Quebec (36 miles). In addition, Eden is home to the Eden Mountain Dog Sledding Club offering tours, lessons and lodging.

The Babcock Nature Preserve is a 1000+ acre tract of boreal forest land owned by Johnson State College and the Vermont State Colleges for scientific and educational study. The land was donated over a period of time by Robert and Anne Hanchett Babcock. There are 3 significant ponds, a bog, a lean-to for primitive camping and two enclosed small cabins and a larger open shelter. A mile-long gravel road provides non-motorized access to the area and is open to the public for recreational and educational use. One can also connect with the long trail as it comes close to the north end of the largest pond and another trail connects with an additional pond and continues on to Route 118.

### **Libraries**

There is no municipal library in Eden. Eden residents have access to all public libraries in Lamoille County and beyond. The general public also has access to the Johnson State College Library and Learning Center, located on the campus in Johnson. The Library and Learning Center allows the general public access to circulation and reference services. Additional features include a 24-hour study room; three media booths for use of videocassettes, vinyl recordings and compact disks; a two-story reading room; six study offices; a children's room; and two seminar rooms. Students at Eden Central School may also borrow books and media from the school library. Eden residents can use libraries located in surrounding communities for free or for a nominal fee.

### **Solid Waste Facilities**

Eden is a member of the Lamoille Regional Solid Waste Management District (LRSWMD), a municipal district formed to serve all of Lamoille County and the neighboring Towns of Craftsbury and Worcester. Funding for LRSWMD operations is covered entirely by user and service fees. As required by state law, LRSWMD has devised a 20-year plan for the management and disposal of all types of solid waste generated by its member communities. The Eden Town Garage serves as a drop-off location for recycling and bagged trash every Sunday, between the hours of 10am and 2pm. From there, waste is

trucked to a landfill in Coventry. The life of this landfill depends greatly on the amount of waste sent to the facility. Through education, recycling, composting and other initiatives, the district strives to reduce the overall volume of trash generated within the district.

### Water & sewer treatment

There are no central water or sewer systems available to Eden residents. Homeowners and businesses must obtain potable water through springs or private wells and all sewage treatment must be handled by on-site septic systems. Under regulations that went into effect in 2007, all permitting for septic systems, leach fields and wells is now delegated to the state. To comply, individuals must apply for a Wastewater and Potable Water Supply Permit from the Vermont Department of Environmental Conservation (DEC). Municipalities retain the right to adopt and enforce a local ordinance, providing it meets or exceeds state standards and can be administered by a licensed engineer. Any complaint or discovery of a failing septic system should be referred to DEC by the local Health Officer. Owners of failed systems will be instructed by DEC on how to bring their systems back into compliance.

### Storm water

The term “storm water” applies to rain and snowmelt that runs off impervious surfaces, including roofs, driveways and paved streets, rather than infiltrating into the ground and natural water cycle. As it flows into streams and lakes, storm water runoff often picks-up pollutants, such as oils, fertilizers and sediment. Excess storm water also contributes to erosion and increases stream volumes during peak storm events. Larger municipalities may attempt to mitigate the negative impact of excess storm water runoff through the creation of storm sewers, and even storm water treatment plants.

Beyond the network of culverts and ditches that serve the local transportation network, Eden does not maintain any storm water infrastructure. However, developers and property owners may implement any number of affordable storm water management strategies, often referred to as “low impact development” (LID). For a community of Eden’s size, the most appropriate residential-scale storm water management techniques include the installation of rain gardens and other plantings, particularly on steep slopes and other areas prone to erosion.

### Municipal Properties

According to the Grand List, the Town of Eden owns fifteen properties. Municipal properties are not taxed. The table below shows the value of the land and structures on each parcel.

Dodge Cemetery	05.01.46	0.65	Route 118	\$9,670.00	
Dodge Cemetery	05.01.45.02	1.19	Route 118	\$16,490.00	
	05.01.48	3.7	Route 118	\$4,440.00	
	06.01.02	9.8	Off North Road	\$8,550.00	
	10.01.56	11.5	Route 100	\$42,700.00	
	11.01.56.01	1	Shover Road	\$11,440.00	
Eden Corners Cemetery	11.01.68	9.8	Cemetery Road	\$59,360.00	\$2,360.00
Oldest Town Dump	11.01.95	3	Cemetery Road	\$3,600.00	
Town Clerk Office	11.01.99.01	2.7	71 Old Schoolhouse Rd	\$50,840.00	\$128,810.00
Town Garage	11.01.99.02	10.4	3625 Route 100	\$60,000.00	\$111,200.00
Beach (LERA)	11.02.04	8.8	5054 Route 100	\$378,000.00	\$118,500.00

Across from LERA	11.02.30	0.1	Route 100	\$13,760.00	
	11.02.47	0.4	Route 100	\$10,080.00	
Old Town Dump	11.02.59	17	South Pond Road	\$36,980.00	
Old School site	14.01.05	0.25	Tree Farm Road	\$300.00	
<b>Total Acres</b>		<b>80.29</b>	Non-taxable Values	\$706,210.00	\$360,870.00
			<b>Total Non-taxable Value</b>		<b>\$1,067,080.00</b>

### Additional Non-taxable Properties

Listed below are 7 additional properties in Eden that are not required to pay any property taxes.

Name	Parcel ID	Acres	Location	Land Value	Structure \$
Eden Central School	10.01.56.01	18	140 Knowles Flat	\$211,610.00	\$744,020.00
Eden Cong Church	11.02.36	0.3	20 Ingalls Road	\$30,000.00	\$152,970.00
Eden Historical Society	10.01.56.02	1	2009 Route 100	\$30,500.00	\$75,550.00
GMC Boy Scout Camp	07.01.02	110.5	Route 100	\$95,400.00	
GMC Boy Scout Camp	12.01.01	813	83 BS Camp Road	\$1,213,200.00	\$332,800.00
GMC Boy Scout Camp	12.01.20	30	83 BS Camp Road	\$31,600.00	
GMC Boy Scout Camp	06.01.13	118	North Road	\$74,930.00	
Parish Most Holy Name	11.01.66	2.05	2837 Route 100	\$50,060.00	\$158,590.00
		1093	Non-taxable Values	\$1,737,300.00	\$1,463,930.00
			<b>Total Non taxable Value</b>	\$3,474,600.00	<b>\$3,201,230.00</b>

The total value of all non-taxable property in Eden, both municipal and other properties is **\$4,268,310.00**. This represents 37.7% of the total Grand List.

### Other Public Lands

**Table 16** below contains a listing of prominent state-owned lands within the town. While state parks and conservation areas serve as an amenity to both residents and visitors, the transfer of land from private to state ownership significantly reduces local tax revenue, which is necessary to support essential services. Comparatively, Eden already has a large percentage of lands in state ownership; therefore, as a general policy, the town does not support state ownership of any additional land in Eden, unless the impact on the local tax base is mitigated.

<b>Table 16: Prominent state-owned lands in the Town of Eden</b>			
Agency or Department	Description	Acres	Use
Dept. of Forest, Parks & Recreation	Long Trail State Forest	~2,525	Recreation (hiking)

Dept. of Forest, Parks & Recreation	Green River Reservoir	~2,226	Electrical generation, recreation
Dept. of Forest, Parks & Recreation	North of Whitney Lane Bridge	~1.0	No identified use
Dept. of Forest, Parks & Recreation	Marjorie Drive	50	No identified use
Dept. of Fish & Wildlife	Wild Branch Management Area	~410	Recreation (hunting & fishing)
Dept. of Fish & Wildlife	Lake Eden Dam	~0.25	Dam facility
Dept. of Fish & Wildlife	Eden Access Area	~0.74	Public access to Lake Eden
VT State Colleges	Babcock Nature Preserve	~1,089	Research, nature preserve
Agency of Transportation	District 8 Garage	~2.9	Maintenance, operations
Agency of Transportation	Natural Spring	~0.2	Conservation
<b>Total</b>		6319.09	
Source: Eden Grant List			

Land that is in public ownership and subject to property tax may participate in the Payment In lieu of Taxes Program (PILOT) that may reduce property taxes if all criteria are met. This program is designed to compensate towns for lost revenue from any property tax reductions. The Agency’s PILOT program for lands administered by the Lands Administration Division and the valuations are determined by the [Department of Taxes, Division for Property Valuation and Review \(PVR\)](#). The Agency’s PILOT payment is calculated at 1% of the fair market value as determined by PVR, with the exception of some lands that were enrolled in the Use Value Appraisal Program as of 1999.

### Power generation & transmission

At this time, there is one active solar powered community-generating facility on Old Deuso Road in Eden. Specific policies pertaining to the siting of energy facilities have changed due to recent legislation and have been outlined in detail within the Energy chapter. High-capacity electric transmission lines (33-35 kilovolts) run along Routes 100, 118 and along Shover Road coming from the old asbestos mine. The Vermont Electric Power Company’s (VELCO) 2009 long-range transmission plan does not identify any reliability concerns within Lamoille County. Due to the minimal amount of commercial and industrial activity in Eden, there are no anticipated transmission capacity concerns at this time although future alternative generation proposals might challenge the transmission infrastructure.

### Financing & future needs

The breadth of community facilities and services is naturally greater in urban settings than in rural areas. Town government must work to balance an appropriate level of public services within a property tax structure that is not burdensome to residents – both present and prospective.

The highest priorities of rural municipalities are the town budget, maintenance of town highways and management of the local school district. General concerns associated with transportation and school budgeting include unfunded mandates, declining tax revenues and the increasing cost of infrastructure maintenance associated with stricter regulations, inflation related to the cost of materials and greater demand for services. From a long-term perspective, continued residential growth in Eden could feed demand for additional public facilities such as a community center, school expansion or centralized water system. Ultimately, such decisions are several years out on the horizon and the town is currently focused on maintaining current service levels to ensure that Eden remains an affordable place to live and work.

### **Goals, policies & recommendations**

*Goal:* To ensure adequate facilities and services are available to protect and enhance the lives of the residents and visitors of Eden.

*Policies:*

- All wastewater treatment systems must meet State standards and receive a state wastewater permit before construction begins.
- All wells must meet State established isolation distances.
- All residential development shall be accessible to emergency vehicles.
- Eden supports any reasonable proposal to locate a community health or dental facility.
- The development of day care facilities and other related services will be supported.
- Human services should be delivered locally to the extent feasible.
- Eden will continue to work with neighboring communities to ensure Eden residents have access to libraries.
- Eden's cemeteries shall be maintained with respect and dignity and have sufficient capacity to support future need.
- Eden supports efforts to improve public and private recreational facilities.
- Eden's residents and businesses will responsibly dispose of solid waste including efforts to reduce the amount of waste generated and increase recycling.
- All projects should maintain water quality in Eden's lakes and streams through proper treatment of storm water runoff.
- Before any purchase of land to be held by the public or the state, the entity should meet with the town to discuss any anticipated loss of value from the Grand List.

*Recommendations:*

- The Health Officer and Selectboard should report any failed wastewater systems to the state for compliance with state wastewater regulations.
- The Selectboard should review police contracts annually to determine the best coverage for Eden.
- Child care facilities should comply with State regulations.
- The town may support, through annual appropriations, the efforts of regional human service providers.
- The Selectboard should review local solid waste, junk and health ordinances to ensure the proper regulations are in place to protect the public health, safety and welfare.

## Chapter 10: Water Quality and Flood Resiliency

Water resources serve a variety of form and function. Lakes and rivers support numerous recreational and economic activities including swimming, fishing and boating. Groundwater and reservoirs supply homes and businesses with potable water; and wetlands store floodwaters, while filtering natural and man-made contaminants. Bodies of water also provide irreplaceable habitats for a variety of aquatic and riparian plant and animal communities. Water systems serve as repositories for runoff and seepage, including (potentially) leaching septic systems and underground storage tanks. Pollutants can also be introduced into the water through the illegal dumping of chemicals. Contaminants may kill fish and plants, negatively impact existing and potential drinking water supplies, and may preclude recreational activities. Water resources also have the potential to impact human built structures and infrastructure through flooding and erosion.

### Rivers and streams

Eden is fortunate to have abundant riparian resources. The town's numerous brooks, streams and rivers helped shape the local landscape. Most of the rivers and streams in Eden contribute to the Lamoille River watershed, the majority of which drains into the Gihon River flowing south to join the Lamoille River in Johnson. Additional waters contributing to the Lamoille River watershed begin at the Green River Reservoir and Wild Branch or North Branch. Eden also has smaller portions of town that drain into 2 other watersheds. Along the northern border with Lowell, streams drain north into the Missisquoi River watershed and the northeast corner of Eden provides headwaters for Seaver Brook, part of the Black River watershed. Ultimately, both the Lamoille and Missisquoi watersheds are part of the Lake Champlain drainage basin, while the Black River is part of the Lake Memphremagog drainage basin.

### Lakes and ponds

Eden is also fortunate to have numerous bodies of water throughout town that support both public and private recreational opportunities as well as plant and animal habitats. Eden has three bodies of water greater than 20 acres, as identified by the Vermont Lakes and Ponds Inventory (1981) and six smaller ponds of at least ten acres.

<b>Name of lake/pond</b>	<b>Surface area</b>	<b>Est. Depth</b>	<b>Elevation</b>	<b>Drainage Basin</b>
Lake Eden	194 Acres	40'	1,239'	2347 Acres
South Pond	103 Acres	66'		
Belvidere Pond (Long Pond)	93 Acres	6'		723 Acres

All the above bodies of water are regulated by the Shoreland Protection Act passed by the Vermont Legislature effective July 1, 2014. This regulation pertains to any cleared area or impervious surface within 250 feet of the mean water level on bodies of water greater than 10 acres in size.

Eden's most prominent aquatic feature is Lake Eden, located adjacent to Route 100. Lake Eden has a fully developed shoreline of both permanent residences, seasonal homes and campsites as well as water frontage for the Boy Scout camp and the Lake Eden Recreational Area owned and managed by the Town of Eden. Present uses of the lake include fishing, swimming and boating. The Lake Eden

Association, a non-profit volunteer organization dedicated to the preservation of Lake Eden, together with the Town, operates a seasonal “greeter program” to welcome visitors at the State Boat Access and helps to educate all visiting boaters on preventing the spread of Eurasian Milfoil.

South Pond is notable as the second deepest body of water in Lamoille County (estimated at 66 feet), behind only the Green River Reservoir (estimated at 93 feet deep). The northern and eastern shores of South Pond are developed with a low density of camps and residences supporting fishing, swimming and non-motorized boating. There is no public access to South Pond and the mostly undeveloped southern shore abuts the Green River Reservoir State Park.

Belvidere Pond (Long Pond), located adjacent to Route 118 is a popular fishing spot. Nearly all of the shoreline is under conservation through the Department of Forests, Parks and Recreation. Eurasian Milfoil, an invasive plant that threatens native vegetation is present in Belvidere Pond. There are 3 approaches to combatting Milfoil. Natural predators can be introduced including the weevil, *Euhrychiopsis Lecontei*, an herbivoric insect that eats the milfoil; a native moth, *Acentria Ephemera*, who feeds on the milfoil while at the same time hiding in its leaves; and a caterpillar that likes to eat milfoil called *Cricotopus Myriophylli*. *Chemical control through herbicides has also been done but is very costly and is typically disruptive to aquatic ecosystems and not selective in the vegetation it affects.* The third option is manual removal of the plant. The Eurasian Milfoil can be either pulled out or cut with a machine and removed from the water. This is not a long lasting solution because milfoil grows very rapidly and it is virtually impossible to remove all of the plant in this manner. In order for this to be affective it must be repeated all summer long.

Other smaller ponds found in Eden, less than 10 acres (identified in the Water Resources map in this plan’s appendix) include Corey Pond, Gut Pond, Round Pond and Rush Pond. With the exception of Gut Pond (contiguous to South Pond), these smaller water bodies are generally undeveloped, or have limited development along the shoreline.

## Wetlands

The term “wetland” is used to identify areas otherwise referred to as swamps, marshes, bogs or fens. Generally, wetlands share three basic characteristics:

- 1) The presence of water at or near the ground surface;
- 2) The presence of water-dependent plants occurring on site; and
- 3) Common types of soil.

Wetlands serve many important ecological functions including flood and storm water retention, erosion control, ground water recharge and wildlife habitat. Wetlands throughout the country have been inventoried by the U.S. Department of the Interior, producing a set of National Wetland Inventory maps for each municipality. These maps were created using aerial photographs and are useful in determining the approximate location and size of the wetlands. In cases where detailed wetland characteristics for individual parcels are desired, a site visit and survey are usually necessary.

Wetland regulations were first adopted in Vermont in 1990, later consolidated into legislation under Act 115 in 2004 and last amended effective August 1, 2010. The current system establishes a three-tier

wetland classification system. The majority of wetlands in Eden are designated as Class II and protected from development by a 50-foot buffer. There are also some Class III wetlands in town with no delineated buffer. Class I wetlands, the most sensitive areas requiring a 100-foot vegetative buffer between any adjacent land development do not currently apply as there are no Class I wetlands located in Eden.

### **Riparian habitat and buffers**

Vegetation—in the form of trees, shrubs, grasses and herbs situated along stream banks and river corridors—provides food and shelter for many wildlife species. The Gihon River corridor, for example, supports essential deer habitat. These and other riparian corridors should be preserved both as a matter of wildlife protection, as well as for the purpose of preventing sedimentation and maintaining stream bank stability.

### **Upland Forests**

While discussions of water quality and flood resiliency usually focus on areas immediately adjacent to rivers, streams, lakes, and ponds, upland forests play a critical role in attenuating floodwaters. Forested land can absorb, filter and hold water much more effectively than cleared or developed land. Maintaining fragmented, upland forests is an important component of both water quality and flood resiliency. As discussed in the Land Use Section, this Plan identifies lands over 1,500 feet in elevation (excluding North Road and East Hill Road) as the Forest District, designated for forestry, watershed protection, wildlife habitat, and low impact recreation.

### **Floodplains**

The Federal Emergency Management Agency (FEMA) defines a floodplain as an area of land adjacent to rivers and streams that is subject to recurring inundation. Development within floodplains can have many potentially damaging consequences, as construction may obstruct the natural flow of water or displace soil and raise base flood elevations. Eden is among a minority of communities in Vermont that has yet to have had an official FEMA flood insurance study published and, therefore, does not have Flood Insurance Rate Maps (FIRMs) for the town. Rather, Eden's maps are approximate Flood Hazard Boundary Maps (FHBMs), which do not differentiate between tiers of floodplain (floodway, floodway fringe, etc.) This is likely due to the limited extent of floodplain that exists in Eden, consisting only of a small area surrounding Belvidere Pond, as well as a corridor along the Gihon River along Route 100. In 2011 and 2016, the Eden Planning Commission began exploring the possibility of adopting a flood hazard bylaw to allow the town to join the National Flood Insurance Program (NFIP), which would enable residents to purchase federally-subsidized flood insurance. To date, the Town has elected not to participate in the National Flood Insurance Program. Currently there are 5 existing structures located within the 100-year floodplain. Participating in the NFIP and any potential benefits to residents is likely outweighed by administration and enforcement costs. The Planning Commission is concerned that by enabling new development to purchase subsidized flood insurance, participation in the NFIP could actually lead to more development in the floodplain.

### **River Corridors**

While the FEMA mapped floodplain is primarily related to inundation hazards, most flood related damage in Vermont is caused by fluvial erosion rather inundation. Fluvial erosion occurs as rivers and

streams meander across the landscape, and can range from gradual bank erosion to drastic changes in river channel location and dimensions during a large flood event. The area in which a river or stream is likely to meander is referred to as a “River Corridor.” The VT Agency of Natural Resources has delineated “River Corridors” for all rivers and streams in Vermont. It should be noted that the State mapped river corridors may over-depict the actual erosion hazards in some areas and under-depict them in others. More accurate and up to date maps would need to be developed if they are to be used for regulatory purposes. The current maps may serve as a useful guide for identifying areas for further study.

### **Water quality**

As a byproduct of Eden’s vast and well-preserved landscape of mountains, fields and forests, the town enjoys excellent water quality. All residents and businesses derive potable water from groundwater wells and springs. Accordingly, it is critical for the town to monitor activities that introduce contaminants into the ground, such as underground storage tanks, septic fields and agricultural activities (in the form of fertilizers and animal waste). Ultimately, substantial impacts to rivers, streams, lakes, ponds, wetlands and public water systems are subject to a range of state and federal regulations as described within this plan. While Eden does not enforce local development bylaws, the town does retain the right to participate in Act 250 proceedings and comment on development proposals—such as those impacting local water quality—based on the polices established throughout this plan.

### **Gihon River Corridor Management Plan**

A detailed River Corridor Management Plan has been developed for the Gihon River. This plan identified and prioritized restoration projects. These projects will reduce sediment and nutrient loading to downstream receiving waters such as the Lamoille River and Lake Champlain, will reduce the risk of property damage from flooding and erosion, and will enhance the quality of in-stream habitat. Many of these projects involve conservation and re-vegetation of riparian areas. Since many of these areas are privately owned property, coordination and collaboration with property owners will be especially important to implement these projects. The plan also identified undersized bridges and culverts that may be constricting the natural flow of water, as discussed in more detail below.

### **Road/River Conflicts**

The term “Road/River Conflict Area” refers to areas where the natural flow of a river comes into conflict with the transportation network. Approximately 5% of the entire road network in Eden (5 road miles, including the local roads and state highways) is located in the 100-year floodplain or river corridor area. These are areas with a higher likelihood for road/river conflicts. During a major flood event, these road segments may be overtopped with water or subject to washout which can compromise safety, disrupt the flow of traffic, hinder rescue efforts, and strand residents. Road/River conflicts can also cause dramatic damage to both the river and the roadway. For example, when a culvert is undersized, water may pond close to the road and undermine the roadbed. Undersized bridges and culverts may result in downstream erosion that destabilizes stream beds and banks and may even change the path of the stream, possibly damaging other roadways. Rivers may meander into roads, while roads may transport sediment and other contaminants into rivers.

The Town of Eden maintains inventories of culverts and roadside erosion and is working to reduce Road/River conflicts. In addition, the Gihon River Corridor Management Plan referenced above identifies several bridges and culverts that could be either retrofitted or replaced to reduce conflicts with the river. Before undertaking an effort as large as retrofitting and replacement of a bridge or culvert, the community will need to weigh all options and consider if it is the most effective means of addressing the issue or if there are other actions that are more cost effective.

### Preparing for the Next Flood

Unlike many communities in Lamoille County, Eden has very few existing structures located in the floodplain. Even so, Eden is not immune to flooding. The Eden Hazard Mitigation Plan contains extensive background and data regarding flooding and other natural hazards. The Hazard Mitigation Plan is incorporated into this Plan by reference. **Table 17** below summarizes major flood and storm events that have occurred over the last ~20 years. Note that this table is not an exhaustive list, and may not include information about more localized weather events.

**Table 17**

Year	Type of Event	Estimated Damages
2014*	Flooding	\$8,710.30
2013	Ice Storm	\$30,521.13
2013	Flooding	\$8,762.75
2012	Flooding	\$34,678.93
2011	Flooding	\$88,390.37
2008	Flooding	\$115,454.65
2002	Flooding	\$8,274.00
2001	Snow Removal	\$3,781.73
2000	Flooding	\$530,216.00
1999	Hurricane Floyd	\$6,360.78
1997	Flooding	\$127,699.43

\* Last year data was available

Preparation is an important element of flood resiliency. Eden maintains an up-to-date Emergency Operations Plan to ensure that public officials and emergency responders are prepared for flooding and other emergencies.

Adequately protecting homes and businesses against future flood damage requires a pool of contractors and design professionals with specialized skills in flood mitigation techniques, knowledge of FEMA rules and regulations, and experience working with “flood resistant” building materials. As noted in the Chapter 6: Economic Development, many Eden residents are employed in construction and construction related industries. While very few structures in Eden are located within the floodplain, there are many structures vulnerable to flooding in nearby communities such as Johnson and Jeffersonville. The growing demand for flood proofing may create a potential “niche” for contractors with these specialized skills.

## Goals, policies & recommendations

### *Goals:*

To preserve Eden's water resources, including its lake reservoir, ponds, streams, rivers, wetlands, groundwater, and associated habitats. Where degraded, work to improve these resources in order to ensure water quality for drinking, recreation, and the environment.

To protect the health, safety and welfare of the residents of Eden by discouraging development in flood hazard areas and river corridors.

### *Policies:*

- Development within floodplain and river corridors should be avoided. If new development is to be built in such areas, it should not exacerbate the potential for any flooding or fluvial erosion. Agriculture, recreation fields, parks, and open spaces are all appropriate uses of flood hazard areas.
- Wetlands shall be protected from pollution, filling, and any other uses or activities that will result in their degradation or a reduction in its capacity to provide wildlife habitat, flood control and water storage. Any development related to wetlands shall adhere to state regulations.
- Existing floodplain encroachments caused by the transportation network should be mitigated when technically and financially feasible. This may involve upsizing bridges and culverts and/or restoring floodplain areas disturbed by past infrastructure investments.
- Development within or proximate to designated rivers and streams should follow Vermont Fish and Wildlife Guidelines for Stream Crossings and should protect and maintain a natural vegetative buffer.
- The Town of Eden encourages support for lake and pond association grant applications to monitor milfoil and other lake issues.
- Per State regulations, withdrawal of groundwater should not exceed the recharge rate over a reasonable period of time. No form of waste disposal or storage of possible contaminants should be permitted in high-water table and groundwater recharge areas.
- All construction should provide adequate erosion control per state guidelines and regulations.
- Agriculture and forestry must abide by State Guidelines (Accepted Agricultural Practices and Accepted Management Practices.)
- Upland forests should be maintained and managed to attenuate floodwaters.

### *Recommendations:*

- Maintain signage at all boat accesses and public shore accesses to notify the public of Eurasian Milfoil and how to protect the lake.
- Educate lakeshore property owners about the importance of maintaining lakeshore vegetation.
- Work with the Agency of Transportation to upgrade undersized bridges and culverts located on the State transportation network. Work with the Lamoille County Planning Commission to have these highway structures added to the State Transportation Improvement Program (STIP).
- Identify funding sources to upgrade undersized bridges and culverts located on Town Roads.
- New bridges and culverts should be built to town and State standards.

- Work with landowners in the Forest District to maintain large blocks of unregimented, upland forest while ensuring that forestland ownership remains economically viable.
- In order to prevent additional property from being removed from the Town's Grand List, as an alternative to buyouts, Eden encourages elevation or relocation of existing structures within the floodplain or river corridors when possible.

## Chapter 11: Natural & Productive Resources

Eden residents derive a vast amount of economic, recreational and scenic value from the town's natural resource base. The mountainous, heavily wooded landscape supports an abundance of rare and irreplaceable forests, wildlife and natural areas. These resources are integral parts of Eden's cultural history and identity, and will be critical to the town's future prosperity. This chapter provides an inventory of Eden's natural and productive resources, alongside goals and policies to support sustainable conservation practices.

### Identified fragile and natural areas

In 1976, the Agency of Natural Resources (ANR) created an inventory of significant natural areas throughout the state. While a natural area designation does not necessarily preserve a site from development, it does act as a tool for increasing local knowledge of Vermont's important natural heritage. Today, many sites nominated to this list are also included in the state's Fragile Area Registry. The following sites within town have been noted for their local and regional significance:

Lake Eden: This body of water is the most prominent aquatic feature in town located adjacent to Route 100 at an elevation of 1,239 feet. Lake Eden has a fully developed shoreline of permanent residences, seasonal homes, camps and public camping opportunities. The Lake surface measures 194 acres with a drainage basin of approximately 2,347 acres. Maximum depth reaches 40 feet.

Belvidere Pond: A 97-acre body of water (otherwise known as Long Pond) located on Eden's western boundary at the foot of Belvidere Mountain. The area contains features characteristic of a Pleistocene mountain glacier and the pond's undeveloped shoreline and deep marshes also provide food and cover for waterfowl.

Babcock Nature Preserve: A 1,000 + acre tract of forestland in north-central Eden, owned and maintained by Johnson State College. The preserve is open to the public and also serves as an outdoor laboratory for environmental sciences. Both Big Muddy, Little Muddy Pond and Ritterbush Pond are located within the tract.

Big Muddy Pond: A 17-acre natural glacial tarn, located in a mountainous and heavily wooded undisturbed setting. The surrounding area includes prominent glacial features including kames, eskers and drumlins.

Little Muddy Pond: A small pond within the Babcock Nature Preserve, which includes a number of beaver ponds layered upon a mountain slope.

Ritterbush Pond: Downstream from Big Muddy, Ritterbush Pond has a surface area of 14 acres and contains similar glacial features. It is also a valued scenic area, with the Long Trail passing along its western shores.

White Branch Swamp: This shrub swamp and bog is located along the White Branch of the Gihon River, east of Crooks Road. The area provides food and excellent cover for waterfowl that utilize it for nesting and during migration periods.

Beaver Meadow: This 6-acre deep marsh and shrub swamp is located along upper stretches of the Green River. The area also provides food and cover for waterfowl; as implied by the name, beavers are quite active in the meadow.

Devil's Gulch: A narrow ravine north of Bowen Mountain, the floor of Devil's Gulch includes massive boulders and thick fern stands, while also serving as a passage for the Long Trail.

Eden Notch: A relatively undeveloped mountain notch at an elevation of approximately 2,000 feet on the Lowell town line.

Green River Reservoir State Park: A 5,110-acre state park surrounding the Green River Reservoir—a 653-acre body of water, with a 19-mile undeveloped shoreline. The park and reservoir span the Eden/Hyde Park town boundary; the area is renowned for its remote and wilderness-like setting. While the majority of the reservoir shoreline is located in Hyde Park, 2,226 acres of the park are located in Eden, including the Upper Diggings—a 1,700-acre mapped deer habitat. The official website of the park is: <http://www.vtstateparks.com/html/grriver.htm>.

Mount Norris Scout Reservation: A 953-acre camp owned by the Boy Scouts of America, located south of Mount Norris on the northeast shore of Lake Eden. The reservation hosts scouts for week-long stays throughout the summer and has dedicated areas for swimming, fishing, hiking and archery, among other activities. Visit [www.scoutingvermont.org/Camping/MountNorris](http://www.scoutingvermont.org/Camping/MountNorris) for more information.

## **Critical wildlife habitats**

### **Deer wintering areas**

Vermont's deer herd requires a protected habitat to endure severe winter weather and heavy snowfall. Winter deer yards provide two features important to whitetail deer survival: shelter and food. Statewide, under average winter conditions, between 6 and 8-percent of Vermont's forestland is suitable for winter deer range. Wintering areas do not change substantially between years and can be used by generations of deer over several decades, if appropriate habitat conditions are maintained. Eden's mapped deer wintering areas include the lowlands west of Route 100, the northern and southern shores of South Pond, and a corridor between Green River Reservoir State Park and East Hill.

### **Bear habitat**

Bears also require large areas of uninterrupted forestland for breeding and travel between seasonal habitats. The Vermont Fish and Wildlife Department prepared a map in 1989 to indicate general areas of black bear habitat throughout the state. According to this map, potential bear habitat exists throughout the town, outside Eden's more developed corridors along Routes 100 and 118, and Lake Eden.

### **Other critical habitat areas**

The Vermont Fish and Wildlife Department maintains an ongoing effort to identify and map special natural features in towns throughout the state. These maps demonstrate the locations of rare plant and animal species, significant wildlife communities, and other natural or fragile ecological areas. According to these maps, Belvidere and Big Muddy Pond have populations of rare flora, as shown in the attached Critical Habitat map. One noteworthy species, the Green Mountain Maidenhair Fern *adiantum viridimontanum*, flourishes most prevalently at the base of the tailing piles of the VAG mine and are found

in Vermont only within the Towns of the tailing piles of the VAG mine. Additionally, the area surrounding the asbestos mine in Eden, Lowell and Westfield are rich serpentine soils, and support a wide variety of rare and endangered plants.

In August 2009, the Vermont Fish and Wildlife Department, in partnership with other federal, state and local organizations, published a report titled *Critical Paths: Enhancing Road Permeability for Wildlife in Vermont*. In essence, the study reviewed major wildlife crossings along the span of the Green Mountains, provided policy recommendations to improve habitat connectivity, and reduce points of conflict with humans and vehicles. Route 118 between the Towns of Eden and Belvidere was identified as one of the study's priority crossings. The report noted this stretch of highway is commonly referred to as "Moose Alley." Other wildlife observed in and around this crossing includes deer, fisher, bobcats, coyotes, beavers, minks, skunks and raccoons.

### Regulatory considerations

On a regulatory basis, Act 250 criteria 8(A) mandates that development activity must not "imperil necessary wildlife habitat or endangered species in the immediate area." According to the Vermont Natural Resource Board (NRB), the habitat must be critical to a life stage of a species and be clearly identifiable—as in the case of the mapped deer wintering and bear habitat.

### Working landscape

The Town of Eden recognizes that farm and forest-based activities are essential to the community's economy and rural character. These prominent natural resource-based industries, including farming, logging, sugaring, forestry silviculture and outdoor recreation, are often associated with the term "working landscape." Maintaining Eden's working landscape is critical to the community's long-term prosperity.

One mechanism helping property owners maintain working lands is the state's Use Value Appraisal (UVA) program. UVA was established by the Vermont Legislature in 1977, in recognition of the fact that tax pressures placed on farm and forestlands were contributing to their development and fragmentation throughout the state. The program allows farm and forestland to be taxed on resource production value, rather than the value of the parcel's development potential. Despite the fact that it was a popular program statewide, the growth of UVA enrollment was curtailed by a decrease in funding in 1991 and 1992, and an enrollment moratorium in tax years 1992 and 1993. During the moratorium, property owners enrolled in UVA program were allowed to withdraw from the program without penalty. Since that period, local enrollment has steadily increased. As of 2010, there were fifty parcels in Eden enrolled in UVA, totaling more than 20,099 acres, or 49.4-percent of the town's land area.

### Goals, policies & recommendations

#### *Goals:*

To maintain healthy conditions in natural areas, fragile areas, and areas with significant ecological value including wetlands, uplands, and critical plant and animal habitats; to ensure fragile and natural areas are protected and preserved; and to maintain the natural diversity of wildlife.

To provide for the wise and efficient use of Vermont's natural resources and facilitate the appropriate extraction of earth resources and the proper restoration and preservation of the aesthetic qualities of the area.

*Policies:*

- Eden supports voluntary efforts by private landowners to maintain and enhance wildlife habitat.
- Eden supports maintaining land for agriculture and forestry.
- Eden supports efforts to promote active land management through use and growth of e-commerce and telecommunications tools such as the Vermont Fish and Wildlife Landowner/Hunter Access Registry: <http://www.vtfishandwildlife.com/wildlife>

*Recommendations:*

- As a result of living in Eden, many landowners have an ethic to be good stewards of the Land. More can be accomplished by supporting education of, advice and assistance to all landowners with any natural or wildlife resource concerns than could be accomplished through regulations.
- Given the large amount of State-owned land within Eden, public use of this land for recreation, wildlife management (including hunting), and timber management should be allowed and encouraged.

## **Chapter 12: Information Technology & Telecommunications**

The availability of high-speed internet and mobile phone service is not only a quality of life amenity, but an essential public safety and economic development tool in the 21<sup>st</sup> century. Due to a variety of factors—including Vermont’s rural character, low population density and mountainous terrain—the state has yet to achieve full wireless telecommunications coverage. Today, Eden’s cell phone service coverage is intermittent. Currently there is not a cell phone service provider that offers contiguous service coverage in all of Eden. Likewise, to this day, Eden remains among those communities with limited broadband service penetration. This chapter is intended to express Eden’s support for broader telecommunications access, while acknowledging the land use and aesthetic impacts associated with extending internet and mobile phone services.

### **2016 Broadband Coverage in Eden**

Vermont law directs the Public Service Department to revise and update the minimum “acceptable level of service” objectives for high speed internet (i.e. broadband) access every three years. The current objective, as defined in the 2014 Telecommunications Plan, is 4 megabits per second (Mbps) download and 1 Mbps upload.

In August 2016, the Public Service Department released information about high-speed internet service availability at all E911 residential and commercial building locations in the state. In Eden, 830 buildings were assessed and the results show that 579 buildings (70%) are served by a broadband service of 4/1 Mbps or better and 251 buildings (30%) are underserved.

Currently, two initiatives are in the works to expand the 4/1 broadband service in Eden. Consolidated Communications (formally Fairpoint Communications) and Vermont Telephone Company (VTel) accepted federal funding - and are therefore required to make a commitment - to provide wired and wireless 4/1 service, respectively, in designated areas in Eden. Once deployed, Eden’s 4/1 broadband speed will be available to all but 16 buildings (or 2%) in town. Eventually, Vermont’s goal is to provide access to wired and wireless broadband service to every 911 address but funding sources to achieve that goal in Eden have not yet been obligated.

### **Point telecommunications service**

Point telecommunication facilities (or point-to-point networks) are those designed to provide services to a fixed-point, such as a home or business. Residents commonly have up to three point facilities in their home: cable or satellite television, home telephone, and internet service. However, such point systems are swiftly consolidating, so that it is now possible to have a single-point telecommunication facility serving multiple functions: a cable line used for television, internet and voice simultaneously.

#### **Telephone**

In many areas of the country, the hard-wired home telephone (otherwise known as a landline) is being replaced by mobile devices and web-based services, such as Skype. However, given the service inconsistency and lacking reliability of mobile devices and web-based services, most families still retain a landline in Eden. Consolidated Communications is the current home telephone service provider in town; Eden is part of the “635” service exchange, which also includes the Town of Johnson.

## Television

At the time of this plan's publication, cable television service is not available in Eden. According to the 2011 *Vermont – Telecommunications Market Analysis Report* published by the Department of Public Service, less than 50-percent of Lamoille County households have access to cable television. Residents across Eden and rural Vermont do, however, have access to a range of competitively-priced television options via satellite providers such as DISH Network and DirecTV.

## Internet

High-speed internet service can be delivered by one of several mediums—DSL, cable, fiber optic satellite, or fixed wireless (WISP). At the time of this plan's adoption, WISP, cable and fiber optic coverage is largely unavailable in Eden. However, high-speed DSL service is accessible to most residences. Other alternatives are generally considered less-than-ideal, either on the basis of cost (satellite) or performance (dial-up). In the end, comprehensive statewide broadband coverage is likely to be achieved initially through a wireless network. The Town of Eden recognizes that access to high-speed internet is a primary consideration for home-based businesses, telecommuters and vacationers who may consider Eden as a destination.

## Mobile telecommunications service

At the time of this plan's adoption, the fastest growing market of internet devices is among "smartphones," which include operating platforms such as the iPhone, Android and Blackberry. Generally, smartphones combine the voice capabilities of a mobile phone, with an internet browser and other data applications, known as "apps." Increasingly, residents and visitors expect both voice and data coverage wherever they travel to support their leisure and business-related internet usage. Additionally, there are a growing number of Wireless Fidelity (or Wi-Fi) hotspots throughout the state that allow for mobile telecommunications access. A Wi-Fi network is essentially a point telecommunications facility that broadcasts a wireless signal through a router and/or series of signal repeaters. A range of devices, including personal computers, notebooks, tablets and smartphones can receive a Wi-Fi signal for data or voice. Wi-Fi is currently available at Eden Central School, Lanpher Memorial Library in Hyde Park, and freely throughout downtown Morrisville.

## Telecommunications facilities

As a byproduct of the growing demand for telecommunications coverage, the state will need to construct an infrastructure of fiber optic lines and wireless towers to extend service to Vermont's dispersed population of residents and businesses. Although the Town of Eden acknowledges that its residents demand world-class telecommunications, they accept the fact that infrastructure will need to be built in adherence to the policies listed below:

- In order to minimize tower proliferation, developers should co-locate antenna on existing towers, whenever possible.
- To minimize conflicts with scenic values, facility design and construction shall employ the following principles:
  - A) Where feasible, structures should be sited in areas not highly visible to the traveling public, or from residential areas, historic districts and public lands and outdoor recreation areas, including hiking trails and beaches;

- B) Be located in forested areas, or be sufficiently landscaped to screen the lower sections of towers and related ground fixtures from public vantage points, such as trails, roads or water bodies;
  - C) Utilize materials, architectural styles, color schemes, lighting fixtures and other design elements to promote aesthetic compatibility with surrounding uses and to avoid adverse visual impacts;
  - D) Where prominent views of a site exist, be located downgrade of the ridge so as not to exceed the elevation of the immediate ridge;
  - E) Where construction of access roads is involved, to minimize visibility, be situated to follow the contour of the land and to avoid open fields or meadows;
  - F) To avoid peaks and ridges identified in the Historic, Scenic & Archaeological Resources chapter of this plan; and
  - G) No external lights.
- In planning for telecommunication facilities, consideration shall be given to the environmental limitations of any given site. Impacts of the use on wildlife habitat, soil erosion, forestry and agricultural lands, and similar resources should be carefully addressed. Projects that materially impact these resources shall be discouraged.

### **Goals, policies & recommendations**

*Goal:* To support investments in telecommunications infrastructure that benefits the local economy, while avoiding negative environmental and social impacts.

*Policies:*

- Eden supports investment in telecommunications infrastructure in town, provided aesthetic concerns are addressed in accordance with the recommendations above.

*Recommendations:*

- Eden should participate in decisions related to development of telecommunications infrastructure at the State and Local level.
- Encourage growth of E-ventures for any type of home based business.

## Chapter 13: Topography & Land Use

Eden's landscape is dominated by rolling hills and flowing streams. Elevations range from over 3,100 feet above sea level on the slopes of Belvidere Mountain, to a low of approximately 860 feet along the Gihon River, near the Hyde Park town line. The highest summit is Eden Mountain (within the Lowell Range) with a peak elevation of 2,640 feet (see the Contour Map in the Appendix).

### Topography

The hills and mountains of Eden provide a beautiful scenic character to the town. However, the factors that contribute to this effect also provide limitations to development. For decades, Vermont has established an upper limit for development at 2,500 feet. Areas above this elevation are typically slower to recover from disturbance and are at greater risk to erosion. All development activities, including forestry operations, require an Act 250 permit above 2,500 feet. The aforementioned Belvidere and Eden mountains are the only such locations in town. Future land uses over 2,500 feet should be limited to hiking trails and wildlife habitat. Logging should be permitted only with an approved forest management plan that will protect water quality and prevent soil erosion. Many communities in Lamoille County have also established a policy to limit or restrict growth above 1,500 feet.

### Slopes

A second factor presenting potential limitations to development is slope. Steep slopes introduce complications when they are cleared for development and timber extraction, as downhill erosion increases as vegetation is removed. Slopes of greater than 30-percent over distances of more than 50 feet are generally considered unsuitable for development. Some soils (particularly clay) may be unstable even at slopes as shallow as 5 to 8-percent. Overall, Eden's soil characteristics are generally stable to at least 30-percent grade, provided they have some degree of vegetation cover (such as grass or trees). The Topographic Limitations Map (Appendix) identifies those parts of town with slopes greater than 20-percent. These areas impose limitations on residential development, due to conventional septic rules established by the Department of Environmental Conservation (DEC).

Unlike lands above 2,500 feet, there is no state regulation of steep slopes, other than DEC septic and wastewater system permitting rules. Like other development-related issues, municipalities have the option to establish policies on slope within the Town Plan and other development bylaws, where applicable.

### Vermont Asbestos Group Mine

The deposits of ultramafic rock on Belvidere Mountain were discovered to contain chrysotile asbestos in the late 1800's. A commercial mine was established in 1900 and ran, with some interruptions in production, until 1994. In 1975, the employees purchased the mine from the parent company, G-1 Holdings. At the time, it was the largest employee owned company in the United States.

Increased environmental and health regulations and decreased demand for the asbestos product finally closed the mine permanently. The site has been a desired destination for geologists, mineralogists and rock hounds as garnets, Vermont jade and additional unique minerals have been found there. It is also a unique ecosystem for botanists as it is the home of the Green Mountain Maiden Hair Fern *Adiantum Viridimontanum*, a rare and endangered plant that thrives at the base of the tailings piles, remnants of the mining process.

The community did consider the possibility of designating the Vermont Asbestos Group (VAG) site as an EPA Superfund site on the National Priorities list. The vote at Town Meeting in March 2012 in both Eden and Lowell was conclusive. Both towns voted against a Superfund site by substantial majority. With the mine now closed, any significant exposure to asbestos fibers is now well in the past. The VT Department of Health concluded that there are no increased incidences of disease related to asbestos exposure in Eden or any surrounding towns.

A feasibility study conducted by the National Resources Energy Laboratory in conjunction with EPA in 2013 showed potential of the site for development of a solar generation facility. In 2016 community survey, 74% of respondents expressed support for utilizing the site for solar generation.

Eden's topographic and geographic characteristics have allowed for a rural, residential development pattern that has left preserved scenic ridgelines, riparian corridors and vast tracts of forestland and open fields. These natural resources are defining characteristics of the town and contribute to the community's vibrancy, economy and overall quality of life.

### **Assessment of Existing Land Uses**

Eden's topographic and geographic characteristics have allowed for a rural, residential development pattern that has left preserved scenic ridgelines, riparian corridors and vast tracts of forestland and open space. These natural resources are defining characteristics of the town and contribute to the community's vibrancy, economy and overall quality of life. These assets have attracted a growing number of residents to town and it is reasonable to expect that Eden will experience continued residential growth in the near-term. For information on population and housing growth, refer to Chapter 2, Community Profile.

### **Future Land Use**

The Town of Eden has not elected to enact regulatory measures, such as zoning or subdivision bylaws, to direct future land uses. However, in accordance with statute (24 V.S.A. § 4382), this chapter of the plan is intended to establish a vision for "prospective land uses, indicating those areas proposed for forests, recreation, agriculture, residence, commerce, industry, public and semi-public uses and open spaces reserved for flood plain, wetland protection, or other conservation purposes." This guide for future land uses in Eden is not regulatory in nature, insofar as it does not prescribe development standards for properties located in town. However, Act 250 criterion 10 establishes that development proposals triggering Act 250 jurisdiction must be in compliance with all duly adopted local and regional plans. Accordingly, this chapter does provide an opportunity to broadly characterize the types and scales of development appropriate in different areas of town.

The 2007 Eden Town Plan established six land use districts: Rural Residential, Eden Mills, East Hill, Shorelines, Forest, Natural Areas, as well as two Overlay Districts. Please refer to the Land Use map (Appendix) for specific district boundaries. Additional information on these non-regulatory designations is described in the following paragraphs:

#### **Rural Residential**

- *Description:* The Rural Residential district includes all lands not otherwise classified; generally, those below 1,500 feet in elevation between the Green Mountains and the Lowell Range.

- *Purpose:* This district is expected to accommodate the vast majority of future growth in town.
- *Present Land Uses:* Due to the large area of this district, it accommodates a diversity of land uses. It currently includes residential, agricultural, forest and other natural resource-based activities, as well as a limited number of commercial uses. Most developed lands are located along the existing road network.
- *Future Land Uses:* The district should continue to be used as described above. Additionally, future development must respect on-site environmental constraints, including slope, soil capacity and wildlife habitat. Preservation of open space for continued use in forestry and agriculture is also desirable.

### Eden Mills

- *Description:* The Eden Mills boundary is established in accordance with the Eden Mills Historic District, designated by the Vermont Division for Historic Preservation.
- *Purpose:* This area represents the historic village center of Eden. Due to its proximity to Lake Eden, this area is expected to continue to be used for commercial and residential purposes.
- *Present Land Uses:* Eden Mills is currently characterized by residential, commercial and public land uses. Many structures within the district have historic value.
- *Future Land Uses:* This district should continue to be used as described above. Mixed-uses and commercial development providing services to Eden residents are encouraged in this district. Any development or redevelopment in this area should respect the historic character of the district. Improvements in pedestrian infrastructure would help connect properties to the recreational areas surrounding Lake Eden.

### East Hill

- *Description:* East Hill Road is one of the few developed areas in town above 1,500 feet in elevation. The district includes all lands within 500 feet of the road, from the point at which it rises above 1,500 feet until reaching the Craftsbury town line.
- *Purpose:* East Hill Road is a Class 2 town highway that connects Eden to Craftsbury. However, the provision of services to this area can be expensive, given the high elevation and remoteness of the landscape.
- *Present Land Uses:* This area is currently used for residential purposes, but also includes agriculture and forestry.
- *Future Land Uses:* East Hill should continue to be used as described above. To avoid negative impacts on an already strained road (especially at the junction of East Hill Road and Route 100C) future development should be limited to low density and seasonal dwellings. Forestry and agriculture, including value-added operations, may also occur in this district. Larger scale development is discouraged.

### Shoreline

- *Descriptions:* The shoreline districts include all lands within 500 feet of the three major water bodies in town: Lake Eden, South Pond and Belvidere Pond (Long Pond).
- *Purpose:* Each of the three bodies of water is unique, but the overall goals of the district are the same—to protect water quality and the scenic character of the surrounding areas.
- *Present Land Uses:* Lake Eden has a developed shoreline, with public access. Much of the residential development consists of seasonal camps, but year-round dwellings are becoming

more common. The shores of South Pond are privately owned and developed at a far lower density. Lastly, Belvidere Pond or Long Pond has an undeveloped shoreline and should be protected as a natural area.

- *Future Land Uses:* The goal for the Shoreline district is to allow the types of land uses found along each of the respective bodies of water to continue. As specific issues arise, they should be addressed, especially to the extent that they impact the water quality or scenic values of these areas. Any new development, redevelopment or clearing within 250 from mean water level will need to follow Vermont's Shore Land Protection Act and may need to obtain a permit from the State.

## Forest

- *Descriptions:* The Forest districts (east and west) are generally lands over 1,500 feet in elevation, excluding North Road and East Hill Road, as well as areas on the "back sides" of these hills out to the Belvidere and Craftbury town lines.
- *Purpose:* These areas have been chosen to conserve forest and wildlife resources. They are considered difficult to develop, due to the presence of wetlands, steep slopes and shallow soils, or based on their distance from maintained town highways. In the Forest west area, there is also greater concern for the protection of scenic values, based on the nearby presence of the Long Trail.
- *Present Land Uses:* The Forest district is currently used for forestry and wildlife habitat. A limited amount of agriculture and residential development also exists, primarily in the Forest east area.
- *Future Land Uses:* The district should continue to be used for forestry and wildlife habitat. Forestry uses may include value-added operations such as onsite processing. Recreational uses with limited structures may also occur in this area.

## Natural Areas

- *Descriptions:* The Natural Areas district includes separately designated Long Trail and Mountain areas. The Long Trail area includes the Babcock Nature Preserve and all the land within 500 feet of the delineated watershed line and Long Trail. The Mountain area includes all lands over 2,500 feet in elevation, and are regulated by Act 250.
- *Purposes:* These areas are chosen for protection from development; no residential or commercial uses are allowed.
- *Present Land Uses:* The Natural Areas district is generally reserved for wildlife and recreation. There is limited existing development associated with the Babcock Nature Preserve, but it is intended for ecological research and protection.
- *Future Land Uses:* The district should continue to be used as described above. No development should occur in these areas.

## Overlay Districts

Overlay districts are generally created to provide additional protections on the lands to which they apply, without changing the underlying land use designation. There are two identified overlays within Eden:

- *Flood Hazard Overlay:* This area consists of the FEMA delineated Special Flood Hazard Area (SFHA), it is identified to protect the safety and welfare of residents and to prevent economic losses from flooding.

- *Wellhead Protection Overlay*: As noted in the Natural & Productive Resources chapter, a small portion of the well-shield area for the North Hyde Park public water system falls within Eden. This area is protected by public water supply regulations established by the state Department of Environmental Conservation.

### Timing and intensity of growth

Future development in Eden should be conscious of the impact on the town's ability to extend and maintain public services, including but not limited to, local highways and educational facilities. The Town of Eden has a responsibility to its taxpayers to continue to provide the highest level of service, within a tax structure that is not burdensome to current or prospective residents. Future development—both residential and non-residential—should be encouraged in a manner that is sensitive to this responsibility.

### Goals, policies & recommendations

*Goal*: For development and growth in Eden to occur in a reasonable and sustainable manner so as to protect the natural resource base, use services efficiently and preserve Eden's rural character and historic settlement patterns.

#### *Policies:*

- Eden encourages development that provides economic opportunities and employment for Eden residents.
- The clustering and/or siting of development is encouraged in order to replicate traditional patterns of development, to protect rural and scenic character, and to maintain contiguous tracts of resources and open land.
- All development within the town must follow state wastewater regulations.
- Further fragmentation of productive agricultural and forestland should be avoided. Continued access to productive forest and farmland will be encouraged.
- Earth resource operations (sand and gravel pits and stone/mineral quarries) shall comply with Act 250 regulations.
- Development in the floodplain is discouraged.

#### *Recommendations:*

- The Planning Commission should periodically review Eden's population and housing growth patterns, and population projections.
- The Planning Commission should review all Act 250 applications for their impact on the town. Where the application is determined to not conform to this Plan, the Planning Commission or Selectboard should participate in the Act 250 process in order to ensure the concerns of the town are addressed.
- Encourage forest landowners to continue to work with the County Forester.
- Encourage participation in Agricultural Extension Service programs.
- Eden should work with LCPC and other organizations to educate landowners about ways to minimize risks for development in Flood Hazard Areas.

## Chapter 14: Implementation

Each of the chapters in this town plan establishes a set of recommendations to accomplish the goals and objectives. With many recommendations throughout this plan, there is no way each and every task can be completed. Over any time period, money or resources may become available to tackle an issue and the policies and recommendations will be in place to take advantage of them.

Implementation can take place in big and small steps. Some chapter recommendations can be undertaken over the course of a few years. With that in mind, the Planning Commission would like to recommend a few projects for the Selectboard and Planning Commission to accomplish in the next eight years. In this way this plan will hopefully lead to some direct actions and take the town a step closer to their goals for the future.

### Recommended Actions for Implementation of the Town Plan

Over the next eight years the town, Planning Commission, and Selectboard should take action to implement parts of this plan.

#### Selectboard

One of the Selectboard's primary responsibilities is the road system and municipal infrastructure. Roads are an important factor in municipal taxes and help determine where future development is possible. Having clear highway policies helps the Selectboard decide on reclassification of roads, to what standards roads need to be built, and how much say the town has in the construction and location of driveways. Therefore, it is recommended that within the next eight years:

- The Selectboard should develop a basic road surface management schedule for budgeting needed road repairs and major improvements.
- The town should review State assessments of bridge conditions and develop a long term budget for road/bridge repairs. The Planning Commission encourages the Selectboard to develop a "rainy day fund" that addresses emergency repairs to roads, bridges and culverts.
- The Selectboard should continue to update road and bridge standards as needed.
- The town may consider purchasing the rights to a gravel pit or to purchase a property with sufficient gravel to provide for the town's needs in the future.
- The Selectboard should encourage the Vermont Agency of Transportation to make needed repairs and upgrades to Route 100 and 118.
- The Selectboard should encourage the State to provide funding for enforcement of violations of state regulations related to abandoned vehicles and junkyards.

#### Planning Commission

In addition to working with other groups and boards in town, the Planning Commission should undertake the following priorities:

- The Planning Commission should pursue funding, perhaps through a municipal planning grant program, to develop a strategy for moving forward with the goals of this Plan.
- If the number of persons moving into Eden becomes a major issue, the Planning Commission may consider growth management tools.

## Other groups or individuals

Other groups were mentioned throughout this plan. The Planning Commission encourages groups to participate in the overall Goals of this Plan. These groups include:

- Eden Historical Society
- Eden Cemetery Association
- Local Officials
- Lamoille Housing Partnership
- School Boards
- Lake Eden Association
- A community based group working for children (currently reorganizing)
- Eden Youth Sports

## How the Plan Relates to the Regional Plan and Adjacent Municipalities

The Eden Planning Commission and Selectboard look forward to cooperating with our neighboring towns to improve services and planning for all residents and visitors. This town plan is one step towards achieving this goal. The Planning Commission and Selectboard believe this Town Plan complements and enhances the efforts of our surrounding communities.

Hyde Park: Hyde Park is Eden's neighbor to the south. Eden and North Hyde Park share a volunteer fire department. Except along Route 100, the border between the two towns is sparsely populated. The two towns share portions of the Green River Reservoir State Park as well. North Hyde Park is the closest "village center" to Eden and is the site of the Vermont National Guard Armory. Growth in North Hyde Park Village and the North Hyde Park Industrial Park may create future opportunities and impacts for Eden residents. This town plan supports the Hyde Park Town Plan.

Johnson: Eden connects to Johnson along the southwest edge. Ober Hill Road and Tree Farm Road are roads connecting the two towns. One of Johnson and Eden's connections is the Gihon River, whose headwaters lie in Eden and whose confluence is in the village of Johnson. Johnson's Plan designates a forest conservation district above 1,500 feet elevation, primarily in the area around Laraway Mountain. This town plan supports the Johnson Town Plan.

Belvidere: Belvidere and Eden are connected via Route 118. The western border of town falls within the North Branch Lamoille watershed. Activities in these areas, especially around Belvidere Pond, may impact water quality downstream; therefore, it is important to residents in Belvidere. Belvidere's forest conservation district includes a large contiguous land area around Laraway Mountain for future forestry, wildlife and recreational opportunities. This town plan supports the Belvidere Town Plan.

Lowell: Historically Eden and Lowell shared a strong connection. The VAG Asbestos mine straddles the line between the two towns. The question of designating the site as a "Superfund" was voted down by both towns at the 2012 Town Meeting. Route 100 and North Road connect the towns of Lowell and Eden. Both towns are encouraged to cooperate with the Vermont Agency of Transportation to make needed repairs and upgrades to Route 100. This town plan supports the Lowell Town Plan.

Montgomery & Albany: While technically adjoining communities, Montgomery and Albany share only a very small border with Eden, but no roads connect the towns. Albany Road connects to the Town of

Albany after crossing through the southeastern corner of Lowell.

Craftsbury: Craftsbury and Eden are connected via East Hill Road and the Square Road. Recent development in Eden and Craftsbury has increased traffic volumes on East Hill Road. Both communities are rural and conflicts in land use are not expected.

Regional Plan: The Lamoille County Regional Plan is guided by three overall objectives: (1) to guide growth into compact settlements; (2) to encourage compact development and protect the working landscapes; and (3) to protect the region's natural systems and valuable agricultural and silvicultural resources. Eden strongly prefers that implementation of these Regional Goals occur through non-regulatory and non-compulsory means. These regional objectives are compatible with the Land Use Section of this Plan. Eden notes that the Town does not contain an existing compact settlement, and that Eden residents will continue to utilize regional development centers in other communities.

## Appendix: Maps

### Index

1. Historic, Scenic, and Archeological Resources Map
2. Utilities and Facilities Map
3. Transportation Map
4. Critical Habitat Map
5. Water Resources Map
6. Soil Resources Map
7. Suitability of Soils for Conventional Septic Systems Map
8. Contour Map
9. Topographic Limitations Map
10. Land Use Map



# Soil Resources Map

Eden, Vermont  
Municipal Development Plan 2018-2026

## Legend

### Primary Agricultural Soils

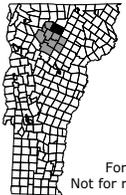
- Prime Agricultural Soils
- Statewide Agricultural Soils
- Stream/River
- Lake/Pond

### Roads

- State Highway
- Class 2 Town Highway
- Class 3 Town Highway
- Class 4 Town Highway
- Private Road
- Legal Trail

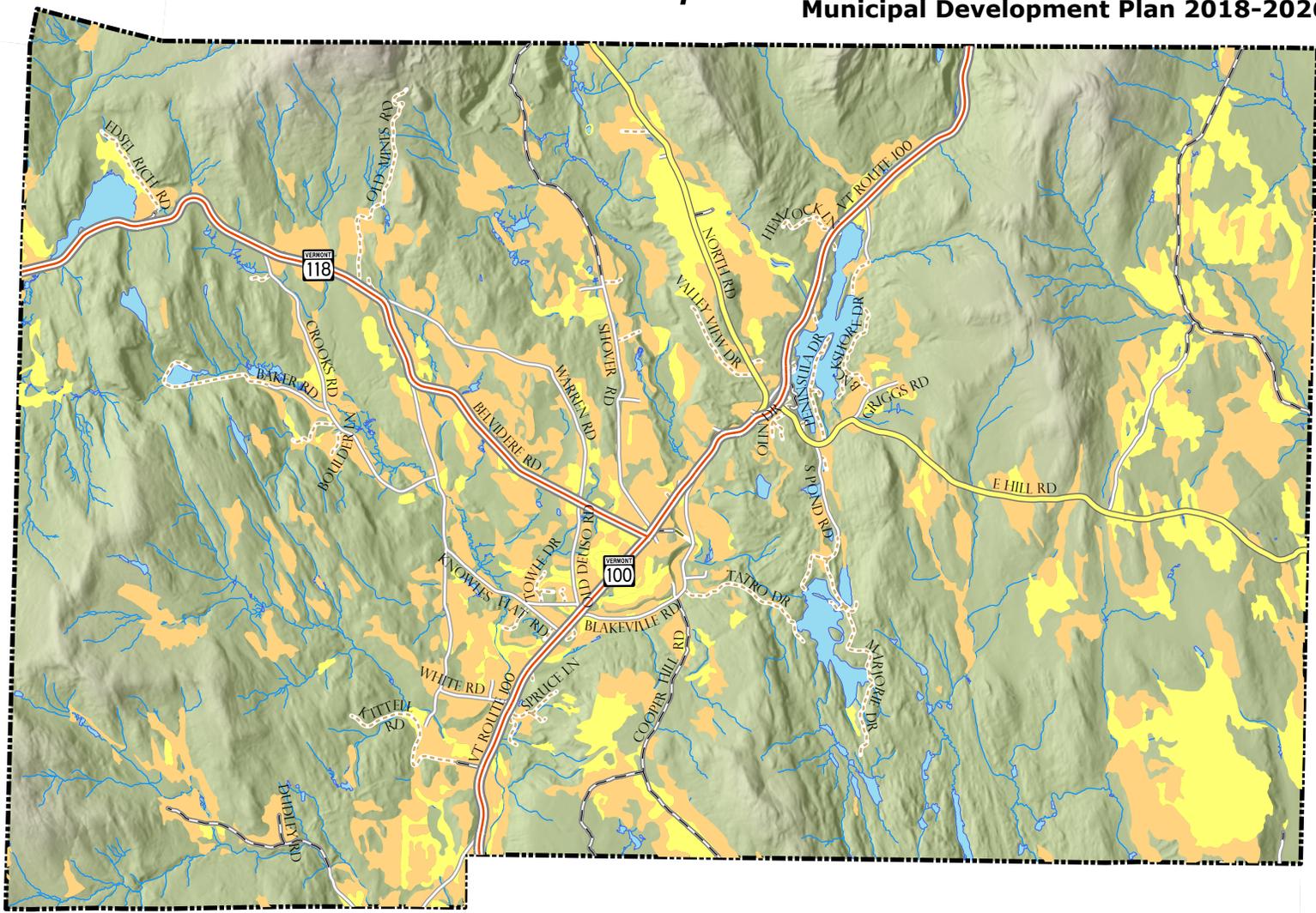


Lamoille County Planning Commission  
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## Primary Agricultural Soils

Soil area with the best combination of physical and chemical characteristics that have a potential for growing food, feed, and forage crops, with additional characteristics that allow for ideal crop growth conditions and a slope not higher than 15 percent. Two soil categories are depicted here: Prime and Statewide soils.

### Prime Soils

Prime Farmland has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods. These soils have an adequate and dependable water supply from precipitation, a favorable temperature and growing season, acceptable acidity or alkalinity, and few or no surface stones or boulders. They are permeable to water and air, are not excessively erodible or saturated with water for a long period of time, and don't flood frequently or are protected from flooding.

### Statewide Soils

Land in addition to prime and unique farmland that is of statewide importance for production of food, feed, fiber, forage, and oilseed crops. Soils in this category may have limitations due to slope, wetness, flooding hazard, shallow depth, or low available water capacity.



POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.

ROADS: 1:5000 E-911 Road Data, 2015.

SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

SOILS: Optically scanned from 1:20000 USDA-NRCS soil maps, 1981; VCGI 2015.

# Utilities

## Eden, Vermont

### Municipal Development Plan 2018-2026

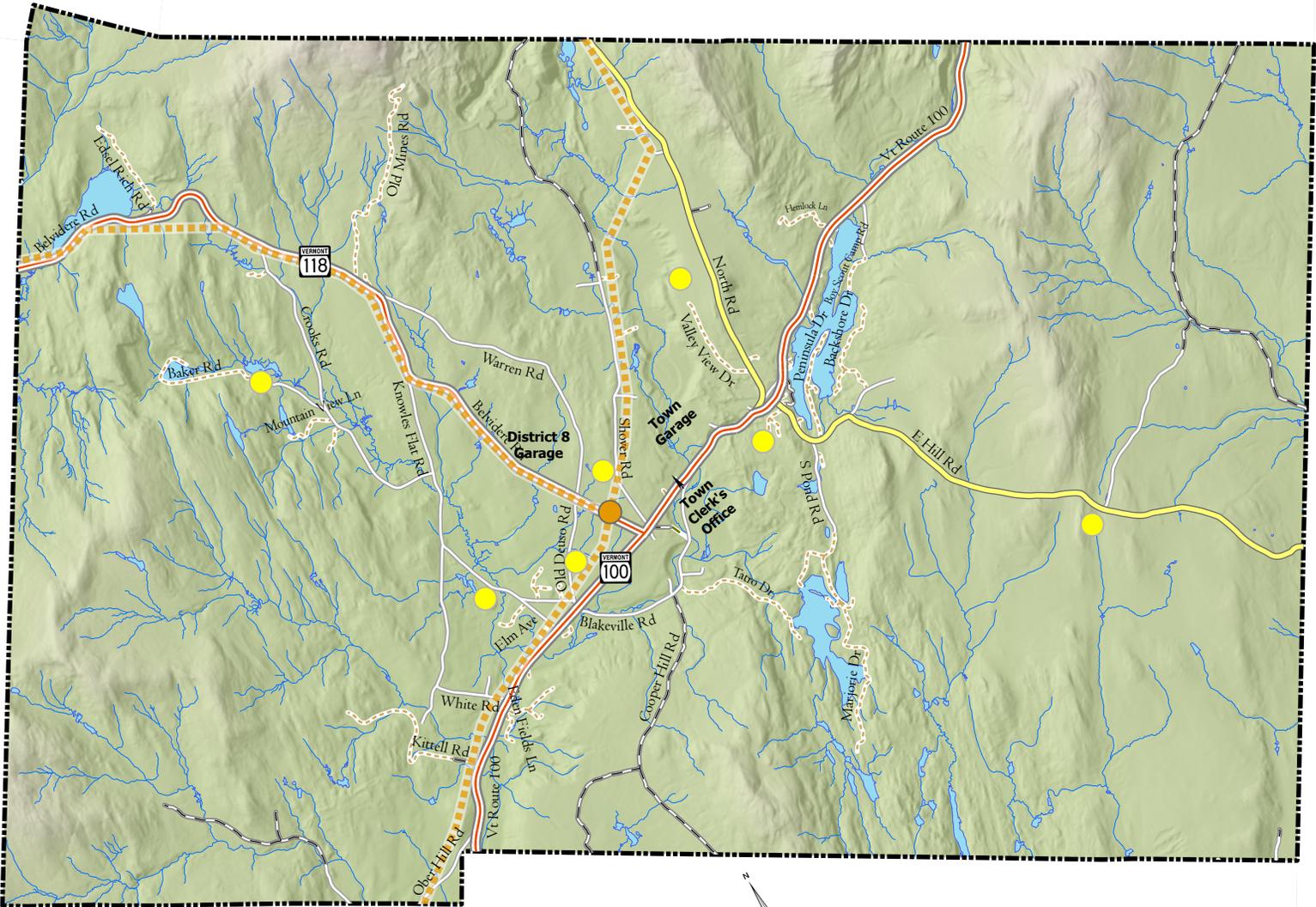
### Legend

#### Utilities

-  Existing Solar
-  Substation
-  Electric Transmission Lines

#### Road Class

-  State Highway
-  Class 2 Town Highway
-  Class 3 Town Highway
-  Class 4 Town Highway
-  Private Road
-  Legal Trail




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VCGI

POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.  
 ROADS: 1:5000 E-911 Road Data, 2015.  
 SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.  
 PUBLIC CONSERVED LANDS: University of Vermont Spatial Analysis Lab, from VCGI, 2009.  
 UTILITIES/FACILITIES: E911 ESITES database, from VCGI, 2015. Some features digitized by LCPC from local knowledge, 2016.

# Public Facilities

## Eden, Vermont

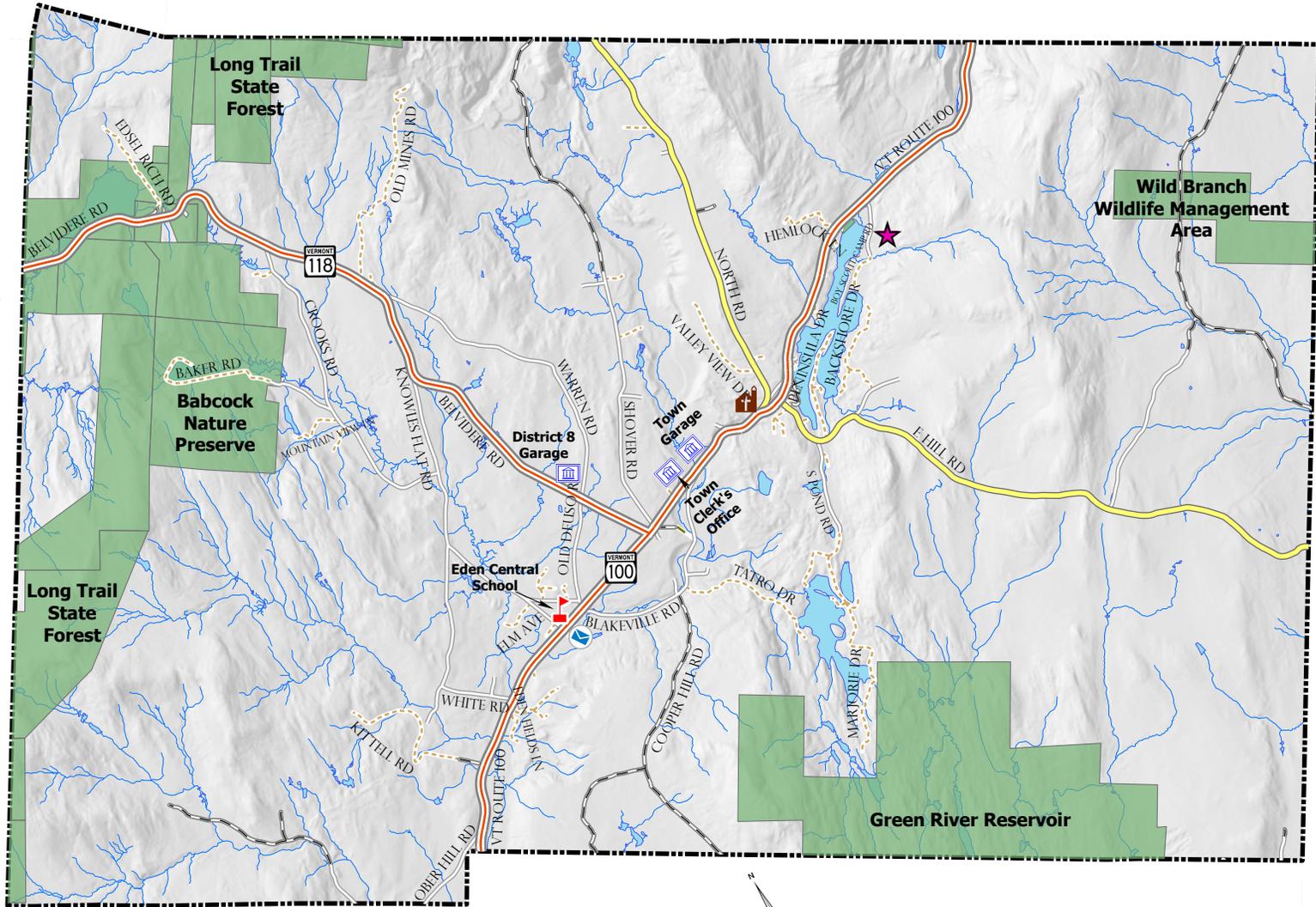
### Municipal Development Plan 2018-2026

#### Legend

-  Municipal Building
-  Post Office
-  Church
-  School
-  Public Gathering Area
-  Stream/River
-  Lake/Pond
-  Public Conserved Lands

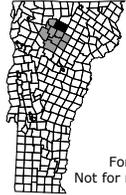
#### Road Class

-  State Highway
-  Class 2 Town Highway
-  Class 3 Town Highway
-  Class 4 Town Highway
-  Private Road
-  Legal Trail



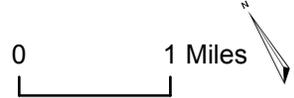

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VCGI

POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.

ROADS: 1:5000 E-911 Road Data, 2015.

SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

PUBLIC CONSERVED LANDS: University of Vermont Spatial Analysis Lab, from VCGI, 2009.

UTILITIES/FACILITIES: E911 ESITES database, from VCGI, 2015. Some features digitized by LCPC from local knowledge, 2016.

# Elevation Map

## Eden, Vermont Municipal Development Plan 2018-2026

### Legend

★ Highest Point

### Elevation Contours

--- 100' Contour

— 500' Contour

### Road

— State Highway

— Class 2 Town Highway

— Class 3 Town Highway

— Class 4 Town Highway

— Private Road

— Legal Trail

### Water Features

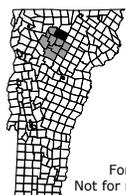
— Stream/River

— Lake/Pond



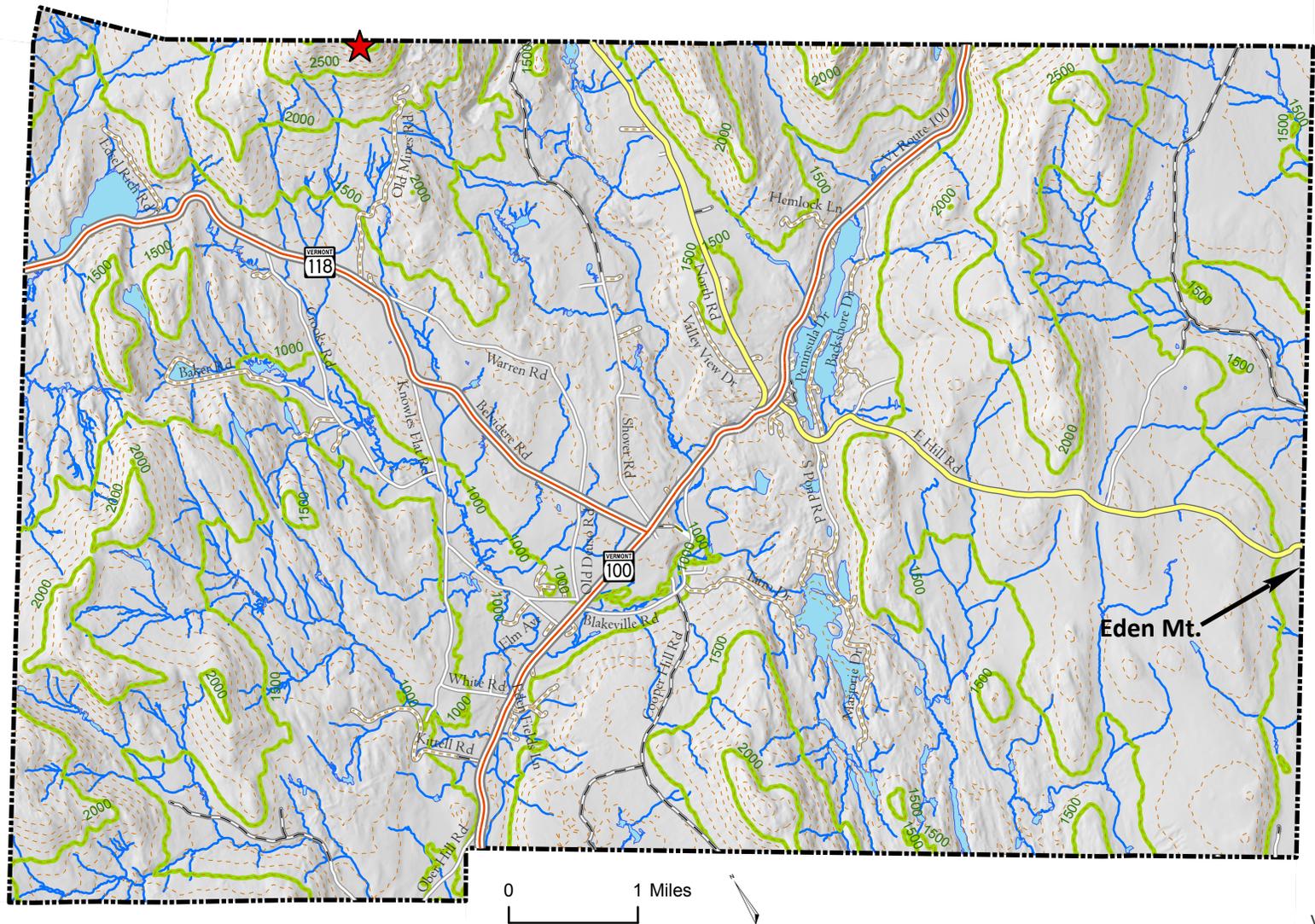
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VCGI

POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.

ROADS: 1:5000 E-911 Road Data, 2015.

SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

SHADED RELIEF: Derived from USGS National Elevation Dataset, 1:24000 30-meter DEM, VCGI, 2012.

STRUCTURES: 1:5000 E911 ESITE 2011 database, obtained from Vermont Enhanced 9-1-1 Board at <http://e911.vermont.gov>.

# Critical Habitat Map

## Eden, Vermont

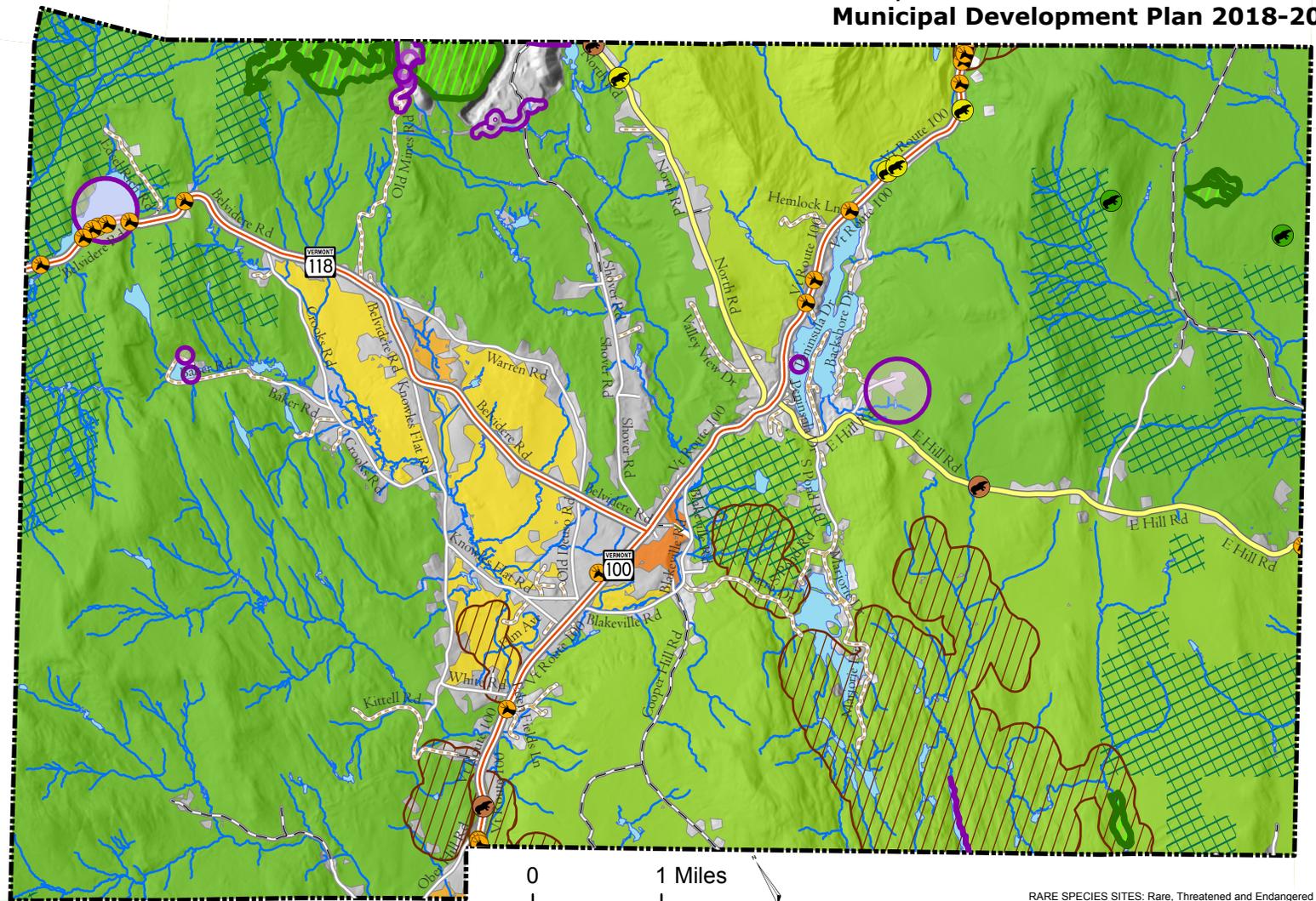
### Municipal Development Plan 2018-2026

#### Legend

-  Bear Collision
-  Bear Mast (foraging) Area
-  Bear Crossing
-  Moose Collision
-  Conserved Land
-  Natural Community
-  Rare, Endangered or Threatened Vascular Plant
-  Deer Wintering Yard
-  Stream/River
-  Lake/Pond

#### Forest Habitat Blocks - Quality

-  Low Rank
- 
- 
- 
- 
- 
- 
- 
- 
-  High Rank



0 1 Miles



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### Forest Habitat Blocks

#### Definition

Forest habitat blocks are areas of contiguous forest and other natural habitats that are unfragmented by roads, development, or agriculture. Vermont's habitat blocks are primarily forests, but also include wetlands, rivers and streams, lakes and ponds, cliffs, and rock outcrops.

#### Ranking

Forest habitat blocks are ranked for biological or conservation value by combining 11 factors, including the estimated element or species occurrence, percent ponds and wetlands, the size of the intact forest block, and the density of streams and rivers.

RARE SPECIES SITES: Rare, Threatened and Endangered Species & Significant Communities, 1:24000, Vermont Nongame and Natural Heritage Program, VANR, :

DEER WINTERING AREAS: 1:24000 and 1:25000, VANR, 2011.

HABITAT BLOCKS/ BEAR AND MOOSE DATA: Jens Hille, Vermont Department of Fish and Wildlife, Eric Sorenson, Vermont Agency of Natural Resources, Jon Osborne, Vermont Land Trust. Quality ranking based on several weighted factors including cost distance to core areas, ELU weighted acreage, element occurrence count, percent core block size, road density, percent ponds, percent wetlands, exemplary aquatic features, density of rivers and streams, and percent of block within a TNC matrix block.

CONSERVED LANDS: University of Vermont Spatial Analysis Lab, 200

POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.

ROADS: 1:5000 E-911 Road Data, 2015.

SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001

# Critical Habitat Map

## Eden, Vermont

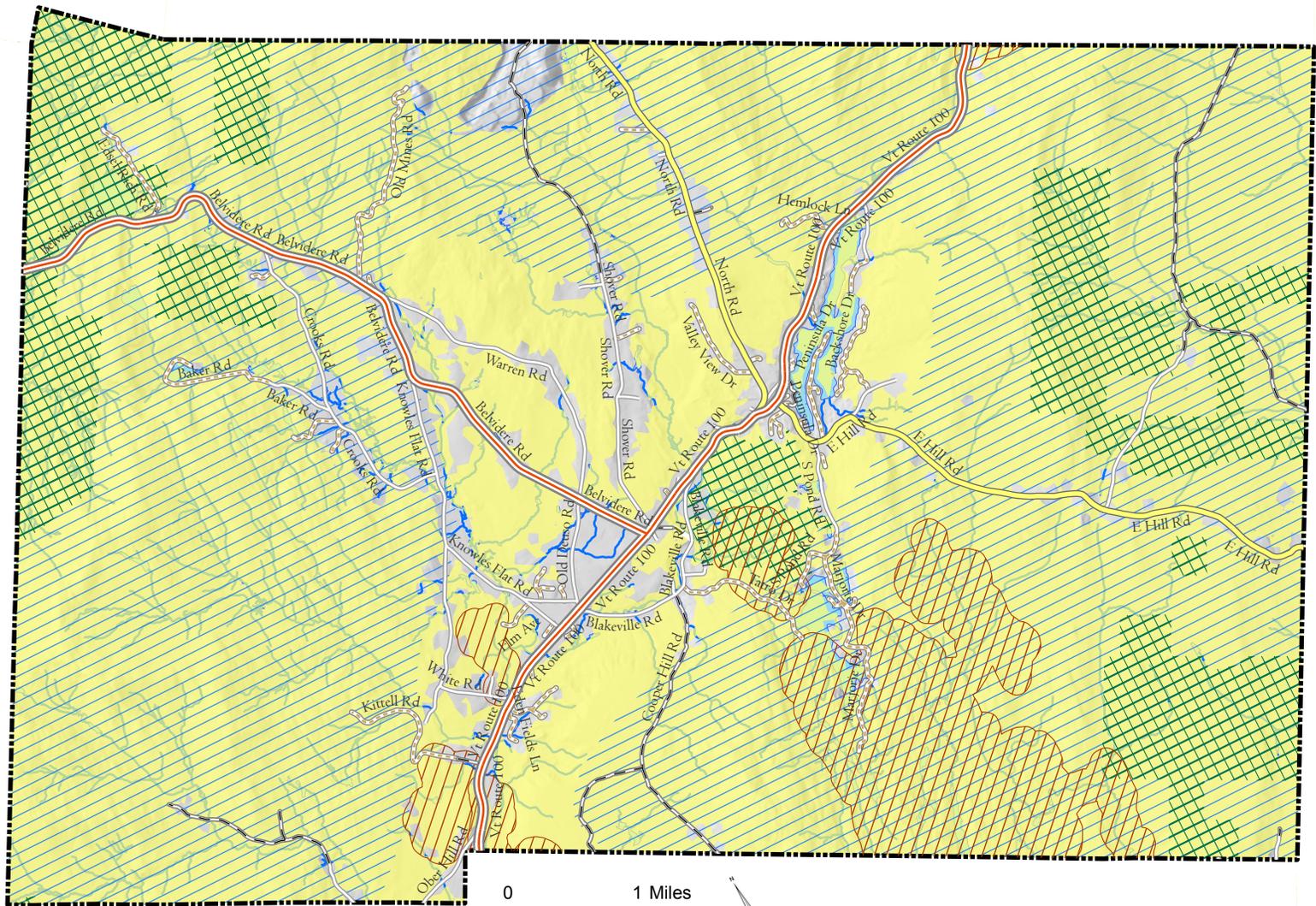
### Municipal Development Plan 2018-2026

#### Legend

-  Deer Wintering Area
-  Conserved Land
-  Bear Habitat
-  Habitat Blocks/Wildlife Corridors
-  Streams
-  Waterbodies

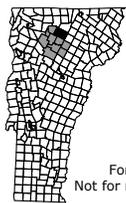
#### Road Class

-  State Highway
-  Class 2 Town Highway
-  Class 3 Town Highway
-  Class 4 Town Highway
-  Private Road
-  Legal Trail



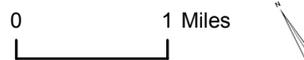

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BEAR HABITAT: Jens Hilke, Vermont Department of Fish and Wildlife.

DEER WINTERING AREAS: 1:24000 and 1:25000, VANR, 2011.

HABITAT BLOCKS AND WILDLIFE CORRIDORS: Jens Hilke, Vermont Department of Fish and Wildlife ; Eric Sorenson, Vermont Agency of Natural Resources.

CONSERVED LANDS: University of Vermont Spatial Analysis Lab, 2009.

POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.

ROADS: 1:5000 E-911 Road Data, 2015.

SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

# Land Use Map

## Eden, Vermont Municipal Development Plan 2018-2026

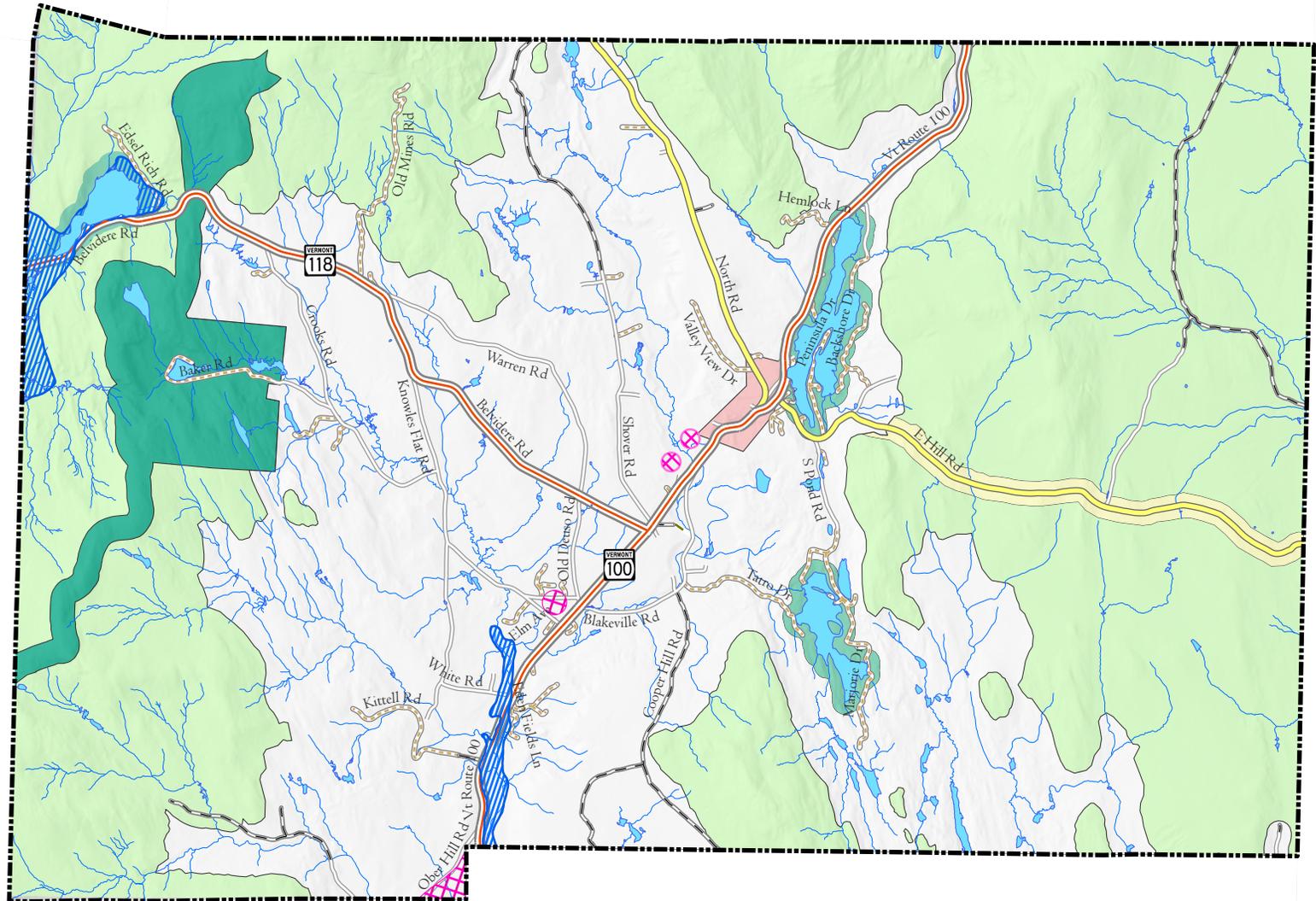
### Legend

#### Land Use District

- EAST HILL
- EDEN MILLS
- FOREST
- LONG TRAIL
- RURAL RESIDENTIAL
- SHORELINE
- 100 Year Floodplain
- Municipal Well-Head Protection Area
- Stream/River
- Lake/Pond

#### Road Class

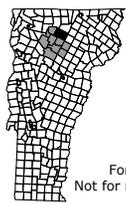
- State Highway
- Class 2 Town Highway
- Class 3 Town Highway
- Class 4 Town Highway
- Private Road
- Legal Trail





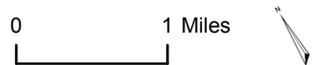
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ROADS: 1:5000 E-911 Road Data, 2015.

SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

LAND USE DISTRICTS: Digitized by LCPC from Eden Town Plan.

WELLHEAD PROTECTION AREAS: SPAs for groundwater sources (wells, springs), 1:24000 USGS Quadrangles, VANR-DEC-Water Supply Division and VT Dept. of Health, 1998.

FLOOD PLAIN: Digitized from FEMA Flood Insurance Rate Maps, LCPC, 1983. Floodplains for planning purposes only. Refer to the VANR-DEC, Water Quality Division, Floodplain Coordinator for official floodplain determinations. (802) 241-3759.

# Topographic Limitations Map

## Eden, Vermont

### Municipal Development Plan 2018-2026

#### Legend

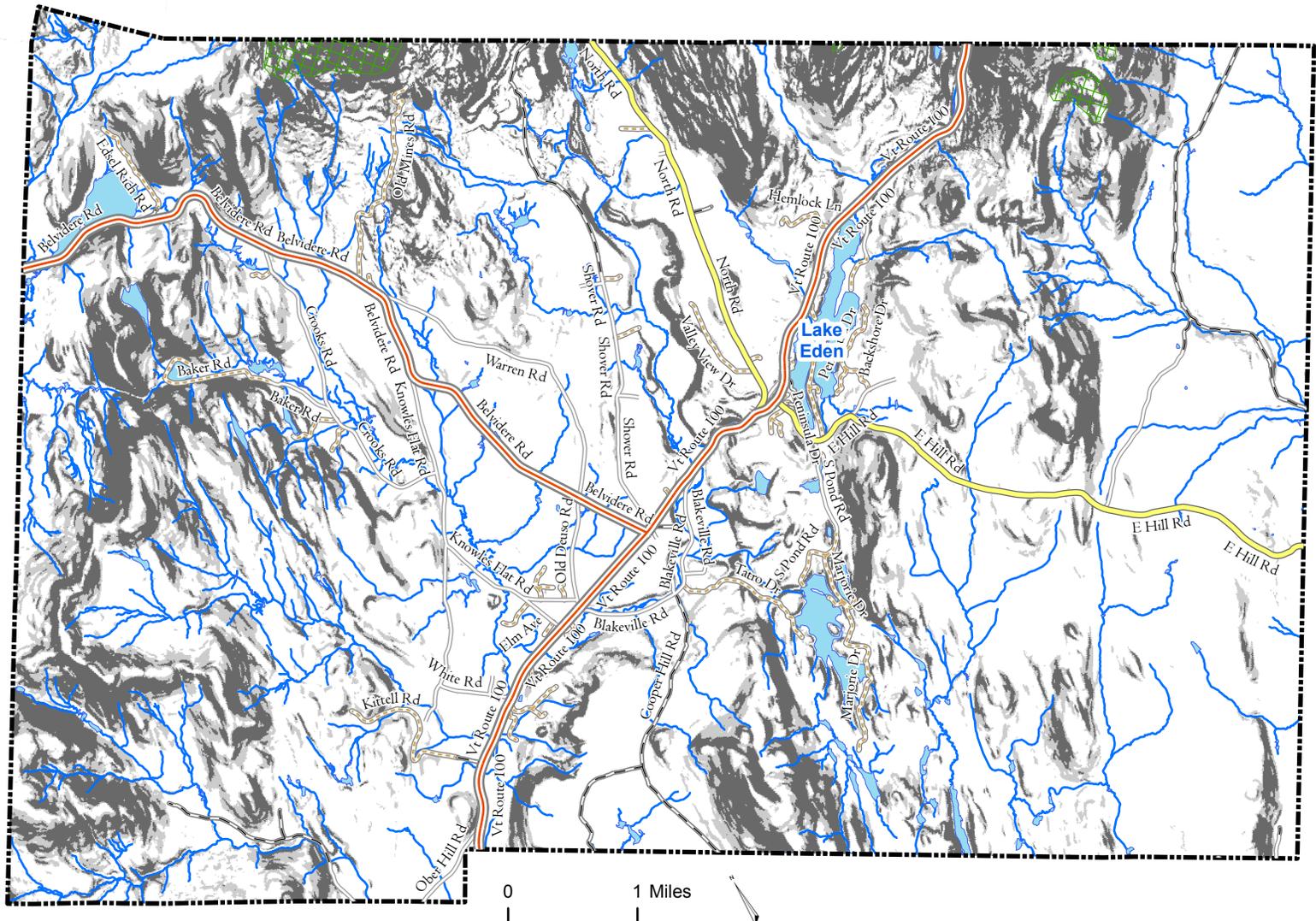
 Area above 2,500'

#### Slope (%)

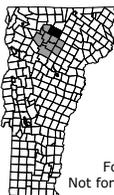
 0 - 20 %  
 20 - 30 %  
 Above 30 %

#### Road Class

 State Highway  
 Class 2 Town Highway  
 Class 3 Town Highway  
 Class 4 Town Highway  
 Private Road  
 Legal Trail  
 Stream/River  
 Lake/Pond




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 ROADS: 1:5000 E-911 Road Data, 2015.  
 SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.  
 SLOPE: Derived from 1:24,000 USGS digital elevation model, VCGI, 2012.  
 AREA OVER 2,500: Derived from 1:24,000 USGS digital elevation model, VCGI, 2012.

# Historic, Scenic and Archaeological Resources Map

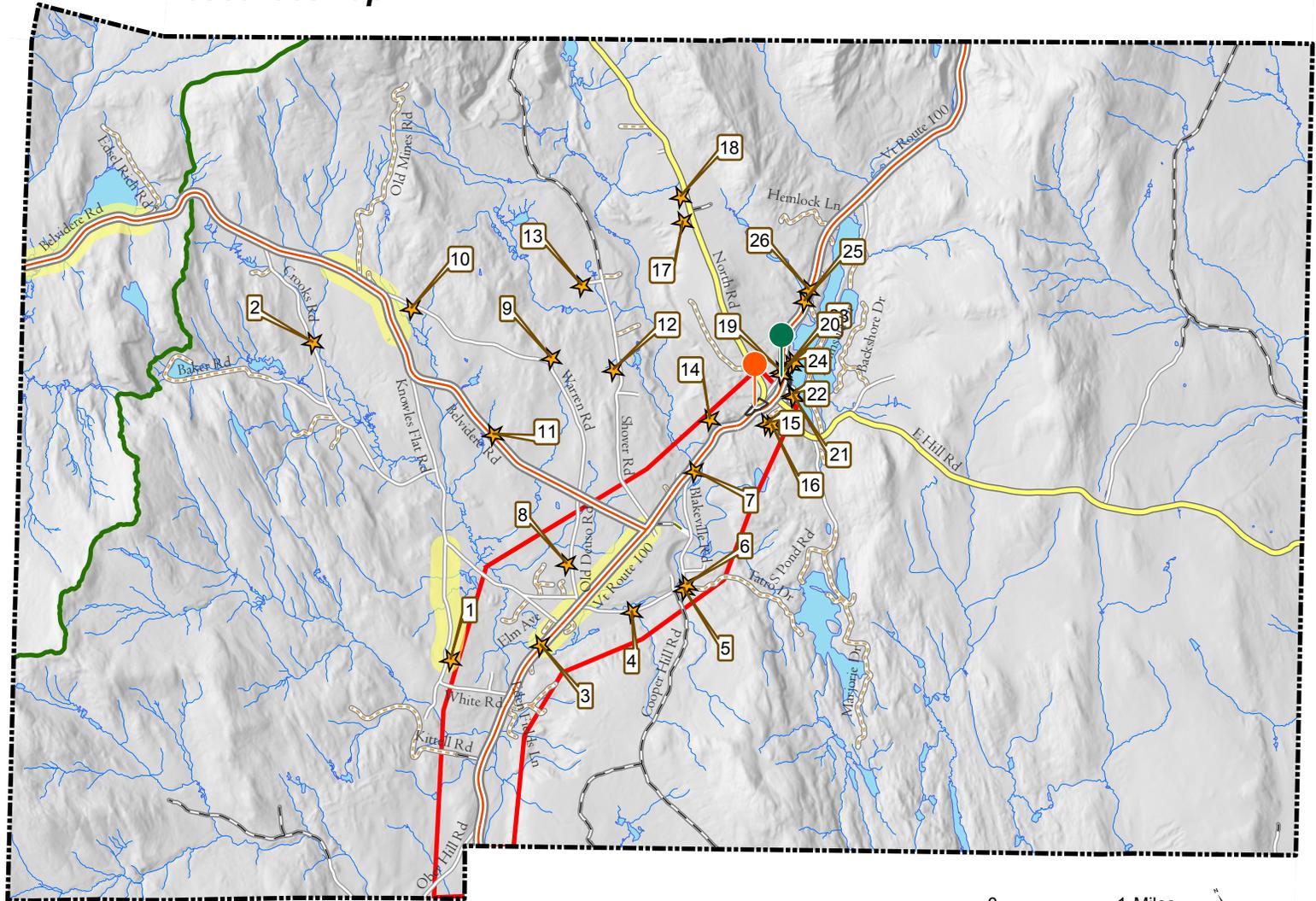
Eden, Vermont  
Municipal Development Plan 2018-2026

## Historic Districts:

- Eden Historic Camp District
- Eden Mills Historic District

## Historic Sites:

- 1 Former McKinley House
- 2 Monticello House (Former Bill Crook)
- 3 Huntley House
- 4 O'Hear's Gun Shop- O'Hear House
- 5 Former Bullard House
- 6 Morin House
- 7 Former Despault House
- 8 Former Deuso House
- 9 Carroll House
- 10 Lanphear-Warren Barn
- 11 Former O'Hear House
- 12 Former Burke House
- 13 Hutchins-Noah House
- 14 Lamphear House
- 15 Former Buchanan House
- 16 Emory-Earle House
- 17 Former Ludy House
- 18 Bullmoose Mansion  
Brown-Cheney Camp
- 19 Earl-Y-Don/Gray/  
McAllister/Cubit/McAllister Camp
- 20 Clark-Cecconi Camp
- 21 Bay View- Dow Camp
- 22 Crescent- Stygles Camp
- 23 Hunter-Miller Camp
- 24 Lee Camp
- 25 Tebbets Camp
- 26 Former Hinds-Weightman House



## Features of Interest

- ★ Historic Site
- Area of Moderate to High Archeological Sensitivity
- Scenic Views
- Long Trail
- Waterbodies
- Streams

## Road Class

- State Highway
- Class 2 Town Highway
- Class 3 Town Highway
- Class 4 Town Highway
- Private Road
- Legal Trail

0 1 Miles

POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.

ROADS: 1:5000 E-911 Road Data, 2015.

SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

LONG TRAIL: Derived from various sources, Green Mountain Club from VCGI, 2010.

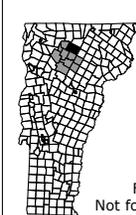
HISTORIC SITES: Digitized by LCPC, 2007. Town of Eden Historic Sites and Structures Survey by the Division of Historic Preservation 1983.

HISTORIC DISTRICT, ARCHAEOLOGICAL SENSITIVITY, SCENIC VIEWS: Created by LCPC, 2007.

GRR VISIBILITY: Created by LCPC, 2000.



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# Suitability of Soils for Conventional Septic Systems Map

Eden, Vermont  
Municipal Development Plan 2018-2026

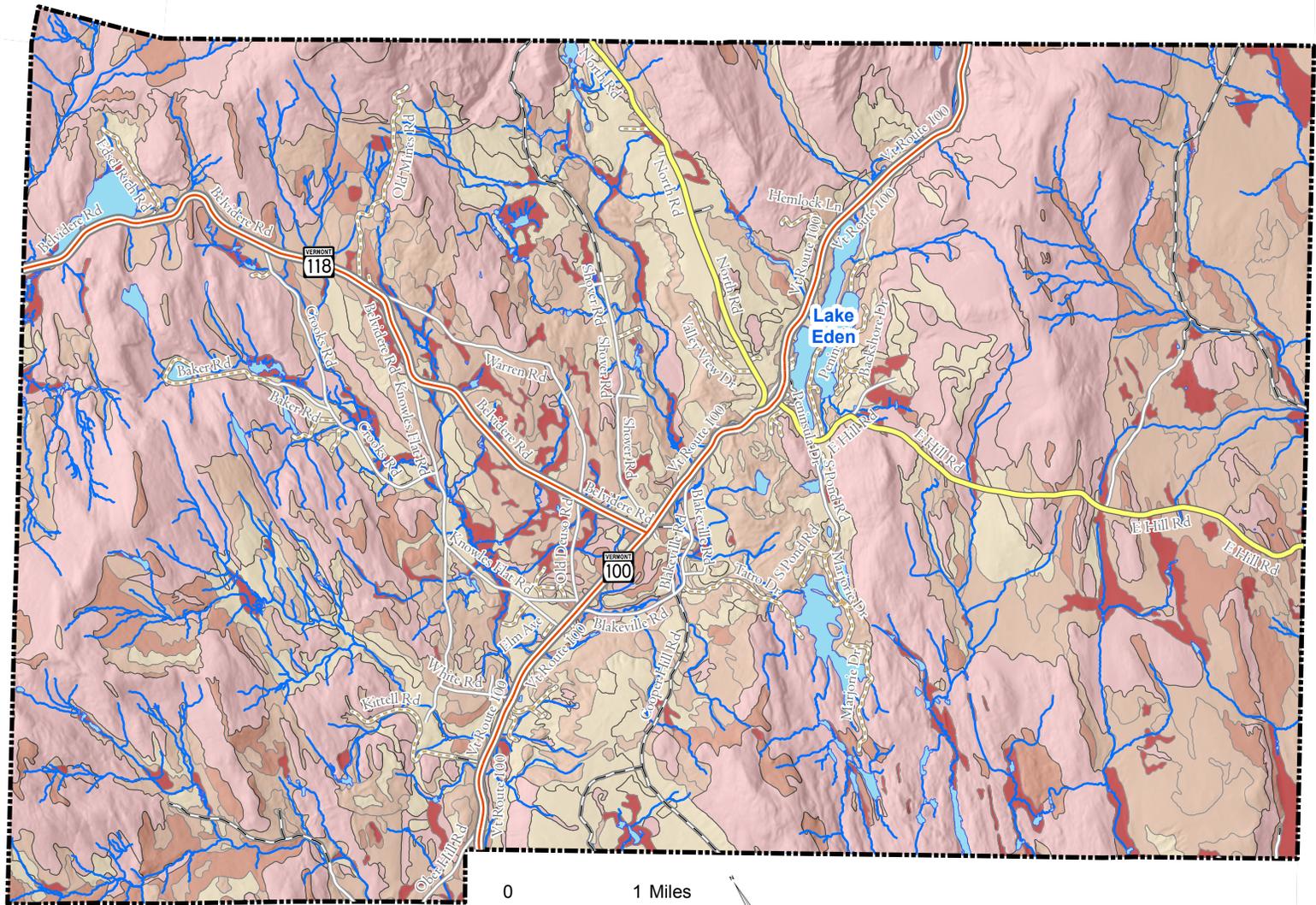
## Legend

### Onsite Septic Suitability

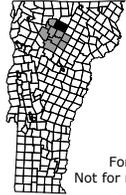
-  Very Suitable
-  Moderately Suitable
-  Marginally Suitable
-  Not Suitable
-  Not Rated

### Road Class

-  State Highway
-  Class 2 Town Highway
-  Class 3 Town Highway
-  Class 4 Town Highway
-  Private Road
-  Legal Trail
-  Stream/River
-  Lake/Pond

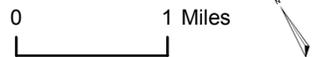



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ROADS: 1:5000 E-911 Road Data, 2015.

SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

ONSITE SEPTIC SUITABILITY: A subset of SSURGO certified soil data depicting onsite sewage disposal ratings of Vermont soils. Ratings are based on Vermont Environmental Protection Rules, 2015, based on 20% maximum slope - for lots created on or after June 14, 2002. It doesn't replace onsite investigation. This data set is not designed for use as a primary regulatory tool in permitting or citing decisions, but may be used as a reference source. Created by USDA - NRCS, 2008; distributed by VCGI, 2015.

VCGI

# Water Resources Map

## Eden, Vermont

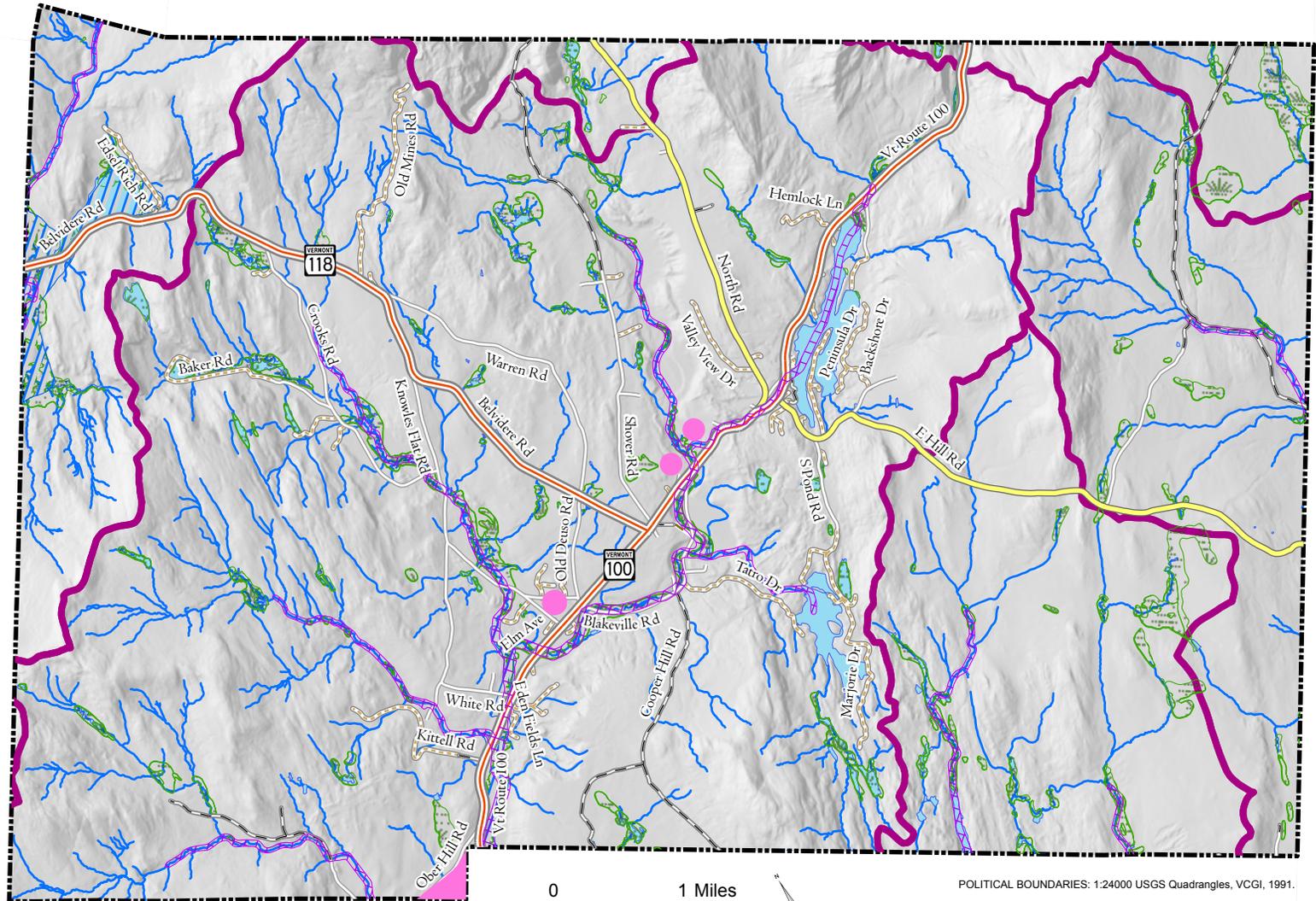
### Municipal Development Plan 2018-2026

#### Legend

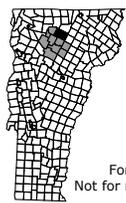
-  Watershed Line
-  100 Year Floodplain
-  River Corridors
-  Wetlands
-  Municipal Well-Head Protection Area
-  Stream/River
-  Lake/Pond

#### Road Class

-  State Highway
-  Class 2 Town Highway
-  Class 3 Town Highway
-  Class 4 Town Highway
-  Private Road
-  Legal Trail




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POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.

ROADS: 1:5000 E-911 Road Data, 2015.

SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

NWI WETLANDS: National Wetlands Inventory wetlands from 1:24000 source material, 3 acre mapping unit, 1996. Wetlands for planning purposes only. Refer to the VANR-DEC, Water Quality Division, Wetlands Section for official wetlands determinations. (802) 241-3770.

WELLHEAD PROTECTION AREAS: SPAs for groundwater sources (wells, springs), 1:24000 USGS Quadrangles, VANR-DEC-Water Supply Division and VT Dept. of Health, 1998.

FLOOD PLAIN: Digitized from FEMA Flood Insurance Rate Maps, LCPC, 1983. Floodplains for planning purposes only. Refer to the VANR-DEC, Water Quality Division, Floodplain Coordinator for official floodplain determinations. (802) 241-3759.

VCGI

# Transportation Map

## Eden, Vermont

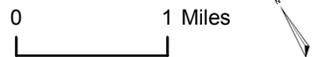
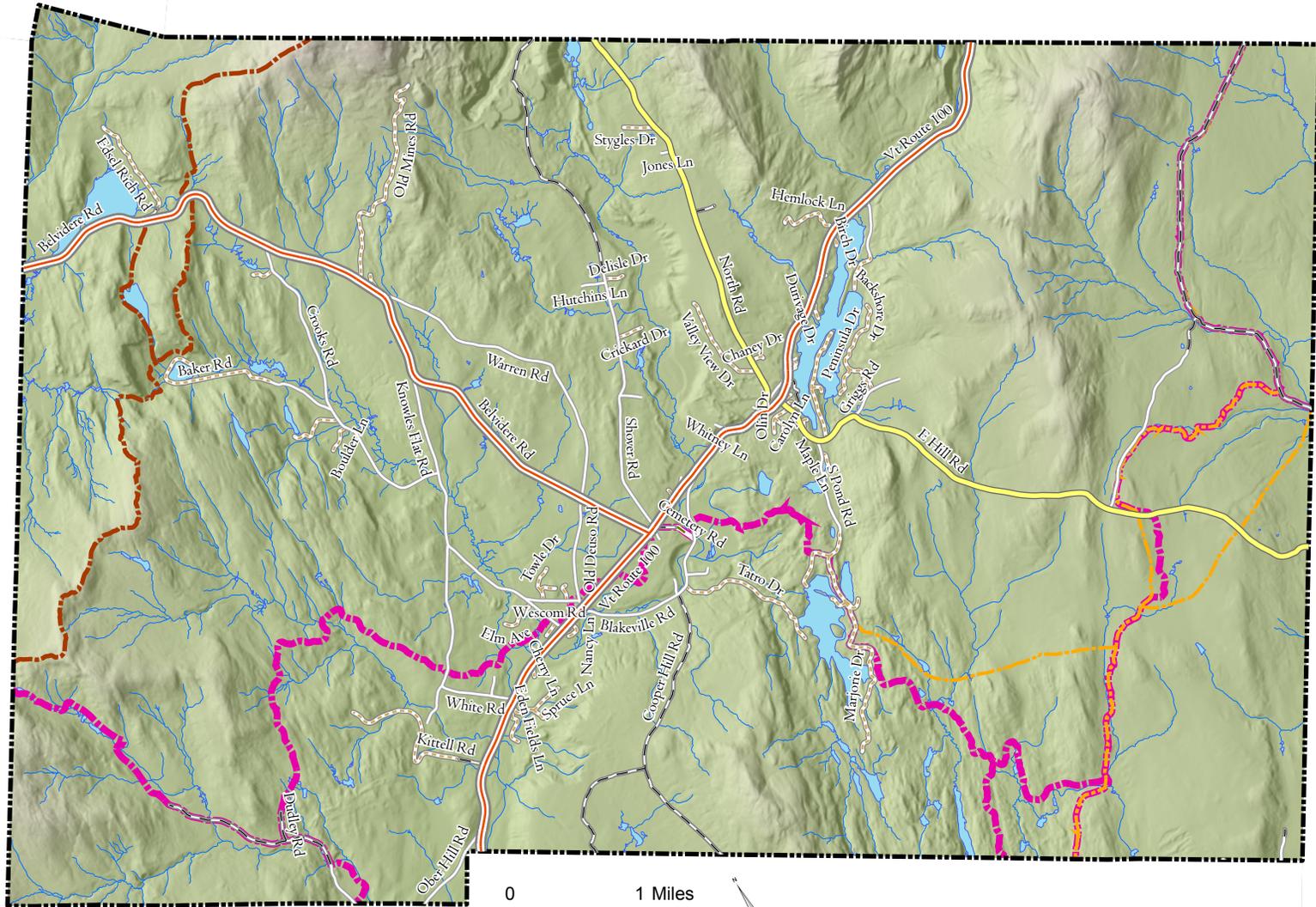
### Municipal Development Plan 2018-2026

### Legend

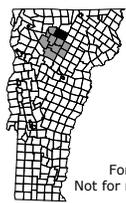
-  Catamount Trail
-  Long Trail
-  VAST Trail
-  Stream/River
-  Lake/Pond

### Road Class

-  State Highway
-  Class 2 Town Highway
-  Class 3 Town Highway
-  Class 4 Town Highway
-  Private Road
-  Legal Trail




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VCGI

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 ROADS: 1:5000 E-911 Road Data, 2015.  
 SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.  
 CATAMOUNT TRAIL: Field GPSed data, Catamount Trail Association, 2003.  
 LONG TRAIL: Derived from various sources, Green Mountain Club from VCGI, 2010.  
 VAST TRAIL: VCGI, 2011.