ELMORE TOWN PLAN

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Date	Version Number	Revision Description
6/22/2018	000	Initial Draft For review
6/23/2018	001	Second Draft still missing some maps
6/24/2018	002	Update Table of Contents, header, couple other formatting issues
6/25/2018	003	Added maps
7/23/2018	004	Updated Community Facilities and Transportation maps
8/6/2018	005	Included comments from hearing, minor formatting issues corrected
8/22/18	006	Minor edits from select board
9/12/18		Approval by Elmore Select Board

CHAPTER 1: Introduction and community profile

Elmore has grown and changed over the years from an agricultural and forestry community with a few small village centers, to a recreation town centered around Lake Elmore, to a growing bedroom community developing on the many back roads. Today, residents generally work in other towns, but live in Elmore to enjoy the rural lifestyle close to recreational amenities. Protecting and maintaining the character and charm of Elmore while encouraging the building of modern infrastructure is important to the future of the town. This has been challenged in recent decades, as Elmore's population has nearly tripled within the last forty years (more than doubling between 1970 and 1990). The Elmore Planning Commission has prepared the following plan after consultation with residents, visitors, other boards and anyone else who had an interest in the future of community. The Planning Commission is authorized by the Vermont Municipal and Regional Planning and Development Act (24 V.S.A. Chapter 117, §4381), hereinafter referred to as "Chapter 117," to draft this plan and has followed all requirements in its preparation and adoption.

Statement of Objectives

The purpose of this Town Plan is to provide guidelines for future growth, development and the preservation of town resources (public land, facilities and services) and natural areas. To this end, the objectives of the plan (listed in no particular order of prioritization) are:

- To protect the rural and scenic character of Elmore, including the historic lakeside village, forested hills, agricultural fields and wildlife habitats.
- To encourage agricultural and forest-based land uses;
- To provide a healthy and scenic environment for recreation;
- To protect unique and fragile areas, including but not limited to: higher elevations, especially on the Worcester Range; steep slopes; wetlands and flood hazard areas; shorelands; unfragmented forest blocks; and other critical wildlife habitat;
- To protect and improve our air quality;
- To protect the ecology of our lakes, ponds and wetlands;
- To identify and preserve historical resources including the last one room school house in VT;
- To ensure all children living in Elmore have access to high quality education;
- To provide residents with services that promote safety and well-being;
- To encourage a diverse, balanced economy that supports other objectives found within this plan; and,
- To establish a plan for managed growth of the town in all areas, and under such conditions, that demand for increased services will not significantly affect the tax burden for residents;

Community Profile

Elmore is a predominantly rural and heavily forested town located in southeastern Lamoille County with an area of 39.15 sq. mi. The town's defining features are Elmore Mountain (2,608 ft.), Lake Elmore (219 acres) and the adjacent village center. There are also several remote ponds as well as large tracts of wilderness, open fields and the Worchester Range of the Green Mountains. The State of Vermont operates a state park with camping facilities a beach and hiking trails at the north end of the lake. These natural features and the tourism, recreation and quality of life they provide are very important to the Town and its citizens (see Appendix #1 for a list of Elmore's natural resources).

The population of Elmore is 871 (2016 American Community Survey) with a population density of <26/sq. mi. Elmore experienced significant population growth in the later half of the 20th century starting with a low of 237 in 1960 and ending with 849 in 2000. The population growth leveled off from 2000-2010, however in a recently housing study completed by Lamoille County Planning Commission, which includes data on population projections, Elmore is projected to grow by 23% to a population of 1,069 between 2016 and 2030, (to view the full 2018 Lamoille Housing Study visit www.LCPC.org)

CHAPTER 2: Land Use Plan

Forestlands

Overview

The forests and lands of Elmore provide both recreational and economic benefits to the residents and visitors year-round as well as providing critical habitat for a diverse array of plants and animals. At this time, approximately 80% of Elmore's land is forest. Elmore's goal is to retain, conserve, and protect the existing forest; improve the ecology of the forest and minimize habitat fragmentation. At the same time the town of Elmore would like to identify areas appropriate to establish a town forest, maintain and support current low impact public and private recreational land use, establish parking access and trail heads for legal trails, establish new recreational trails and work towards establishing connecting trails for the current trail fragments located throughout the town of Elmore.

Recreational Benefits

The recreational opportunities available in the town is one of the driving force for why the majority of people in Elmore spend time in the forestlands. These opportunities, just to name a few, include hiking trails, the extensive VAST trail for snowmobiling, fishing, boating, swimming, as well as hunting in designated areas. In the future Elmore would like to investigate areas for legal biking trails as well as an area designated as an official Town Forest for the enjoyment of the community and visitors.

Economic Benefits:

Current Industries that benefit from Elmore forest resources include both manufactured and non-manufactured wood products, fire wood sales, Christmas tree farms and maple syrup production. Current timber management should be continued where environmental factors such as steep slopes and wetlands are not adversely affected and where existing development is not negatively impacted. This would include parts of the Forest Reserve District and large portions of the Rural East district, especially in the southern part of town. Portions of Elmore Mountain located above 1,500 feet in the Forest Reserve District are inappropriate for timber harvest due to steep slopes susceptible to erosion.

Habitat benefits:

Forest animals as well as a variety of plant life reside in the forests of Elmore and require large, contiguous tracts of land for critical habitat needs. Currently, the endangered birds in the area include the Blackpoll Warblers, Swainson's Thrush and the Bicknell's Thrush. Also, in 2011 Lamoille County Forest Stewardship Plan identified the northwest wetlands surrounding Lake Elmore as designated rare plant communities.

Connectivity and Interior Forest Blocks:

The Vermont Agency of Natural Resources (ANR) identifies areas of the state that it considers highest priority Habitat Connectivity and Interior Forest Blocks, (see appendix #2 for descriptions) and much of Elmore's land falls into these categories, (see map 1).

Elmore feels as though these areas have importance beyond their recreational and economic benefits. Elmore has worked to maintain interior forest blocks through the creation of the Rural Area Overlay (RAO) in its Zoning Bylaws and this trend of conservation should be continued in the future. The concept of forest connectivity should be looked at on both a local and regional level, and for this purpose Elmore's forestlands can be broken into five blocks (see map 12). Given Elmore's regulatory framework, growth will likely occur in forest blocks 1, 4 and 5 to varying degrees and less so in the others. From a regional forest connectivity perspective Block 4 should be given special consideration as it provides connectivity from Block 3 to the north across a section of Rt15 in Wolcott that is more rural. Another area for special consideration is the highlighted section of Symonds Mill Road. This area acts as an important local and regional connector between Elmore's southern and northern forestlands.

Forest Resource Challenges:

Development and unsustainable logging practices can dramatically change a forest and threaten the many benefits we currently enjoy. Efforts to reduce that economic incentive were made at the state level in 1977 when the state established the Use Value Appraisal/Current Use Program. This program aims to keep forests and farmlands in production by appraising these lands on the value of their current use (e.g. for agriculture or logging), not on their potential value if sold and developed. In turn, this reduces property tax on working landscapes. According to the Vermont Department of Taxes, in Elmore currently 14,628 acres and 72 parcels are enrolled in the Current Use Program.

Forest Invasive species:

Many invasive species of flora and fauna threaten our native environment. The management of these, including but not limited to the spread of Eurasian Milfoil in Lake Elmore and the Emerald Ash Borer are considered high priorities in Elmore.

The Emerald Ash Borer is an immediate threat to the Elmore forestlands. Not only is the Emerald Ash Borer already in the state of Vermont, and as of May 2018 the Emerald Ash Borer has been confirmed in East Montpelier, Montpelier, Middlesex, Berlin, Barre City, Barre Town, Orange, Groton, and Plainfield. This area has a five-mile radius "High Risk" zone where there is anticipated infestation. The areas closet to Elmore with the most possible impact include but are not limited to Calais, Peacham, Worcester, Waterbury, and Duxbury.

The state of Vermont has joined a 31-state quarantine boundary outlined by the USDA to help reduce the movement of infested ash wood to un-infested regions outside of Vermont's borders. At this time Ash wood may not be moved from Vermont to Maine, Rhode Island, or five counties in New Hampshire in hopes to prevent the pest from spreading to these areas. Vermont is also developing a series of Slow-The-Spread recommendations, initially including recommendations for handling logs, firewood, and other ash materials. A firewood quarantine has been put in place to help prevent the introduction of damaging forest pests by prohibiting untreated firewood from entering the state.

To learn more about these recommendations, to see a map indicating where EAB is known to occur in Vermont, and to report suspected invasive species like EAB, visit vtinvasives.org. All Vermonters are encouraged to familiarize themselves with the signs and symptoms of EAB and keep an eye out for the beetle.

Aquatic Invasive species:

Eurasian Watermilfoil is an invasive nuisance aquatic plant that was first identified in Vermont waterways 1962, and now is present in at least 64 Vermont lakes including Lake Elmore. While Eurasian Milfoil cannot be completely eradicated, much work can be done to keep it under control. Milfoil grows in shallow dense weed beds that can seriously affect the environmental health and recreational use of the lake.

Suction harvesting of the milfoil is the best option, being the most efficient and having the least impact on other aquatic species in Lake Elmore. Divers have been at work since 2002 harvesting milfoil and barrier mats were constructed and installed in the more heavily infested areas. Permits were obtained through the Vermont Agency of Natural Resources, and partial funding was secured. Since 2005 a suction harvesting system and divers has been in place. In the fall of 2017 the Lake Elmore Association (LEA) hired a professional environmental company to perform an aquatic plant inventory of Lake Elmore for the purpose of gathering information to plan the most efficient use of funding. For the 2018 season they have hired professional divers with updated equipment to continue the suction harvesting of the milfoil. Additionally, barrier mats were purchased and installed in the Lake. The new barriers are expected to last 10 years or more, and will be repositioned to the most densely infested areas annually. A Greeter program at the boat launch has also begun. The trained greeter will be on duty every weekend and will speak with boaters regarding the program, educating them about milfoil removal efforts and ways in which they can prevent the spread of this invasive aquatic plant.

Water Resources

In addition to Lake Elmore, there are two large undeveloped ponds, several smaller ponds, many wetland areas, rivers, streams and other important water features located throughout the town.

Lakes & Ponds:

At an elevation of 1,139-feet, Lake Elmore is a 219 acre body of water that supports a variety of outdoor recreational activities, including boating, fishing and swimming. It also serves as a critical aquatic habitat and invaluable part of the town's natural ecosystem and cultural identity. Lake Elmore is a natural lake, with an artificially controlled surface elevation and maximum depth of 17-feet. The Morrisville Water and Light Department owns a dam at the northern end of the lake, and uses it as a water impoundment for its downstream dams. The lake supports four noteworthy plant species, including a threatened and a rare species of bur-reed and two rare aquatic buttercups.

Little Lake Elmore is a 20-acre lake in north-central Elmore, which can only be accessed by foot from a small wooded track, approximately three-quarters of a mile from the nearest road. It is a wilderness-like lake, which also supports a threatened bur-reed species and a rare water milfoil.

Hardwood Pond is among the highest elevation bodies of water in Lamoille County (1,568-feet). This 44-acre natural pond is also located in a remote section of town. Additionally, there are numerous other smaller ponds dotting the landscape in Elmore.

Agriculture

Overview

Similar to sustainable forestry, Elmore would like to see sustainable farming and agriculture continue as a land use into the future. The town of Elmore benefits from prime agricultural lands and at this time Elmore has a number of working farms in the Rural East, Rural West and Village districts. Elmore views the preservation of its working agricultural lands as critically important, once developed these areas would likely never again be useful in the production of agricultural products. The importance of the local production of products such as firewood, and food is stated in Elmore's Energy Plan as a contributing factor in the reduction of Elmore's carbon footprint. Elmore encourages all types of farming, wherever appropriate, based on site conditions and when erosion measures are in place. (See Map 2 for agricultural soils)

Residences

Overview

Elmore has a variety of residence in the town. Mostly consisting of single-family homes and camps. The highest population densities are in the village and around the lake, as well as along Elmore Mountain Road. Current zoning bylaws limit future residential development in the Forest Reserve District, Flood Hazard Area Overlay District, Undeveloped Shoreland District, Remote Area Overlay District as well as on steep slopes and sensitive habitats as these areas are to be protected against the impact of erosion and flooding. Future residential development is encouraged where appropriate services can be safely delivered. (See Map 3 for local zoning boundaries)

Commercial

Overview

Small businesses are vital to creating a strong local economy. Elmore recognizes the importance of home businesses and occupations and would like to see these types of ventures continue into the future provided they do not conflict with neighboring existing uses. The zoning bylaws permit commercial enterprises of various sizes in the Village, Rural East and Rural West Districts. In general, businesses such as retail stores, restaurants, and professional offices, should be focused in the Village district, provided the uses are designed to be compatible with existing development with regard to building

styles, materials, scale and orientation. At this time commercial uses in the Rural East and West Districts consist mainly of home-based businesses, agriculture and forestry-based businesses, and small-scale hospitality businesses such as bed and breakfasts.

Industrial

Overview

At this time it is unlikely that Elmore will attract any medium to heavy industry due to a variety of development limitations the town currently faces. These limitations include 1) the lack of municipal, potable water supply, 2) the high expense of designing, installing and maintaining on-site sewage and wastewater systems, 3) a lack of high electrical power supplies and alternative sources of power, and 4) the remote location of Elmore. However, should an industry wish to locate in Elmore, it is likely that industry would gravitate to Route 12 where the only large tracts of open, level land are located, allowing easy road access. Any industry located in this area would be part of the watershed of Lake Elmore and will be required to adhere to strict standards to maintain the integrity of the watershed. Any small scale Cottage Industries operated by a homeowner and small employers are allowed subject to conditional use review in the Village, Rural-East, and Rural-West Districts. Larger, "rural industries" are conditional uses in the Rural-East and West Districts.

Floodplains and Wetlands

Overview

Elmore's' flood plains and wetlands help to absorb excess floodwater, serve as water pollution filters, prevent flood damage downstream, and are important wildlife habitats In order to protect the safety of residents and the wetlands as well as maintain clean water supplies, Elmore has adopted flood hazard area bylaws and provisions. (See Map 4 for Flood Hazard Areas)

Goals Objectives, Policies and Recommendations

Goal:

To protect the rural character of Elmore, including the historic lakeside village, forested hills, agricultural fields and wildlife habitats.

Forestland

Goals:

- Retain, conserve, and protect the existing forest; improve the ecology of the forest.
- Maintain and support current low impact public and private recreational land use.

Objectives:

- Identify areas appropriate to establish a town forest/park.

- Establish parking access and trail heads for legal trail.
- Maintain forestry and forestland use by protecting incompatible uses from conflicting with forestry efforts, and by making forestry as economically viable as possible.
- Establish new recreational trails and work towards establishing connecting trails for the current trail fragments located throughout the town of Elmore.

Policies:

- Elmore supports economic activity that strengthens the viability of forestry and related activities including value added manufacturing.
- Maintain large tracts of unfragmented forestland, especially at higher elevations in the Worcester range.
- Minimize habitat fragmentation and continue to provide a safe environment for our endangered species.

Recommendations:

- Consider expanding the Rural Area Overlay of include parts of Symonds Mill Road as this area acts as an important local and regional connector between Elmore's southern and northern forestlands.
- Reviewing existing zoning bylaws to determine whether they further the goal listed above and propose revisions if needed.
- Distribute information about the Vermont Land Trust and other land conservation options to land owners of large tracts of productive forestland in town.
- Maintain existing regulations that limit development in higher elevations and prohibit development above 1,500 in elevation.
- Explore options for funding future conservation projects in Elmore.
- Investigate grant matching opportunities from the state
- Start a town of Elmore bike association
- Talk to land trust about pieces of land that could be used for town forest/use

Water Resources

Goals:

- To control the spread of invasive nuisance aquatic plants and animals in Lake Elmore and other bodies of water.
- To maintain the existence of the lake through the dam with the goal being to research ownership and long-term maintenance of the dam.

Recommendations:

- Continue to work with the state for funding of the Greeter program at Lake Elmore.
- Continue to monitor the spread and impact of invasive species.
- Investigate long term maintenance and ownership of the dam at Lake Elmore.

Agriculture

Goals:

- To improve and expand the use of existing agricultural lands.

Objectives:

- To maintain agriculture and farming by protecting incompatible uses that conflict with agricultural efforts and by making farming as economically viable as possible.

Policies:

- Elmore encourages diverse agricultural entreprisse.

Recommendations:

- Review existing zoning and subdivision bylaws to determine whether they further the goal listed above and propose revisions if needed.
- Distribute information about the Vermont Land Trust and other land conservation options to land owners of large tracts of productive farmland in town.
- Explore zoning/subdivision tools that allow landowners to maintain large blocks of working agricultural and/or forest land while creating smaller building lots on the most appropriate areas of a property.

Residences

Goals:

- To encourage responsible residential development where appropriate.

Objectives:

- Ensure residential development is sited and constructed in a way that is safe and accessible while maximizing the conservation of useful and fragile natural resources.

Policies:

- Residential development is encouraged near access roads.
- Development is encouraged in the Village Center along Rte. 12 to increase activity near the town hub.
- Residential development should not occur in the flood hazard areas without strict compliance with the Flood Hazard Area Zoning bylaws.
- Residential development should not occur in the Forest District

Recommendation:

- Examine whether subdivision regulations further the above goals.
- Consider adding Conservation Subdivision language to the bylaws to encourage conservation of natural resources while expanding the use of PUDs

Commercial

Goals:

- To encourage development in areas where the town economically and environmentally can afford it, (i.e. in areas which have access to Class 1, 2, and 3 roads, have power, have suitable soils, and do not have excessive slopes).
- To encourage commercial development which will maintain the rural character of Elmore.

Objectives:

- Elmore should have commercial development at a scale and location consistent with the neighborhood in which it is located.

Policies:

- Cottage industries are encouraged and supported provided they do not conflict with existing uses in the neighborhood.

- Commercial and retail development should have a low environmental impact.

Recommendation:

- Review existing zoning bylaws to determine whether they further the goal listed above and propose revisions if needed.

Industrial

Goals:

- To allow industrial development which preserves the environment and rural character of Elmore.

Objectives:

- To allow industrial development provided the use preserves the environment and rural character of Elmore.

Policies:

- Clean industries, especially those that add value to local resources are encouraged.
- Home industries are encouraged and supported provided they do not conflict with existing uses in the neighborhood.

Recommendations:

- Review existing zoning bylaws to determine whether they further the goal listed above and propose revisions if needed.

Floodplains and Wetlands

Goals:

- To protect the safety of residents from flood and erosion hazards, and to maintain water quality.

Objectives:

- Development should be limited or prohibited from the flood hazard area to protect the health, safety, and welfare of the entire community.

Policies:

- Residential development should not occur in the flood hazard areas without strict compliance with the Flood Hazard Area Zoning bylaws.

Recommendations:

- Revise zoning permits to indicate responsibility of the applicant to obtain all necessary permits if wetlands are suspected on the development site.

CHAPTER 3: Transportation Plan

State Highways

Elmore is located along scenic Vermont Route 12, and only a short distance from Route 15 and Route 100. As the only numbered state highway in Elmore, Route 12 is maintained by the Vermont Agency of Transportation (AOT) District #6, with a maintenance garage located in nearby Morrisville.

Town Highways & Bridges

In accordance with state statute, local roads in Elmore are classified according to their level of function and use:

- Class 1 Highway: Town-owned road that are assigned a State Highway number (None in Elmore);

- Class 2 Highway: Town-owned roads that are busier and are given higher priority. (4.85 miles);

- Class 3 Highway: Town-owned roads that are actively maintained for use in all seasons and weather. (20.37 miles);

- Class 4 Highway: Town-owned roads that are not actively maintained by the town and may not be passable at all, or in certain weather or seasonal conditions. (12. 78 miles).

- Legal Trails: A public Right-of-Way available for public use excluding vehicular traffic. (8.55 miles)

Road classifications in Elmore are evaluated by the Select board on an annual basis.

The town owns and maintains two bridges. All other crossings in Elmore are served by culverts, ranging in size from 18 inches in diameter to 14-foot diameter.

All Town Highways, bridges and related infrastructure are maintained by the Elmore Highway Department, with a garage located next to the town fire station, on Beach Road. A full-time Road Commissioner manages the highway department with oversight from the Select board. Of the Town's 38 miles of Town Highway, only appx. 0.4 miles are paved.

(See Map 5 for the location of state and local roads in Elmore.)

Town Highway Standards

Elmore has established Town Road and Bridge Standards. These standards establish criteria which are to be followed when performing construction, repair and maintenance of Town Highways and applies to work performed by the Town and private enterprise. Compliance with these standards shall be met for any new road being conveyed to the Town.

Per the Town Road and Bridge Standards, Elmore requires a permit for new points of access that connect to town highways. Zoning bylaws have established regulations regarding access to lots, driveways, and parking and loading areas.

The town may assume ownership of a new road, at the discretion of the Select board.

Public Transit Providers

There are no public transit providers that directly serve Elmore; however, bus service is available through the Green Mountain Transit (GMT) in Morristown and Stowe. For more info visit www.ridegmt.com.

Airports Service

Private, charter and limited commercial aviation services are available to Lamoille County through the Morrisville-Stowe State Airport (MSA). The Federal Aviation Administration has recently funded upgrades to the airport, including upgrade of facilities and runway improvements. More information on the MSA are available at www.stoweavation.com. Broader nationwide and international flight are available at nearby Burlington International Airport (BTV).

Rail Service

The nearest passenger rail service to Elmore is provided through AMTRAK, with nearby stations in Montpelier and Waterbury.

Alternative Transportation

Due to Elmore's rural character, the town has less capacity and demand for alternative transportation facilities, including parking facilities, bicycle paths and trails, among other amenities. Nonetheless, Elmore does seek to promote alternative modes of transportation that are feasible for residents to access. Currently, Elmore offers the following alternative transportation facilities:

- Park-and-ride facilities: The church parking lot and area around the historic Town Hall function as unofficial carpool lots.
- Air facilities: Seaplanes and other amphibian crafts use Lake Elmore.
- Pedestrian facilities: Picnic tables are located on the shore of the lake, next to the historic Town Hall.

(For more information on state and local programs aimed at promoting alternative transportation see Appendix #3)

Transportation and Energy Planning

Currently Elmore is drafting a comprehensive energy plan directed at helping the state reach it's goal of using 90% renewable energy by 2050. Included in the plan are specific statistics on Elmore's transportation energy usage, as well as reduction targets and possible strategies for reaching them.

Transportation and Natural Resources

Transportation infrastructure can have a significant impact on natural resources. For example, runoff from improperly maintained roads and ditches can have negative impacts on water quality**;** constructing culverts wider than a stream's normal width can facilitate passage of certain species such as fisher and bobcat in addition to reducing downstream erosion; providing periodic breaks in guardrails can improve the permeability of a road for moose and deer while increasing human safety by allowing large animals to cross the road quickly. Issues like these can be addressed through proper maintenance and planning.

The Municipal Roads General Permit

The Municipal Roads General Permit (MRGP) is intended to achieve significant reductions in storm water-related erosion from municipal roads, both paved and unpaved. The Town of Elmore is required to implement a customized, multi-year plan to stabilize their road drainage system. The plan will include bringing road drainage systems up to basic maintenance standards, and additional corrective measure to reduce erosion as necessary to meet a Total Maximum Daily Load (TMDL) or other water quality restoration effort. The permit is required by Act 64, the Vermont Clean Water Act, and the Lake Champlain Phase I TMDL. (See Appendix #4 for a timeline and specific regulation regarding the MRGP)

Commencing on July 31, 2018 and beyond, the Town of Elmore will apply for permit coverage, develop Road Storm water Management Plans (Road SWMPs), conduct road erosion inventories for hydrologically-connected road segments (REIs) to determine baseline road conditions and road practice needs, develop Implementation Tables, and begin upgrading roads to the MRGP standards. The Town of Elmore will implement

practice upgrades to meet new MRGP standards so that all hydrologically connected roads meet new standards as soon as possible, but no later than December 31, 2036. While many grant opportunities exist to implement the MRGP Standards, funding full compliance with the Permit is expected to have a significant impact on Elmore's budget.

Goals Objectives, Policies and Recommendations

Goals:

- To provide a transportation network that is efficient, safe, resilient and well maintained for all forms of transportation.
- To provide a transportation network that does not adversely affect water quality and limits habitat fragmentation.
- To reduce the amount of energy used in transportation by Elmore's residents.

Policies:

- The construction of new transportation infrastructure, including roads, bridges and culverts, shall be planned with a high-level of sensitivity towards potential wildlife impacts, including habitat fragmentation and the disturbance of fish passages.
- Future growth in Elmore shall occur in areas and under such conditions that the demand for increased transportation services will not significantly affect the tax burden for existing residents.

Objectives:

- Maintain full compliance with MRGP with the lowest costs to taxpayers.
- Encourage the expansion of public transit and alternative transportation opportunities in town

Recommendations:

- Continue to apply for available grants to reduce costs of compliance with MRGP to tax payers
- Work with the Agency of Transportation to establish a crosswalk across Route 12, from the Elmore Store to the Lake School.
- Work with LCPC to identify potential sites for transit stops or additional park-and-ride lots, along with accompanying shelter areas, where feasible.
- As the Agency of Transportation plans future improvements to Route 12, Elmore and the LCPC should advocate for wider shoulders, to accommodate bicyclists and other alternative forms of transportation.
- Contact the Agency of Transportation regarding the feasibility of installing sidewalks between Elmore State Park and the Elmore Store.
- Contact the Department of Transportation to consider extending the 35 MPH speed limit to the south of town past Camp Road.

See Energy Plan for additional Transportation Objectives and Recommendations

CHAPTER 4: Utility and Facility Plan

Public Buildings and Public Facilities

Overview

Approximately one thousand six hundred and ten acres of Elmore are public lands. Figure 3 below shows existing public land in Elmore including the lake, state park, state forest and municipal lands. Additional semi-public facilities in town include the Elmore Church site, situated on 1.2 acres of land used to hold community gatherings. (See Map 6 for the location of community facilities, services and public land in Elmore.)

Lake Elmore School and Schoolyard	.25 acres
Town Clerk office building	.25 acres
Town Hall	.25 acres
Town garage and fire department buildings	3.1 acres
Cemetery lands	2.52 acres
State park and forest	1,604.14 acres

Figure 3: Public lands by acreage in Elmore.

Hospitals

The area is served by Copley Hospital in Morrisville, VT, Fletcher Allen Health Care in Burlington, VT, Central Vermont Medical Center in Berlin, VT and the Dartmouth Hitchcock Medical Center located in Lebanon, NH.

Libraries

The Morristown Centennial Library serves the area. The Stowe Free Library also serves the residents of Elmore with an annual $20 usage fee for access to all library resources.

Water Supply

The Town of Elmore reconstructed its public drinking water system in 2014. The system now has 18 subscribers and services residences, the Elmore School, Store and Town Hall. The springhouse that supplies this water cooperative must comply with the State of Vermont Water Resources Department regulations.

Many of Elmore's rural residential homes are served by private water systems supplied by shallow springs and wells. Some of these are gravity-fed systems that can be located on a neighbor's property or some distance from the homes they serve. These types of springs can be adversely affected by nearby development that can pose a threat to water supply by

the construction of new wells or water potability, by the installation of septic systems. All new construction will conform to state regulations in relation to water sources and water supply matters.

Sewage Disposal

Elmore has no central wastewater treatment facility. Sewage is treated in individual on-site septic systems. State regulations govern new and replacement systems (i.e., perk tests and septic designs). With the changes implemented in 2007, all wastewater permitting responsibilities shifted to the state level, eliminating the need for local septic permits unless towns voted to take over the permitting process.

Refuse Disposal

Refuse disposal is handled on an individual basis by residents who either make private arrangements or transport their own trash and recyclable products to a small transfer station (Morrisville and Stowe offer local stations). Elmore is a voting member of the Lamoille Regional Solid Waste Management District and complies with district rules and regulations. It is the district's policy to try to avoid burying refuse in the ground by recycling and composting as much as possible.

State and federal laws govern the disposal of hazardous waste. Salvage yards and the open storage of junk and vehicles are regulated locally through zoning.

Public Safety

Fire Protection

Elmore has a volunteer fire department, which was formed in 1983. The Elmore Fire Department operates from a station located adjacent to the town's garage, located on Beach Road. Elmore is a participant of the Lamoille County Mutual Aid Network for dealing with large fires. Elmore and Wolcott have a special arrangement whereby both departments respond to each other's fire calls.

The Fire Department provides the following services listed below.

1. Fire suppression
2. Search and rescue
3. Water rescue
4. Hazardous Materials (Haz Mat) protection
5. Emergency management
6. Fire prevention
7. Education
8. Auto extrication
9. Vermont rural fire protection
10. Carbon monoxide alarm investigations
11. Home inspections for fire insurance companies
12. Residential Dry-hydrant testing

Police Protection

Police protection as well as 911 emergency dispatch is supplied by the Vermont State Police Department whereas traffic enforcement is provided by the Lamoille County Sheriff's Department. As a result of the Town's reliance on state police (Williston barracks), Elmore residents face longer response times (1-2 hours) to local crimes

Emergency Rescue

The Morristown Rescue Squad responds to most Elmore emergencies. Lamoille Rescue Squad is available as a back-up service. Additionally, the Vermont State Police Search and Rescue Team and the Elmore Fire Department respond to reports of missing hikers. During the winter months, the Stowe Hazardous Terrain Team responds to emergencies dealing with hazardous terrain.

Water Safety

The Vermont State Police and the Elmore Fire Department respond to boating accidents. There are currently no public boats maintained locally for water rescue.

Recreation Facilities

Overview

Lake Elmore and Elmore State Forest offers the most visible recreation opportunities to residents and visitors. Traditionally, Elmore's private lands have provided opportunities to snowmobile, ski, hike and hunt. See below for a list and brief description of public and private recreation lands in Elmore.

Public Lands

- Elmore State Park/Lake Elmore: Started in 1936 Elmore State Park is located at the north end of Lake Elmore and covers an area of 700 acres. Amenities include picnic and beach areas, hiking trails, 45 campsites, 15 lean-tos, full restrooms and pay showers.

- Putnam State Forest: Putnam State Forest is open for low-impact public recreation. No mechanized transportation is allowed, except for snow machines on designated VAST trails. Low-impact camping is allowed when obtaining prior permission from the Barre District Office of Vermont State Department of Forests, Parks and Recreation. Currently, there is no fee for use.

- Forest Legacy Parcel: The Atlas/Forest Legacy Parcel (Wagner Woodlands Timber property) located in between Elmore State Park and Putnam State Forest, is open for low-impact public recreation. No mechanized means of transportation are allowed, except for snow machines on designated VAST trails. Residents and visitors may access the Forest Legacy parcel for free.

- Fishing Access: The Vermont State Department of Fish and Wildlife maintains boat and fishing access on Lake Elmore. These amenities are open to the public free of charge.

- Town-Owned Recreation Land: Several town-owned properties also provide recreational opportunities for Elmore residents. These include the schoolyard and Stanley Merriam Park, open to the public after school hours, for sports activities, playground use and other low impact recreation purposes.

Private Lands

Privately owned recreation land including the Catamount Trail Association and the Vermont Association of Snow Travelers depend on the use of private property to provide hiking, snowmobile, snowshoe and cross-country ski trails. Additionally, hunters, fishermen and trappers, have traditionally relied on the generosity of private landowners for the recreational use of those lands.

Additional measures to protect landowners are enforced through the Vermont Recreation Use Statute; Title 12, part 9, section 203. Title 12 states that when a land owner makes their land available for public use without consideration for recreational uses, this statement shall not be misinterpreted to 1) limit property owner rights, 2) limit the ability of a land owner and recreation user to enter into an agreement for recreational uses, 3) support any claim of eminent domain, 4) create any duty of an owner to inspect their land for dangerous conditions, and 5) relieve any users from their obligation to exercise proper safety while participating in recreational activities.

Communication Facilities

Overview

Elmore would like to expand the communications network to provide the entire town with adequate cell and high-speed internet coverage. However, the town does have concerns over the adverse impacts of expanding the network. When expanding the communication network, both public and private utility companies should follow the policies and standards within this plan.

Communication Towers

Elmore supports the enhancement of a telecommunication network when such facilities do not have significant adverse environmental, health or aesthetic impacts since one of the town's principal scenic qualities is its ridgelines and mountainsides. These scenic areas are significant contributors to the maintenance and enjoyment of Elmore's rural character. Elmore ridges are predominately undeveloped and provide an unbroken skyline when viewed from the valley floor and the use of the town's ridges for telecommunication towers and related facilities needs to be undertaken in a manner that will not detract nor adversely affect these scenic values. To minimize conflict with scenic values, facility design and construction shall employ the following principles listed below.

- Encourage communication tower applicants to exhaust all reasonable options for sharing space on existing towers and tower sites prior to proposing new sites and related facilities. Taking into consideration space available on existing towers, geographic service area requirements, mechanical or electrical incompatibilities, comparative costs of co-location and new construction.
- Where feasible, site towers/facilities in areas not highly visible to the traveling public, or from residential, historic district, public use, and outdoor recreation areas including hiking trails and beaches.
- Locate towers/facilities in forested areas or sufficiently landscape to screen the lower sections of towers and related ground fixtures from public vantage points, such as trails, roads or water bodies.
- Utilize materials, architectural styles, color schemes, lighting fixtures, mass and other design elements to promote aesthetic compatibility with surrounding uses and to avoid adverse visual impacts.
- Where prominent views of a site exist, locate towers downgrade of the ridge so they don't exceed the elevation of the immediate ridge.
- When constructions of access roads are involved, minimize their visibility by situating roads along the natural contour of the land, and avoid open fields or meadows.
- Avoid peaks and ridges that function as regional focal points.
- The height of towers should not exceed that of the tree canopy in forested areas.
- No access roads (this does not include logging roads) suitable for vehicle traffic should be constructed on the Worcester Range above 1,500 feet in elevation.
- Avoid using external lights.
- Towers, antennas, and related fixtures that fall into disuse, or are discontinued are to be removed by the facility owner immediately. The owner may be required to post bond for removal.

Facility/Service Priorities and Funding Opportunities

Water Supply and Waste Water Treatment

Currently, Elmore has only limited public drinking water supply and no central wastewater treatment facility.

This puts tremendous pressure on private residents and businesses to maintain individual septic systems and seek outside sources for drinking water supply. Rising numbers of individual septic systems increases the risk of both surface and groundwater pollution in the central village area and along Lake Elmore. Additionally, economic growth is limited by the lack of municipal water and sewer infrastructure. To minimize water pollution, the town of Elmore should consider water and sewer updates for lake front developments as well as existing homes. Implementing municipal water systems and waste treatment facilities can be a costly procedure. However, there are funding opportunities available to construct and update these systems.

Funding opportunities for water and waste disposal systems are available through the U.S. Department of Agriculture's (USDA) Rural Development Program and the Vermont Department of Environmental Conservation (DEC). The Rural Development program offers a wide range of utility grants and loans to assist rural communities in financing utility and infrastructure improvements. The DEC offers Public Water System Construction Loans to both municipalities and nonprofit water cooperatives. For more information on these funding opportunities visit www.rurdev.usda.gov and www.anr.state.vt.us/dec/. Additionally, for towns in the preliminary stages of water and sewer updates, DEC offers a Planning Advance for decentralized wastewater feasibility studies. For more information on this funding opportunity please contact Don Robisky at 802-654-8991.

Another strategy for financing water and sewage treatment systems is developing a Tax Increment Financing district (TIF). TIF districts are typically designated by a municipality to target areas in need of economic growth or public infrastructure improvements. Initial improvements are commonly financed through federal or state bonds, grants and loans. Financial debt acquired during the construction and implementation process is repaid by property tax revenue generated from the targeted infrastructure or facility improvement. Examples of towns in Vermont that have successfully implemented TIF districts to fund water and sewer expansions include Milton, Newport City and Winooski. To learn more about existing TIF districts in Vermont visit the Vermont Legislature's 2011-2012 Legislative Reports listing online at http://www.leg.state.vt.us/reports/allreports.cfm?Type =Other&Session=2012.

Recreation and Community Facilities

Given the nature of Elmore's rural character it is important to maintain and protect the town's valuable recreational resources. To assist in developing new or updating existing recreation and community facilities funding assistance is available through the Department of Buildings and General Services (DBGS) and the USDA's Rural Development Program. DBGS offers a Recreational Facilities Grant Program to financially assist municipalities and non-profit organizations in developing recreation opportunities in Vermont communities. The USDA Community Facilities Grant Program provides a wider range of assistance to rural areas, by awarding grants to municipalities, counties and nonprofit organizations engaged in constructing, expanding or improving essential community facilities. To learn more about recreation and community facility funding opportunities visit www.bgs.vermont.gov/ and www.rurdev.usda.gov/.

Goals, Objectives, Policies and Recommendations

Goals:

- To ensure adequate public facilities and services are available to protect and enhance the lives of residents and visitors of Elmore.

Objectives:

- Maximize the present use of public and semi-public buildings, facilities, and lands.

- Ensure personal water supplies are safe and of adequate quantity.
- Preserve public health and prevent pollution of surface or groundwater.
- Ensure Elmore businesses and residents can responsibly dispose of solid waste and are incentivized to reduce the amount of waste generated by increasing recycling efforts.
- Decrease police response times to increase security of Elmore residents
- Research the potential of developing public access mountain bike trails and/or dirt bike trails that would connect into neighboring trail networks to promote tourism and further interest in maintaining Elmore's forest land.
- Control the spread of invasive species in the lake.
- To support the enhancement of a telecommunication network when such facilities do not have significant adverse environmental, health or aesthetic impacts.
- Eliminate septic waste from entering Lake Elmore

Policies*:*

- Any new water supply must meet state water supply rules including isolation distances.
- Ensure that State regulations for wastewater disposal are followed. Conventional septic fields are not permitted on slopes greater than 20%.
- Provide access for adequate removal of solid waste.
- Backyard burning of trash is prohibited.
- The town supports the public safety activities of the Elmore Fire Department.
- All development should be accessible to emergency vehicles.
- Large developments, and developments in remote locations, should include fire ponds and dry hydrants to aid in fire fighting, if similar resources are not available nearby.
- Elmore supports local land owners who generously keep their lands open to traditional recreational uses such as hiking, hunting, fishing, horseback riding and for VAST trails use.
- To minimize tower proliferation when feasible
- In planning for telecommunication facilities, consideration shall be given to the environmental limitations of any given site. Impacts resulting from the use of wildlife habitats, forestry, agricultural lands, and similar resources should be carefully addressed. Projects that materially impact these resources shall be discouraged.
- Towers, antennas, and related fixtures that fall into disuse, or are discontinued shall be removed by the facility owner to retain the values set forth above. The owner may be required to post bond for removal.

Recommendations:

- Develop a maintenance plan and capital budget to preserve public property and equipment.
- Zoning and subdivision regulations should require the identification of existing and proposed water supply locations to ensure water quality is protected.
- Evaluate how the introduction of new "alternative" wastewater treatment systems may impact future land use and development patterns in Elmore.
- Consider having a decentralized wastewater feasibility study conducted for Lake Elmore and Elmore Village properties.

- Consider options to improve water rescues including budgeting for the purchase of a rescue boat, portable defibrillator or other life saving equipment to aid the Elmore Fire Department in rescue operations on Lake Elmore.
- Discuss the need for increased local police protection.
- Review alternatives to create a legal right-of-way to provide access to Little Elmore, if one does not exist.
- Meet annually with the Lake Elmore Association for sharing information and to address concerns if they arise.
- Support the Lake Elmore Association to control the spread of invasive species including Eurasian Milfoil.
- Explore potential free or discounted access to the Lake Elmore beach for Town residents.
- Talk with relevant property owners and the Department of Fish and Wildlife to consider requesting that the State renew its former lease to allow fishing access on Little Elmore.
- Research the potential of developing public mountain and dirt bike trails around Elmore that would tie into neighboring trail networks promoting the preservation of the forests and generate income for the town.

CHAPTER 5: Historical & Archaeological Resources

Overview

In 1983 a survey of the town by the Vermont Division for Historic Preservation identified 37 buildings as well as three districts in Elmore as historically significant. These districts consist of the Lake Elmore Historic District, the Lake Elmore East Historic Camp District and the Lake Elmore West Historic Camp District. Examples of the native Vermont architecture identified as historically significant include the Town Hall, the one-room schoolhouse, the church and the Elmore Store. The town also contains and values the remains of the once-thriving village of East Elmore.

In 1986 a National Park Service Study of archeologically significant riparian areas was conducted as a part of the Vermont Rivers Study. Findings concluded that Elmore Pond Brook, from Lake Elmore to the Wolcott town line, has an expected moderate-to-high archeological sensitivity. The rating does not necessarily indicate that any archeologically 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 to support the findings.

In September 1995 the Elmore Fire tower (which was used to monitor for fire activity from 1938 until 1974) was designated a National Historic Lookout and is currently owned by the Vermont Department of Forests, Parks and Recreation.

In September 1996 The Elmore Historical Society was formed to record, preserve and collect all available information about the hamlets and people of Elmore. Since then an extensive narrative and photographic history of the town has been made available to the public via the Elmore website's: https://elmorevt.org/historical-society/

Presently, none of the structures or districts have been placed on the National Registry of Historic Structures but the Vermont Advisory Council on Historic Preservation placed all three districts on the State Register of Historic Places. (See Map 7)

Goals, Objectives, Policies and Recommendations

Goals*:*

- To record, identify and preserve Elmore's heritage (town history, archeological records & resources, and structures & districts of historical value) for the enjoyment of current and future generations.

Objectives:

- Encourage the Elmore Historical Society to host events and workshops to educate the public on the importance of preserving archeological sites
- Any future findings as well as currently known documented archaeological resources should be preserved and protected from development activities.

Policies:

- Grant applications intended to augment Elmore's historical record and preserve historical sites and artifacts in town are supported.
- Elmore encourages the restoration and re-use of historic buildings.
- If during the development of a parcel an archeological site is discovered, the town asks that the developer contact the state archeologist to provide a reasonable opportunity to investigate and suggest a means to mitigate the impact.
- Projects occurring in the archeologically sensitive area around Elmore Pond Brook are to consider the potential impact of their project on archeological sites during the early stages of development in order to mitigate potential impacts.

Recommendations:

- The Elmore Historical Society should work with the town and state Division for Historic Preservation to identify a secure and safe place for the long-term storage of items intended for preservation as well as research avenues and sources of funding for historic preservation projects in town.
- The Elmore Historical Society should continue to identify and preserve Elmore's historic resources as well as compile a comprehensive listing of historical areas archeological sites and structures in town.
- The zoning bylaws should continue to recognize the historic significance of the Elmore Village District as well as the importance of preserving and current or future archeological sites.

CHAPTER 6: Education Plan

Local Schools

Overview

In 2016 the town of Elmore voted to join Morrisville in forming the Elmore-Morrisville Unified Union (EMUU) School District. The combined school district now owns five buildings; one located in Elmore, the Elmore School; and four in Morrisville, Morrisville Elementary School (MES), Peoples Academy Middle Level (PAML), Peoples Academy (PA), and the Graded Building which houses preschool services and administrative offices. The seven member combined school board consists of two representatives from Elmore, two from Morrisville and three at large. The Town of Elmore strongly supports the continued operation of the historic Elmore School.

Currently children grades 1-3 residing in Elmore can still attend the Elmore School, the last one-room school house in the state. This facility has a capacity of 20 students with preference given to Elmore students. Per the existing school policy, elementary school children who cannot be accommodated in Elmore school building go to the Morrisville Elementary School. Elmore's Middle and High School students also attend the Morrisville schools. For students wishing to attend another high school of their choice, (provided it has available capacity at the time of enrollment), there is a state regulated lottery system which accepts up to 10% of the EMUU student population grades 9-12.

The EMUU School District has a long-term facilities maintenance plan, which covers all buildings and facilities including the Elmore School building. For specific information on this plan contact Lamoille South Supervisory Union.

Early Education Services

Elmore recognizes the importance of early care and education to the community and supports the development of these types of services. EMUU provides access to preschool programs both in school and through partnerships with private providers. There are a variety of early care and educational opportunities available in the community as well, such as the Lamoille Family Center, which offers a range of early education services.

Goals Objectives, Policies and Recommendations

Goals:

- To continue Elmore's history of providing access to high quality education to all children without placing an undue burden on taxpayers.
- To maintain a strong and active school board with participation from the community to guide them.

Objectives:

- To ensure safe and adequate facilities are available to provide for the education of residents.
- Encourage maximum participation in filling at large positions on EMUU school board by Elmore residents.

Policies:

- Elmore recognizes the importance of early care and education to the community and supports the development of these types of services.
- Elmore strongly supports the continued operation of the Elmore School.

Recommendations:

- The School Board should continue to monitor the needs of students and assess the most effective way of meeting those needs to ensure students have access to high quality education.

CHAPTER 7: Economic Development Plan

Overview

With the majority of Elmore residents commuting to other communities for employment, the town's economic future will likely rise and fall with regional trends. Today Elmore has few commercial properties and no industrial buildings. While Elmore currently lacks the infrastructure to support large businesses, the town encourages environmentally sensitive rural industries and home businesses as a means to diversify the economy and provide local employment while maintaining the town's rural character.

Elmore has a variety of zoning districts meant to direct the type and scale of development in town. Much of future economic development is likely to be located in the Village District, the traditional civic and commercial center of town, as well as the Rural East and Rural West Districts.

Outdoor Recreation and the ski industry are major economic drivers within the region. The Elmore State Park, which is located on the north end of Lake Elmore is a popular destination for tourists. Due to the proximity of the State Park to Elmore Village, these visitors represent a significant portion of the village economy in the summer and a potential market for village based businesses that could be further developed.

For some of the most up-to-date and specific Elmore economic data and how it compares to the rest of Vermont, please visit: http://www.city-data.com/city/Elmore-Vermont.html

Future Development

For Elmore to capitalize on its scenic natural landscape its unique qualities, such as its mountains, lakes, ponds and unfragmented forest blocks, must be respected and taken into account as new development occurs. Conservation and protection of these important resources should be considered an economic development strategy as well as a natural resource conservation strategy.

Potential areas of future development:

- Renewable energy
- Agriculture and Forestry
- Tourism and Agritourism
- Village Center Designation (The State of Vermont "Village Center Designation" program provides tax credits for repairs and code improvements to historic, non-residential properties located within a Designated Village Center)

Renewable Energy

The Town of Elmore is determined to meet the goal set out by the State of Vermont which would require the Town of Elmore to have 90% of its energy usage to be from renewable sources by 2050. Elmore will research the potential of turning this goal into business that would have a positive economic impact on the town. By promoting electrical charging stations for electric cars in town to the possibility of building an energy storage facility that would purchase only renewable energy at off-peak times and resell the power at peak times for profit as well as achieving renewable energy use goals.

Agriculture and Forestry

Elmore still has an active agricultural industry and still has a significant amount of land area reserved for agricultural purposes. Elmore has encouraged the diversification of the agricultural products it has produced in the past and will continue to do so in the future. Elmore is determined to keep agriculture as a part of the landscape in order to increase industry income and maintain the rural appeal. Elmore will help encourage the growth of agriculture in the town. Elmore also has a large forested land base. Over the last several decades, the forestry industry has taken a decline. At this time, there is not much Elmore can do to develop the forestry industry within Elmore other than to encourage the responsible maintaince of its forests.

Tourism and Agritourism

Elmore is a popular summer time destination for tourists and locals from neighboring towns as a camping and hiking destination. The State of Vermont has been promoting tourism within the state and the neighboring town of Stowe has seen an increase in visitors. Elmore would like to take advantage of this increase of tourism in its immediate area by promoting its natural resource-based activities. Also, Elmore would like to explore innovative ideas for outdoor recreation-oriented tourism that would increase tourism income within the town that would at the same time promote the preservation of its rural landscape and culture. Some examples of areas that Elmore could expand its recreation activities that would promote preservation of its natural resources is to join the growing network of public mountain biking trails in neighboring Stowe. Also, Elmore has great potential for creating trail networks for dirt bikes and atv's that would connect to existing networks in the neighboring towns of Wolcott and Hardwick.

Agritourism involves any agriculturally based operation or activity that brings visitors to a farm or ranch. By promoting agriculture and the diversification of the agriculture products within Elmore, there is new opportunities to create agritourism. Agritourism has been a growing industry within Vermont, from brands such as Cabot, Ben & Jerry's, to local maple sugaring operations opening their doors to guests and hosting spring events. In recent years the farm-to-table movement has also brought a lot of attention and value to locally grown products from smaller producers. This is an industry that Elmore should encourage within the town.

Village Center Designation

The village center designation program is a Vermont Agency of Commerce and Community Development program issued by the Department of Housing and Community Development. The village center designation supports the revitalization efforts of small to medium-sized historic centers. If Elmore were to receive this designation, it would help bring financial incentives, training and technical assistance needed to attract new business and vitality to the community. Elmore will apply to the state to receive the village center designation and use the designation to revitalize the town which will help increase its appeal to tourism. It would also help bring in capital which could be used to grow the local agritourism industry and strengthen the current tourism infrastructure that currently exists.

Goals Objectives, Policies and Recommendations

Goals*:*

- Manage growth and economic development in order to attract and welcome visitors, new residents, and businesses with opportunities while preserving the rural scenic character.

Objectives:

- Explore options in the renewable energy industry that would add new industry to Elmore
- Promote the growth of natural resource-based tourism.
- Attract more visitors from neighboring towns to hike, swim, and camp in Elmore.
- Promote the growth and resiliency of current agriculture endeavors within Elmore.
- Encourage new agriculture endeavors in agricultural areas that are currently not in use.

Policies:

- Maintain the forests and preserve the rural character of Elmore while encouraging healthy economic growth and development

Recommendations*:*

- Conduct a study of the possibility of installing an energy storage facility
- Encourage the development of new small businesses within Elmore.
- Apply for the Village Center Designation program.
- Discuss building mountain bike trails that would connect into the Stowe mountain biking network and/or develop a dirt bike trail network/park that could connect into Hardwick/Wolcott.
- Encourage citizens to visit with the local forester for education in proper forest management.

CHAPTER 8: Energy Plan

Introduction

The purpose of this plan is to set clear energy goals for the Town of Elmore and list specific strategies that can be used to reach those goals. Elmore supports the Vermont energy goal of 90% renewable by 2050 and will pursue policies and strategies intended to achieve it while also considering the conservation of undeveloped land, wildlife habitat and the financial needs and limitations of the residents. Energy must be reliable, cost effective and accessible.

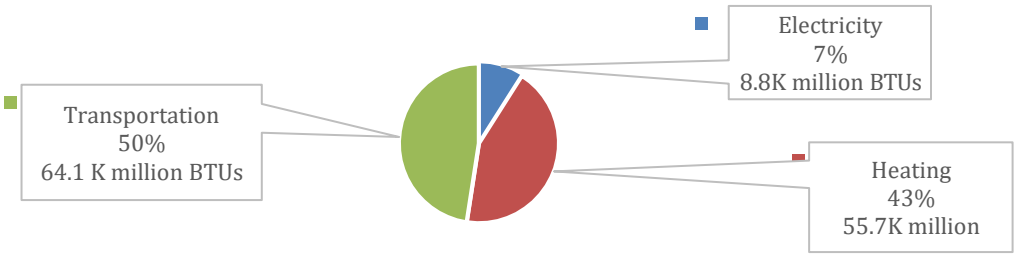
Current Energy Usage

Overall Energy Use

Energy used in Elmore is used to provide electricity, heat and cool buildings, and transport people and products. There are various ways to measure energy use. Electricity use can be measured in kilowatt hours, transportation fuel use can be expressed in gallons of gas, and heating fuel use can be tracked be tons of wood pellets, gallons of propane; depending on what kind of fuel is measured. A common measure of usage that can be calculated for any type of energy fuel is a British Thermal Unit (BTU) *1. While British Thermal Units (BTUs) may be harder to conceptualize in terms of the volume of energy fuel used, they allow for usage comparisons across all energy sectors; i.e. electricity, transportation and heating.

Annually, Elmore uses approximately 128,557 million BTUs of energy *2. Of that, electricity accounts for about 7% (about 8.8 million BTUs), transportation for 50% (about 64.1 million BTUs) and space heating for 43% (about 55.7 million BTUs) (see **Figure 1**).

Figure 1: Annual Energy Consumption in Elmore (129K million British Thermal Units)
Source: Lamoille County Planning Commission



*1 The British thermal unit (Btu or BTU) is a traditional unit of heat; it is defined as the amount of heat required to raise the temperature of one *pound* of water by one degree Fahrenheit. It is part of the British *Imperial* system of units.

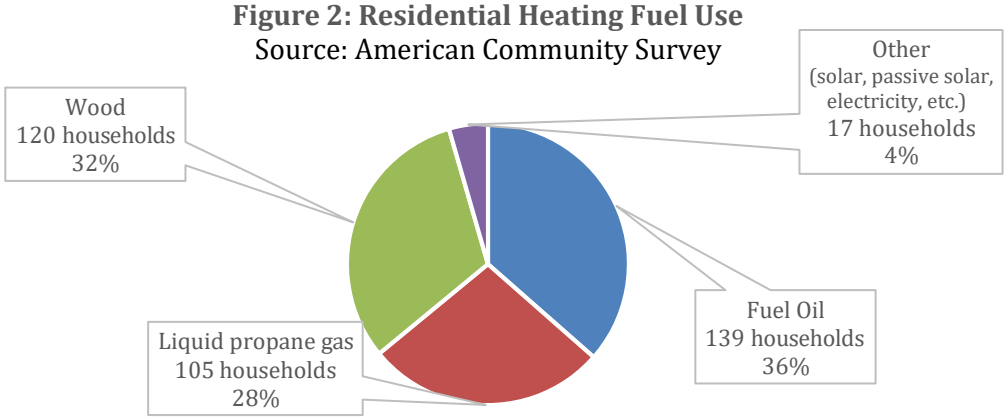
*2 Estimates of current energy usage are derived from data available from the American Community Survey, the Vermont Agency of Transportation, VT Department of Labor, Efficiency Vermont and the VT Department of Public Service. Lamoille County Planning Commission converted these estimates to British Thermal Units.

In 2016, according to the calculations provided by Lamoille County Planning Commission and based on 2016 energy prices, the estimated average household spending on energy in Elmore was $6,993 and split as follows: transportation $2,937 (43%), heating $2,797 (40%) and electricity $1,188 (17%). *3
The Municipality (Town Clerks Office, Town Hall, Elmore School, Highway Dept. and Fire Dept.) in 2016 spent $16,112 on heat and electricity and $94,989 on transportation (diesel equipment, snow-plows, dump-trucks, fire trucks, and some gas-powered town vehicles).

Space Heating Energy Use

The highest need for space heating fuels comes from residences which utilize about 92% of space heating energy used in Elmore. Commercial and municipal establishments utilize the remaining 8%. As far as specific types of heating fuels used by residences, according to American Community Survey data from 2011-2015, 32% of households heat their homes by wood, 36% by fuel oil, 28% by propane, and 4% from other sources (electricity, solar etc.) See **Figure 2**. Commercial and municipal establishments use fuel oil, propane, electricity and wood.

Figure 2: Residential Heating Fuel Use
Source: American Community Survey



Electricity Use

Efficiency Vermont reports that in 2016 Elmore's residents and businesses used 2.6 million kilowatt hours (KWh) of electricity. Residences used about 87% of electricity, and businesses and municipal buildings remaining 13% of electricity. Average annual residential usage was 4,988 KWh, well below Lamoille County average of 6,733 KWh and lowest in the county.

Transportation Energy Use

Most people in Elmore drive out of town to work and shop. There is no public transportation that currently serves Elmore due to lack of demand and currently only two residents own electric cars. The church parking lot and area around the town hall serve as an unofficial park and ride although there is no data on how many people use it. Currently, approximately 777 vehicles in Elmore drive

*3 Energy prices are derived from information available from US Energy Information Administration.

11,655,000 miles each year and burn 531,468 gallons of gasoline. (Sources: American Community Survey, Vermont Agency of Transportation).

Targets

Overview

To model pathways and toward reaching the state energy goal, the Vermont Energy Investment Corporation used a program called the Long-Range Energy Alternatives Planning model (LEAP) to project future energy demand in the state, regions and towns. LEAP provided a potential scenario by which the Town of Elmore could achieve the states goals. This scenario includes very specific efficiency, fuel switching and energy generation targets. LEAP modeling baseline estimates and future projections are presented in Tables 1 through 9 below.

	2015	2025	2035	2050
Heating	11%	22%	36%	73%
Transportation	9%	21%	38%	86%
Electricity	44%	64	78%	94%

Table 1: Use of Renewable Fuels in Heating, Electricity and Transportation Sectors (modeled by LEAP)

Thermal

Residential Targets

Currently 32% of homes in Elmore are heated with wood. LEAP envisions a gradual shift in the use of wood heat in existing homes as well as in new construction is recommended. However, there is great potential for newer technologies such as cold climate heat pumps and liquid bio fuels to increase as well. LEAP model provides space heating targets for two particular renewable sources - wood systems and heat pumps (see Tables 2 and 3).

	2015	2025	2035	2050
# Households	**120**	**163**	**195**	**300**
% Households	**32%**	**41%**	**47%**	**66%**

Table 2: Homes Heated with Wood (modeled by LEAP)

	2015	2025	2035	2050
# Households	**2**	**12**	**30**	**65**
% Households	**0%**	**3%**	**7%**	**14%**

Table 3: Homes Heated with Cold Climate Heat Pumps (modeled by LEAP)

The importance of thermal efficiency and conservation is stated repeatedly in Elmore's Bylaws. Intelligent siting and design should be the first consideration of anyone looking to build in Elmore. The town should continue to place a strong emphasis on energy efficient building, of both new constructions and renovations, by encouraging builders comply with Vermont Residential Building Energy Standards (RBES). Energy efficient building can be an intimidating concept to a

homeowner/builder, Elmore will distribute information about technical assistance and financial incentive programs available through Efficiency Vermont at the time that permits are issued.

Weatherization of existing homes will be strongly encouraged by the town. Currently only 5% of homes in Elmore are considered weatherized (see Table 4), efforts will be made to inform residents about the benefits of home weatherization, (health, comfort, energy and financial savings,) as well as financial assistance programs that exist.

	2015	2025	2035	2050
# Households	**19**	**83**	**202**	**452**
% Households	**5%**	**21%**	**49%**	**100%**

Table 4: Homes Weatherized (modeled by LEAP)

The State of Vermont provides financial assistance to low income Vermonters for home weatherization through its Weatherization Program. For more information visit: www.dcf.vermont.gov/benefits/weatherization

Municipal and Commercial Targets

Elmore is a small rural town with only six municipal buildings and few commercial businesses. The majority of businesses are considered cottage industries and therefore for the purpose of this plan are considered residential.

Currently all of the Town's municipal buildings are heated with fuel oil. Research will be conducted into the most appropriate renewable replacement when the lifespan of the current equipment reaches the end of its lifecycle.. LEAP has forecasted an increased use of renewables for heating of commercial establishments. Specific projections were calculated for increases in the use of wood(see Table 5). To support these projections, the Town would consider the use of wood when doing the research of replacing its aging fuel oil heating systems.

Elmore encourages energy efficiency and conservation in all commercial and municipal buildings. All new construction and renovations are encouraged to comply with the Vermont Commercial Building Energy Standards (CBES). Along with the municipal buildings, all commercial building owners are encouraged to weatherize their buildings and are informed of the benefits. Elmore will lead by example by conducting energy audits on its buildings and make adoptions based on appropriate cost-based analysis. With this example, Elmore plans on achieving the projections set forth by the LEAP models of weatherized commercial establishments (see Table 6

	2015	2025	2035	2050
% of establishments	**9%**	**12%**	**17%**	**25%**

Table 5: Commercial Establishments Heated with Wood (modeled by LEAP)

	2015	2025	2035	2050
% of establishments	**7%**	**16%**	**31%**	**61%**

Table 6: Commercial Establishments Weatherized (modeled by LEAP)

Electricity

Targets

Over the past few years, as awareness to the benefits of new technology grew, residents and businesses took steps to conserve energy and implement energy efficiency measures. Efficiency

Vermont reports that in 2016, electric and thermal efficiency measures installed by Efficiency Vermont in Elmore resulted in annual energy cost savings of about $20,000 to homes and $4,500 to businesses. During 2016, Efficiency Vermont worked on 35 residential projects and 28 business projects. (Note: Efficiency Vermont defines a "project" as a collection of one or more energy efficient measures that have been implemented at a customer's physical location.) For businesses customers, energy efficiency measures focused on the installation of efficient lighting hardwire fixtures and purchases of efficient light bulbs/lamps. For residential customers, improvements included installations of efficient lighting systems efficiencies, and purchases of more efficient electronic equipment, cooking ranges, refrigerators, washers and driers. Residences also implemented thermal shell weatherization improvements, replaced space heating equipment and introduced motor control measures to improve efficiency of existing motors, pumps and fans. The LEAP forecast for adoption of upgraded electric appliances by Elmore households is outlined in Table 7.

	2015	2025	2035	2050
# Households	**30**	**143**	**247**	**411**
% Households	**8%**	**36%**	**60%**	**91%**

Table 7: Electricity Efficiency Target: Houses Equipped with Upgraded Appliances (modeled by LEAP)

In order to reach the renewable energy generation LEAP target for 2050, Elmore will need to produce 9,722 MWh more than the existing residential systems are currently producing (see Table 8). Due to the emphasis on minimizing the development of land outlined in the town plan, Elmore would like to see the majority of this energy come from smaller commercial and residential systems if possible.

One renewable alternative that Elmore would like to research is the implementation of battery storage of renewable energy. In order to prevent the development of large scale renewable generation, Elmore will research the feasibility of developing an energy storage facility that would purchase its power directly from renewable resources from existing generation facilities during off-peak hours. The town would then be able to distribute the power to its residents at high-demand times resulting in a higher percentage of the energy use coming from renewable resources.

	2016	2025	2035	2050
Total Output (MWh)	**190**	**2,764**	**5,623**	**9,912**

Table 8: Renewable Electricity Generation (Current output estimated based on VT energy dashboard data. Future estimates modeled by LEAP)

Although the development of larger scale renewable energy sites may be necessary to reach this goal, a strong emphasis will remain on conservation. Switching to efficient products and equipment, as well as simple awareness and reduction of excessive use should be encouraged.

Transportation

Targets

Over the years Elmore will encourage its residents to switch to driving electric cars and biodiesel fuel cars, as the technology advances not only with the prices for these technologies be

reduced, but the cost benefits will be more apparent over time. However, the economic reality of buying a new electric car stands in the way of most Elmore residents at this time and to date only a handful of residents drive electric vehicles. Tables below show LEAP projections for the use of electric and biodiesel fuel cars (see Tables 9 and 10.) As the use of electric cars increases Elmore will consider installing an electric charging station in the village, and/or at the state park.

	2015	2025	2035	2050
# Electric Vehicles	**2**	**88**	**324**	**791**
% Electric Vehicles	**0%**	**11%**	**39%**	**89%**

Table 9: Use of Passenger Electric Vehicles (modeled by LEAP)

	2015	2025	2035	2050
# Biodiesel Vehicles	**2**	**12**	**25**	**46**
% Biodiesel Vehicles	**0%**	**1.5%**	**3%**	**5%**

Table 10: Use of Passenger Biodiesel Fuel Vehicles (modeled by LEAP)

Elmore's municipal trucks and heavy equipment rely on petroleum-based fuels. In 2016, the prices of petroleum-based fuels were relatively low. Over time, the prices for petroleum-based fuels are expected to rise and the costs of renewable fuels for trucks and heavy equipment is projected to become more competitive in the marketplace. Therefore, when a Town vehicle or piece of equipment is replaced, the Town will give a careful consideration to fuel economy and energy efficiency.

Fuel switching will not be the only method Elmore will use in reaching its targets. Elmore intends to actively work to reduce the number of miles driven, not only by its residents, but also the miles accumulated by the delivery of goods and services required by the town and its residents. In order to do this, Elmore intends to support local businesses and food producers whenever possible to help to reduce our carbon foot print as well as boost the local economy.

Current and Future Energy Sources and Generation

Existing Energy Generation

Today, electricity generated in Elmore comes from solar and wind generation facilities. At the close of 2017, Elmore was home to 8 solar sites with total generation capacity of 128 kilowatts (KW) and two wind sites with combined generation capacity of 19 KW. Total estimated production from these facilities is 190,267 kilowatt hours (KWh) *4.

All sites but one are small-scale installations with generation capacity between 3-14 KW. One site is larger, with generation capacity of approximately 80 KW.

*4 Generation capacity data is based on information available via Community Energy Dashboard. As new facilities are added, the Energy Dashboard gets periodically updated; *http://www.vtenergydashboard.org* . The generation data here is from November 2017. Estimated production was determined as follows: (For solar: existing generation capacity x 8760 hours per year x solar capacity factor of 0.14; For wind: existing generation capacity x 8760 hours per year x residential wind capacity factor of 0.2)

Future Energy Generation

The projected energy generation target for 2050 for Elmore – derived from the LEAP model - is to build generation facilities with total energy output of 9,722,000 kilowatt hours by 2050.

The Solar and Wind Resource Maps show areas with energy generation potential as based on presence of the resource (sun or wind) and environmental attributes of the resource areas. "Prime" areas are lands with available resource and no environmental constraints. "Secondary" areas also have the resource but possess environmental characteristics that may pose an obstacle to development, based on statewide regulations or designated critical resource.

In addition to the Solar and Wind Resource Maps developed on the basis of statewide regulations, Elmore Planning Commission identified local preferences to be considered in the planning of renewable energy facilities. These local preferences are incorporated into the Solar and Wind Resource maps.

The maps can be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. They should not, however, take the place of site-specific investigation for a proposed facility, and should therefore not be thought of as "siting maps."

In addition to utilizing Wind and Solar to achieve the Towns goals of achieving the 90% goal by 2050, Elmore will be researching the feasibility of installing energy storage facilities which would store renewable energy during off-peak hours to be redistributed during high demand times which could significantly increase the renewable energy output and usage within the Town.

Targets

Solar Generation Potential

The initial mapping analysis performed by Lamoille County Planning Commission (LCPC) identified that there are there are 4,367 acres of land in Elmore that are potentially suitable for solar power generation. Of this number, 137 acres (about 3%) are lands with prime solar potential and 4,230 acres (about 97%) are lands with secondary solar potential.

The siting guidelines in this plan prohibit commercial and utility scale solar generation in certain portions of Elmore (see areas where renewable energy generation is unsuitable). According to the GIS analysis performed by LCPC, the remaining areas of town where solar generation is not restricted contain 2,487 acres of land (114 prime acres and 2,373 secondary) with potential for solar generation. *5. See Map 8 for areas potentially available for solar.

Based on LCPC's calculations, to reach the LEAP output levels via only ground-mounted solar facilities, Elmore would need to dedicate about 60 acres of land to this pursuit. This plan finds it feasible that Elmore could support the estimated 60 acres of land, and the Town is committed to working with future energy developers so long as certain guidelines and constraints are followed.

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*5 Energy generation potential from lands potentially suitable for solar generation is 311 MW and 381,410 MWh. Source: Department of Public Service methodology, page 15 of http://publicservice.vermont.gov/sites/dps/files/documents/Pubs_Plans_Reports/Act_174/Regional%20Guidance_Final.pdf

To reduce the amount of land needed for land based solar systems to reach the LEAP goal, Elmore encourages residential rooftop installations. While rooftop solar can supplement land based solar installations, rooftop solar cannot fully replace the land based installation needs to meet the 2050 renewable energy output target. Elmore estimates that if 25% of its households installed rooftop solar facilities with an average capacity of 4 KW per household, the resulting generation output would be about 467,258 KWh which is slightly less than 5% of the 90% by 2050 energy generation target.

The siting of any solar installation must take into consideration the extreme importance that Elmore places on maintaining large tracts of unfragmented forest, wildlife corridors, existing farmland and prime agricultural soils. For the health and well-being of future generations these lands must be preserved. This statement is consistent throughout the Town's Plan and Bylaws and will be a major factor in the appropriate siting of solar installations in Elmore. See map for detailed overlay of Local Constraints. Additionally, the guidelines listed later in this chapter illustrate the process that will assist developers in evaluating the feasibility of solar projects in Elmore.

Wind Generation Potential

The initial mapping analysis performed by the LCPC identified 1,475 acres of lands potentially suitable for wind energy generation. Of this number, 17 acres (about 1%) are lands with prime wind potential. Lands with secondary wind potential total to 1,458 acres (about 99%).

Elmore's policy on wind development is consistent with that of solar. The siting of any installation must take into consideration the extreme importance that Elmore places on maintaining large tracts of unfragmented forest, wildlife corridors, existing farmland and prime agricultural soils. And under no circumstances should the Worcester Range be considered for development.

Going forward, residential and commercial scale systems are encouraged provided they follow the siting guidelines below. The siting guidelines prohibit commercial and utility scale wind generation in certain portions of Elmore. According to the GIS analysis performed by Lamoille County Planning Commission, the remaining areas of town where wind based energy generation is not restricted contain 342 acres of land (11 prime and 331 secondary acres) with potential for wind generation. *6. See Map 9 for areas potentially available for wind generation.

Hydro Generation Potential

Elmore may have a potential to produce energy from small or micro hydroelectric facilities. A hydroelectric renewable generation potential map developed by the Lamoille County Planning Commission identifies the Lake Elmore Dam as having 10-49 KW of undeveloped generation potential. Additional potential may exist along Elmore's rivers and streams. The feasibility of harnessing energy via hydroelectric projects may be questionable as potential projects will face a

*6 Energy generation potential from lands potentially suitable for wind generation is 86 MW and 263,676 MWh. Source: VT Department of Public Service methodology, page 16 of: http://publicservice.vermont.gov/sites/dps/files/documents/Pubs_Plans_Reports/Act_174/Regional%20Guidance_Final.pdf

wide range of environmental, economic, and permitting challenges. Hydroelectric power is the only renewable energy source required to gain approval from numerous state and federal agencies which makes the permitting process very complex and costly. *7

Biomass

Elmore's farms should consider the use of methane digesters as a way of producing energy.

Energy Storage Facility

Elmore will research the feasibility of installing an energy storage facility. The use of an energy storage facility will allow Elmore to contract with other renewable energy resources, such as Kingdom Community Wind, to purchase renewable power during off-peak hours. This renewable energy will in turn be used as a generation facility for the Town of Elmore to generate renewable energy for the town. The study will need to be conducted in cooperation with the local distribution provider of Elmore to determine whether or not there is potential for building the transmission network needed for such an undertaking. The long-term potential of this project will greatly increase the percentage of renewable energy used by the Town of Elmore. In turn, the study of this project will greatly increase the awareness of the goals set forth by the State to the residents which will help encourage the residents to help achieve the goal of 90% renewable energy usage by 2050.

Siting Guidelines

It is the responsibility of the developer to complete this process, only when presented with a detailed analysis of these constraints will Elmore begin to consider a project.

Areas Preferred for Renewable Energy Development

Areas preferred for renewable energy development are the areas identified as "preferred" in Act 174. In Elmore, relevant examples of Act 174 preferred sites include:

- Parking lots
- Rooftop installations

Areas Unsuitable for Renewable Energy Development

There are certain areas in Elmore where the development of renewable energy generation facilities is not supported because such development would be inconsistent with land use goals for these areas. The land use goals are outlined in the Land Use Chapter of this plan and detailed in the Zoning Bylaws.

Areas where all types and sizes of renewable energy generators are prohibited include:

- Forest Reserve District above 1500'. The Forest District encompasses Mt. Elmore and the Worcester Mountain Range. Elmore's land use goals for this area are to maintain large tracts of unfragmented forests to protect flood hazard areas, shorelines, steep slopes and sensitive habitats. (pp 67, 68 and .70 of the plan)

*7 The Undeveloped Hydroelectric Potential of Vermont, http://www.communityhydro.biz/

Areas where commercial and utility scale renewable energy development is prohibited include:

- Forest Reserve District above 1200'. The Forest District encompasses Mt. Elmore and the Worcester Mountain Range. Elmore's land use goals for this area are to maintain large tracts of unfragmented forests to protect flood hazard areas, shorelines, steep slopes and sensitive habitats. (pp 67, 68 and .70 of the plan)
- Remote Area Overlay District. This district includes all lands east of VT Route 12 and south of Lacasse Road, Symonds Mill Road, or Brown Hill Road (respectively) that are ¼ mile or more from a State Highway or Class II or III Town Road. Future land uses in the Rural East District include agriculture, forestry, home based occupations, small-scale hospitality businesses and low density residential development. (pp. 68-69 of the plan). Remote Area Overlay is subject to additional standards that aim to protect surface waters, wetlands, wildlife habitat and the habitat's travel corridors as well as forestland.
- Part of Undeveloped Shoreland District. The Undeveloped Shoreland District include all lands which are located within 500 feet of the shorelines of Little Elmore Pond, Little Pond, and Hardwood Pond. This plan does not support commercial and utility scale energy projects within 100 feet from shorelands.
- Part of Developed Shoreland District. The Developed Shoreland District shall include all lands which are located within 500 feet of the shorelines of Lake Elmore. This plan does not support utility scale and ground mounted facilities within 100' from shore. Roof mounted facilities are supported.

Areas where utility scale renewable energy development is prohibited include:

- Agricultural Land in active use. Existing farms are in the Rural East and Rural West districts. Elmore wishes to see farming continue and therefore utility scale renewable projects on the actively farmed land are not supported.
- Lake Elmore Historic Districts. Utility-scale projects are not supported due to Elmore's interest to retain the historic character of the districts and devote these areas to higher density, small scale development (p. 68 of the plan)

Areas Potentially Suitable for Renewable Energy Development:

The Solar and Wind Resource Maps show areas with energy generation potential as based on presence of the resource (sun or wind) and environmental attributes of the resource areas. "Prime" areas are lands no environmental constraints. "Secondary" areas have possible environmental constraints that may pose a barrier to the development of renewable energy facilities, based on statewide regulations. In some cases, these constraints may prohibit the development and in others the development may be suitable. The secondary areas shown on the Solar and Wind Resource Maps include the following environmental constraints:

- Federal Emergency Management Agency Special Flood Hazard Areas
- Prime Agricultural Soils
- Act 250 Agricultural Soil Mitigation areas
- Protected Lands (State Fee Lands and Private Conservation Lands)
- Deer Wintering
- Hydric Soils
- Vermont Agency of Natural Resources Conservation Design Highest Priority Forest Blocks

Areas Likely Unsuitable for Renewable Energy Development

Areas likely unsuitable for renewable energy development include areas with insufficient resource potential (sun or wind) and areas with environmental constraints that signal likely, though not absolute unsuitability for development based on statewide or local regulations or designated critical resource. The solar and wind resource maps, name these areas as "solar likely unsuitable" or "wind likely unsuitable". The environmental constraints include:

- Federal Emergency Management Agency identified floodways
- River Corridor Areas as identified by the Vermont Department of Environmental Conservation
- Class 1 and 2 Wetlands as noted in Vermont State Wetlands Inventory or advisory layers
- Vernal Pools (confirmed and unconfirmed)
- State-significant Natural Communities and Rare, Threatened, and Endangered Species
- Wilderness Areas, including National Wilderness Areas

Goals Objectives, Policies and Recommendations

Goals:

- Promote the use of alternative fuel vehicles to the residents and businesses of Elmore.
- Research the feasibility of rideshare, bus, or any other form of mass transit.
- Expand infrastructure for electric vehicles.
- Encourage sharing space on delivery vehicles in order to reduce the energy used for the transportation of goods and services (i.e. food, firewood, landscapers, plumbers).
- Incorporate renewable energy principles into the plan.
- Support and promote the organization of community workshops and distribute information on home and business weatherization.
- Create an Elmore Energy Committee.

Objectives:

- Develop a local service directory to promote coordination amongst local business and food producers.
- Support the efforts of Efficiency Vermont to promote the use of energy efficient products and appliances.
- Pursue conservation projects within the Elmore footprint.

Policies:

- Elmore recognizes the importance of increasing the use of renewables.
- When considering updating Elmore infrastructure and equipment, Elmore will explore the feasibility/affordability of upgrading to the most energy efficient options.
- Influence behavioral changes to reduce energy consumption. (i.e. distribute free clothes lines at community events, provide information on incentives for energy saving)
- Encourage the installation of residential and commercial scale renewable energy generation systems.
- Continue to expand on the use of renewable energy technologies in residential and commercial development through the Town's Zoning Bylaws and Subdivision Regulations.

Recommendations:

- Encourage the use of electric cars by inviting dealerships to bring cars to community events such as the Fire Dept. Chicken BBQ.
- Work with Green Mountain Transit Authority (GMTA) to determine the feasibility of a Morrisville to Montpelier bus route. Build town support for public transportation.
- Create and promote a Community Carpool forum through the town website and Front Porch Forum to connect people with compatible routes such as: Elmore to Copley Hospital, Elmore to Stowe and Elmore to Montpelier.
- Consider installing an electric charging station in the village and/or at the state park. This would also increase revenue as people waiting for their car to charge would likely shop at the Elmore Store.
- Rebuild and replace the 1930s Town Garage and Highway Maintenance building.
- Begin a feasibility study of creating an energy storage facility to harvest renewable energy during off-peak times.

- Encourage the use of the town website as a community forum and information resource.
- Provide information on energy efficient building design and siting when permits are issued.
- Encourage use of wood stoves, pellet burning stoves, and heat pumps in new construction by providing information at the Town Clerks Office and on the website.
- Promote programs that provide financial assistance to low income residents for building and weatherization projects.
- Promote responsible logging practices to protect forest health as the projected demand for wood increases.
- Investigate if the existing Lake Elmore dam is still generating electricity and determine who is responsible for maintaining the dam in the future.

CHAPTER 9: Housing element

Housing Demographics

Overview

Single-family units are the predominate form of housing in Elmore. A breakdown of housing from the 2012 and 2018 Grand Lists records is as follows:

Mobile homes without land	4	3
Mobile homes with land	14	10
Vacation homes on 6 or less acres	106	105
Vacation homes on 6+ acres	58	57
Operating farms	8	6

Source : Grand List 2017

According to the latest U.S. Census Bureau, in 2010 467 (90.8%) out of 515 total housing units in Elmore were single-family dwellings. While the population from 2000 to 2010 only increased by 6%, the number of housing units increased by 27%. Additionally, during the same time period, the number of vacation units increased from 145 to 159. While the total number of housing units in Elmore has increased, the vacancy rate has raised from 27% in 2000 to 32.6% in 2010. Out of the 515 housing units, approximately 177 are classified as vacant. The rise in vacancy rates may largely be attributed to the increase in vacation homes built over the past 12 years. Overall, 317 housing units are owner-occupied while 159 are seasonal, and only 49 are renter occupied.

Median Housing Costs

According to the 2016 American Community Survey, the median value of homes in Elmore is $271,900. This figure is for property value, whether or not it is for sale. The figures on the table 4 below reflect actual sale prices of houses in Elmore sold in 2012 compared to sale prices of 2016

Average sale prices in Elmore for 2012

House Type	Sale Price	Number of Valid Sales
House on 6 acres or less	214,500	3
House on 6 acres or more	312,500	2
Open Land/Woodland	32,600	1
Vacation homes 6 acres or less	319,750	4

Average sale price in Elmore for 2016

House Type	Sale Price	Number of Valid Sales
House on 6 acres or less	331,666	3
House on 6 acres or more	225,333	3
Open land/Woodland	48,250	4

Table 4: Average Sales Prices, Source: Elmore Grand List 2017

The Department of Housing and Community Affairs housing policy states that housing is affordable when the cost of housing does not exceed 30% of a household's income. The affordability figure for Lamoille County is $1,044.68 per month ($52,232 median household income; $41,748.56 is 80% of Lamoille County median income; $12,535.68 is 30% of the 80% figure; divided by 12 months). During the 2010 Census, figures for homeowners were calculated for Elmore. Median costs were $1,209 per month for those with a mortgage and $500 for those without a mortgage. By the definition above, Elmore's housing is not considered affordable to the average county resident. When residents were asked about affordability during the 2010 Census, 21.4% of residents had mortgage payments that were not affordable.

Since 2000, regionally housing affordability has increasingly become a major concern for Lamoille County residents and prospective buyers. Incomes in Lamoille County increased by only 13% between the two census counts (2000- 2010) while housing values rose nearly 50%. In comparison, a similar scenario has played out in the Town of Elmore between 2000 and 2010. Income for the average Elmore resident increased by 16% while housing values rose by over 50%.

Housing for All Ages

As a whole Vermont is aging, and Elmore is not isolated from that trend. As residents age, many may wish to remain in Elmore, but it will become more difficult to take care of large, rural properties. At the same time, housing costs may be prohibitively expensive for younger families and individuals seeking their first home. While Elmore lacks the infrastructure to support large senior housing or affordable housing developments, there are several strategies to address this issue that are in keeping with Elmore's rural character.

Accessory Dwellings

Based on State Statute, homeowners are allowed to add accessory dwellings (frequently referred to as "in-law apartments") to any single-family home. Accessory dwellings are a key component of allowing older residents to "age-in-place." By adding an accessory dwelling, homeowners can provide space within their home to parents or adult children, or supplement their annual earnings with rental income. Accessory dwellings represent an opportunity to create additional housing in Elmore without developing valuable natural areas.

HomeShare

HomeShare Vermont assists elders and persons with disabilities to live independently in their own home by bringing them together with persons who are seeking affordable housing, and/or, care giving opportunities. HomeShare conducts background checks and monitors matches to ensure safety of those involved. HomeShare expands housing opportunities while maintaining open space, farmland, forests, and other critical environmental areas. For more information visit http://homesharevermont.org/.

Goals Objectives, Policies and Recommendations

Goals:

- Encourage the planning of housing which preserves the rural character of Elmore, conserves energy, provides for efficient delivery of public services, minimizes the impact on forestry and wildlife, all while accommodating a variety of income levels, ages, and housing preferences.

Objectives:

- Have a variety of housing types to meet the various needs of its residents, including vacation homes, single-family, two-family, mobile homes, and apartments.
- Ensure a pattern of residential growth compatible with Elmore's rural character that does not outstrip the Town's ability to provide necessary services.
- Residents of Elmore should have the opportunity to find affordable housing, for purchase or rent in regards to the Department of Housing and Community Affairs housing policy stating that housing is affordable when the cost of housing does not exceed 30% of a household's income.

Policies*:*

- Accessory Dwellings are encouraged as they provide needed income for the homeowner and small apartments for residents living alone.
- Vacation homes are encouraged in town where appropriate.
- Sites for manufactured homes are not differentiated from site-built homes in the local permitting process.
- Affordable housing should minimize long-term living costs through high quality design, efficient construction, energy efficiency, and proximity to employment.
- Encourage land use patterns that are inherently more affordable by nature of cost associated with construction (e.g. shorter access roads, smaller lots, proximity to utilities).
- New residential development should be strategically located to protect important natural resources and critical habitat.
- New residential development should be located in areas where existing infrastructure and roads are in place.
- In order to accomplish the policies listed above, new residential development shall be strictly limited at elevations above 1,300 feet and prohibited at elevations above 1,500 feet.

Recommendations:

- Monitor development trends and upcoming US Census data in various areas of town and neighboring communities.
- Work to promote HomeSharing options among residents.
- Work with the Lamoille Housing Partnership to find ways to ensure that working residents have housing they can afford according to the
- Promote the option of utilizing Planned Unit Developments to cluster development on

the least sensitive portion of a property.
- Consider developing mechanisms to allow “transfers of development rights” from areas with important natural resources to areas that are more suitable for development.
- Consider adding Conservation subdivisions language to the bylaws

CHAPTER 10: Statement of Regional Impact

How the Elmore Town Plan Relates to Adjecet Municipalities and the Regional Plan

Wolcott: Wolcott shares the full length of Elmore's northeast border and the two are connected by several roads and trails. These areas are primarily rural residential in use and some are considered important north south habitat connectors.

Hardwick: Hardwick shares Elmore's eastern corner. Kate Brook Road, the only road that connects the two, is sometimes used by residents to access Brown Hill during inclement weather. Hardwick also functions as an alternative economic hub to Morristown.

Woodbury: Woodbury shares the full length of Elmore's southeast border, this area is mostly undeveloped and no maintained roads connect the towns except for Woodbury Mountain Road that connects to a small area of Woodbury otherwise isolated for the rest of the town, there are several recreational trails that run between this and Eagle Ledge Road in Elmore. This area is primarily used to recreation and timber and is an important piece of the overall regional forest block.

Calais: Elmore touches Calais on its southern corner in undeveloped sections of both towns

Worchester: Worchester shares the full length of Elmore's southwest border. They are connected by Route 12. This large tract of undeveloped land is considered to be of critical importance as an interioior forest and connectivity block in the region. For this reason Elmore created the Rural Area Overlay zoning district to minimize future development and the Vermont Land Trust has been working with the owners of some of the largest parcles to conserve them.

Stowe: Stowe contacts Elmore's western corner only but has a greater effect on Elmore then most of its other neighbors as it is a major economic hub in the region and many residents commute there for work and recreation. The towns are connected by the Elmore Mountain Road which, with views of Mt Mansfield and easy access to Stowe and Morristown villages makes it a desirable location. This has caused land prices and development activity to increase in this area in relation to the rest of Elmore. Residential development pressure stemming from Stowe was the reason Elmore advocated for a 7 acre minimum lot size in the rural west district and a general disregard by some developers for Elmore's zoning bylaws has lead to an amendment of the bylaws meant strengthen the Towns ability to take action against the perpetrators.

Morristown: Morristown shares the full length of Elmore's northwest border and is also a major economic driver in the region. The two are connected primarily by Route 12 and Elmore Mountain Road which has numerous side roads connecting it to Randolf Road in Morristown. This area of Morristown is primarily residential with 2 acre minimum lot size. Currently some of the farms in this area are being subdivided and there is a moderate amount of developmental pressure.

The Regional Plan: The Elmore Town Plan falls within the parameters of the Lamoille County Regional Plan.

CHAPTER 11: Flood Resilience Plan

Elmore has been proactive in planning for flood resiliency, examples of this can be found throughout this plan's transportation and land use chapters as well as the Town's bylaws. In 2017 Elmore created Flood Hazard regulations intended to protect river corridors and special flood hazard areas and to ensure that development in these areas is done in a reasonably safe manner. Also in 2017 Elmore developed a stand alone Local Hazard Mitigation Plan which will assist in recognizing possible hazards in the community, (many from flooding), and in developing strategies to address them. Elmore should continue to maintain and strengthen these documents into the future to insure the health and safety of its residents and water resources.

CHAPTER 12: Implementation of Recommendations

Overview

The following list of goals which have been taken from all of the different chapters of this plan are designed to guide growth in the Town of Elmore in a manner which will achieve its overarching goals and community vision statement listed in Chapter 1 of this plan. These goals address strategies to maintain and protect the town's rural character, scenic beauty, historic resources, productive working landscapes, and the quality of natural habitats and water resources. Greater detail of the goals and recommendations are provided within each individual chapter.

In order to achieve these goals, the Planning Commission will work with the residents of Elmore and the various governing bodies in Elmore and surrounding communities to determine which goals will be set at the highest priority. Once the higher priority goals have been identified, time and resources will be allocated in order to achieve the goals.

Forestland

Goal:

- Retain, conserve, and protect the existing forest; improve the ecology of the forest.
- Maintain and support current low impact public and private recreational land use.

Water Resources

Goals:

- To control the spread of invasive nuisance aquatic plants and animals in Lake Elmore and other bodies of water.
- To maintain the existence of the lake through the dam with the goal being to research ownership and long-term maintenance of the dam.

Agriculture

Goal:

- To improve and expand the use of existing agricultural lands.

Residences

Goal:

- To encourage responsible residential development where appropriate.

Commercial

Goal:

- To encourage development in areas where the town economically and environmentally can afford it, (i.e. in areas which have access to Class 1, 2, and 3 roads, have power, have suitable soils, and do not have excessive slopes).

- To encourage commercial development which will maintain the rural character of Elmore.

Industrial

Goal:

- To allow industrial development which preserves the environment and rural character of Elmore

Floodplains and Wetlands

Goal:

- To protect the safety of residents from flood and erosion hazards, and to maintain water quality.

Transportation

Goals:

- To provide a transportation network that is efficient, safe, resilient and well maintained for all forms of transportation.
- To provide a transportation network that does not adversely affect water quality or further habitat fragmentation.
- To reduce the amount of energy used in transportation by Elmore's residents.

Utility and Facility Plan

Goal:

- To ensure adequate public facilities and services are available to protect and enhance the lives of residents and visitors of Elmore.

Historical & Archaeological Resources

Goal:

- To record, identify and preserve Elmore's heritage (town history, archeological records & resources, and structures & districts of historical value) for the enjoyment of current and future generations.

Education Plan

Goals:

- To continue Elmore's history of providing access to high quality education to all children without placing an undue burden on taxpayers.
- To maintain a strong and active school board with participation from the community to guide them.

Economic Development Plan

Goals:

- Explore options in the renewable energy industry that would add new industry to Elmore.

- Manage growth and economic development in order to attract and welcome visitors, new residents, and businesses with opportunities while preserving the rural scenic character.

Energy Plan

Goals:

- Promote the use of alternative fuel vehicles to the residents and businesses of Elmore.
- Research the feasibility of rideshare, bus, or any other form of mass transit.
- Expand infrastructure for electric vehicles.
- Encourage sharing space on delivery vehicles in order to reduce the energy used for the transportation of goods and services (i.e. food, firewood, landscapers, plumbers).
- Incorporate renewable energy principles into the plan.
- Support and promote the organization of community workshops and distribute information on home and business weatherization.
- Create an Elmore Energy Committee.

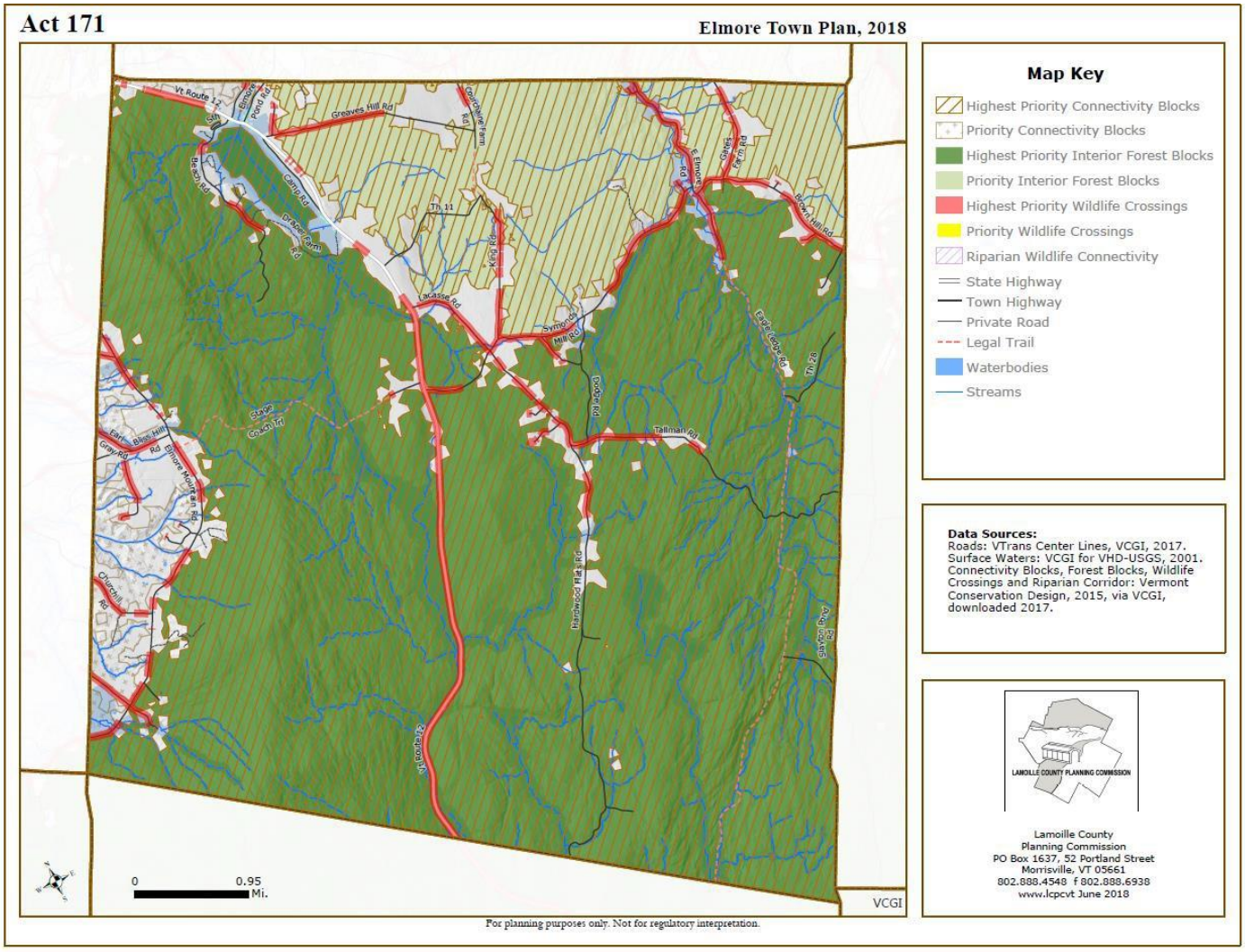
Housing element

Goal:

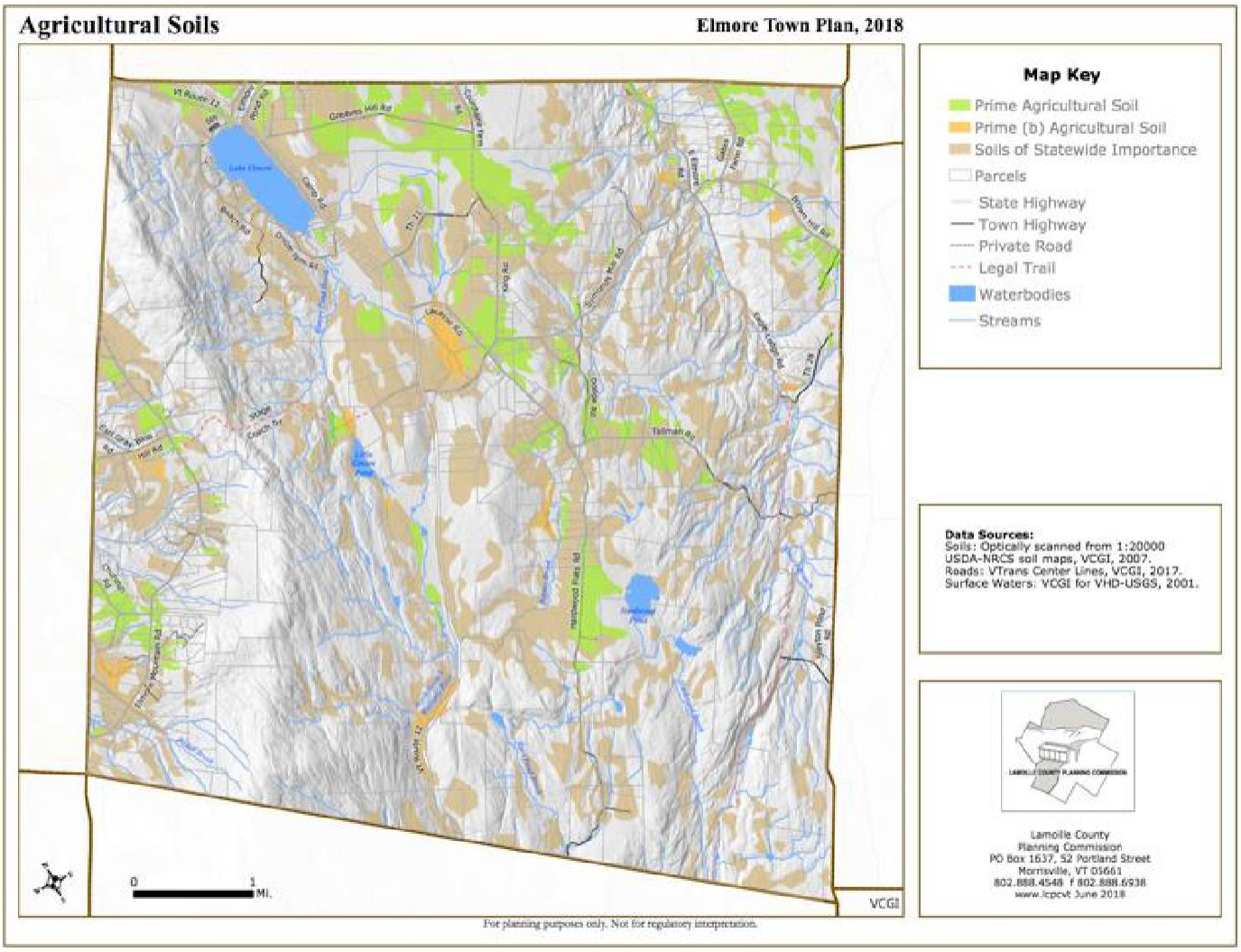
- Encourage the planning of housing which preserves the rural character of Elmore, conserves energy, provides for efficient delivery of public services, minimizes the impact on forestry and wildlife, all while accommodating a variety of income levels, ages, and housing preferences.

Maps

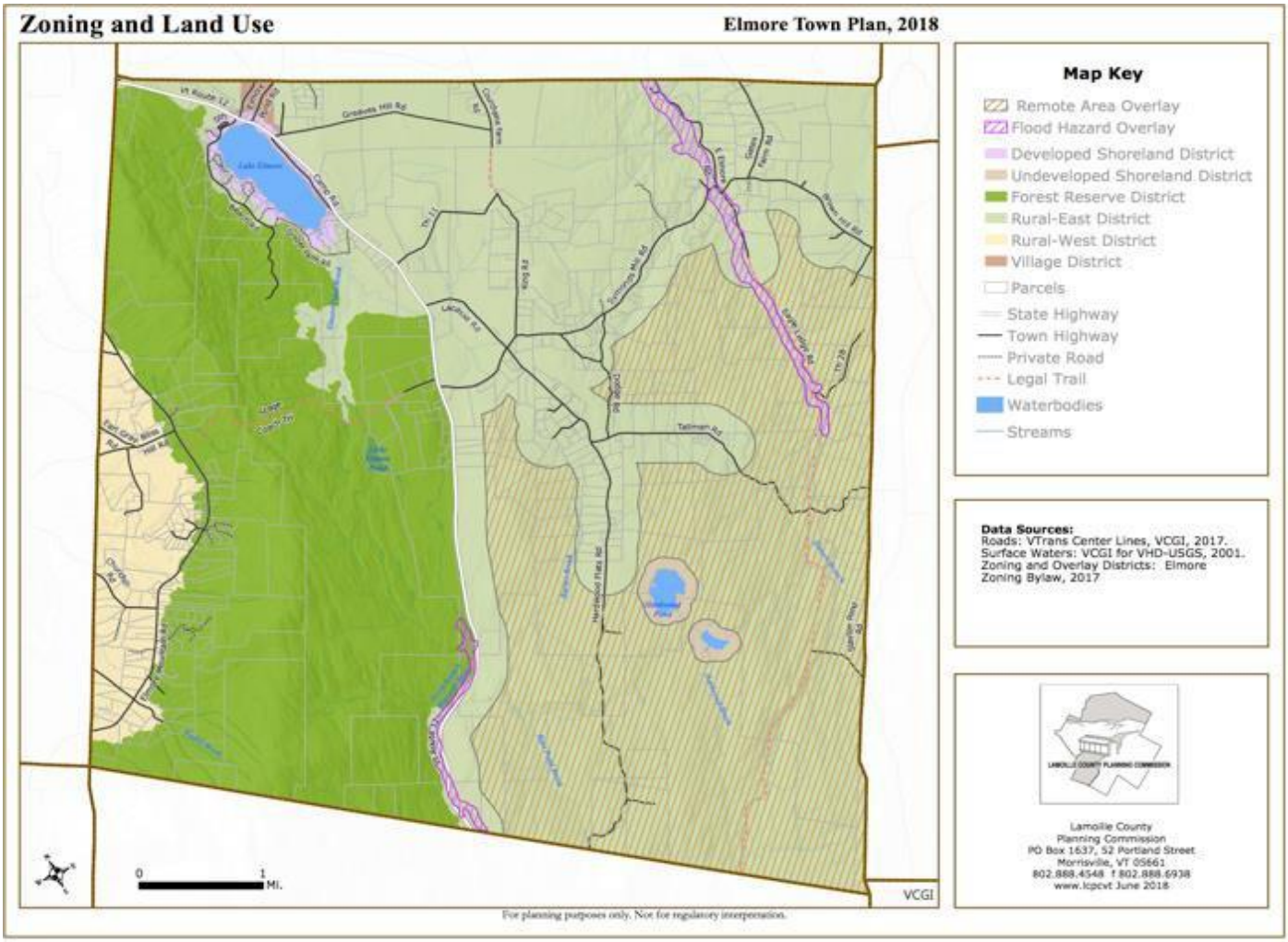
Map 1: Land Use and Forest Blocks



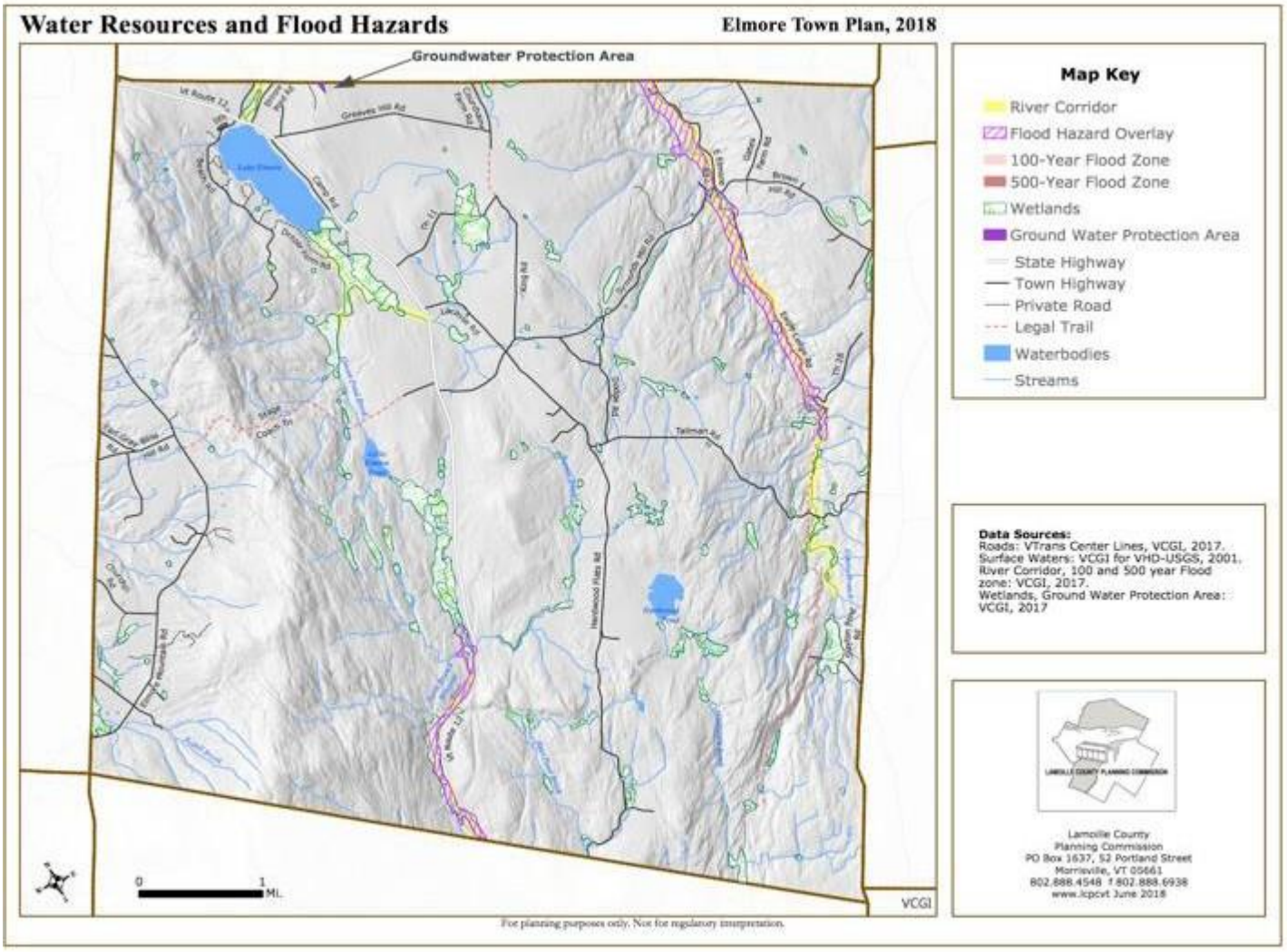
Map 2: Agricultural Soils



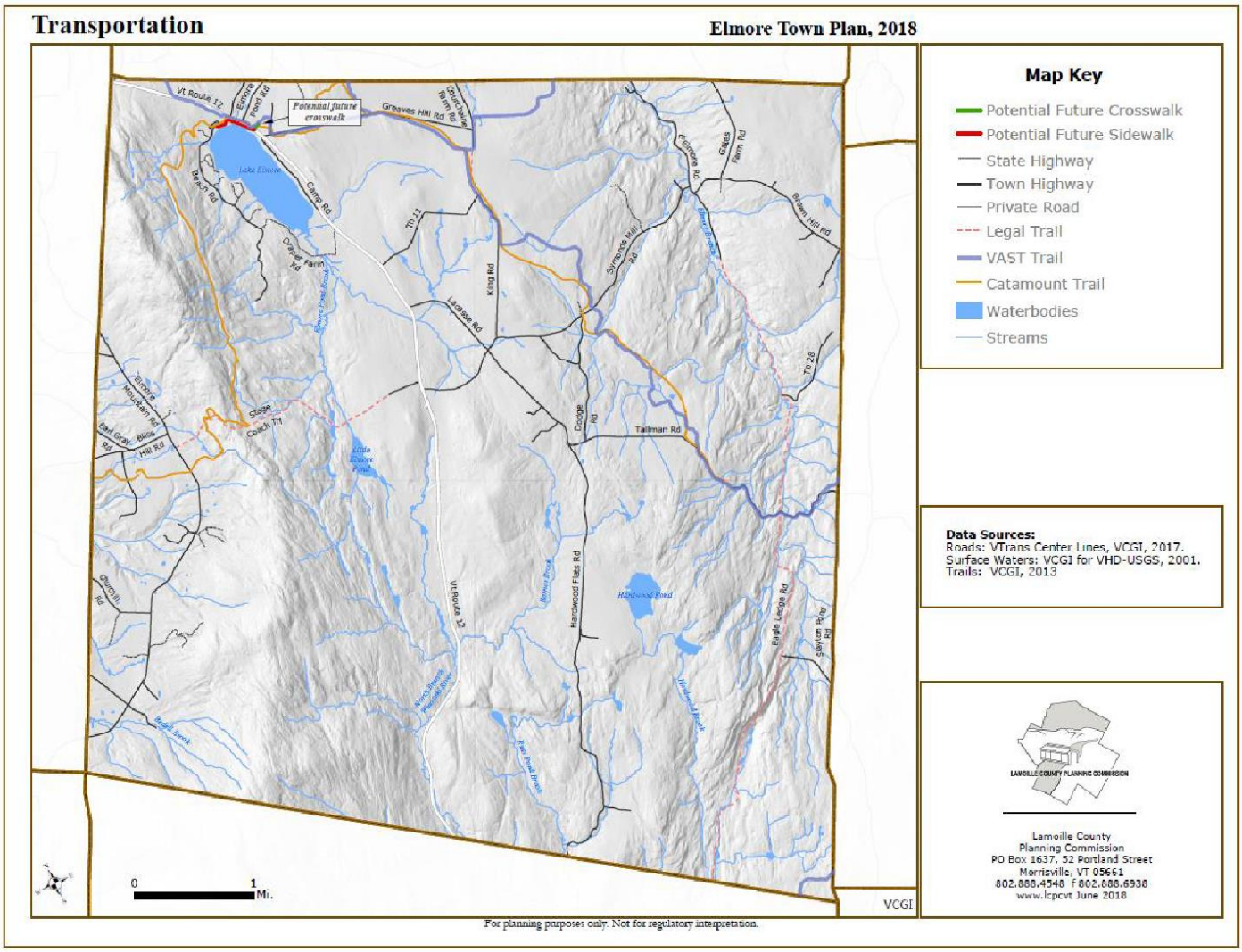
Map 3: Zoning Districts



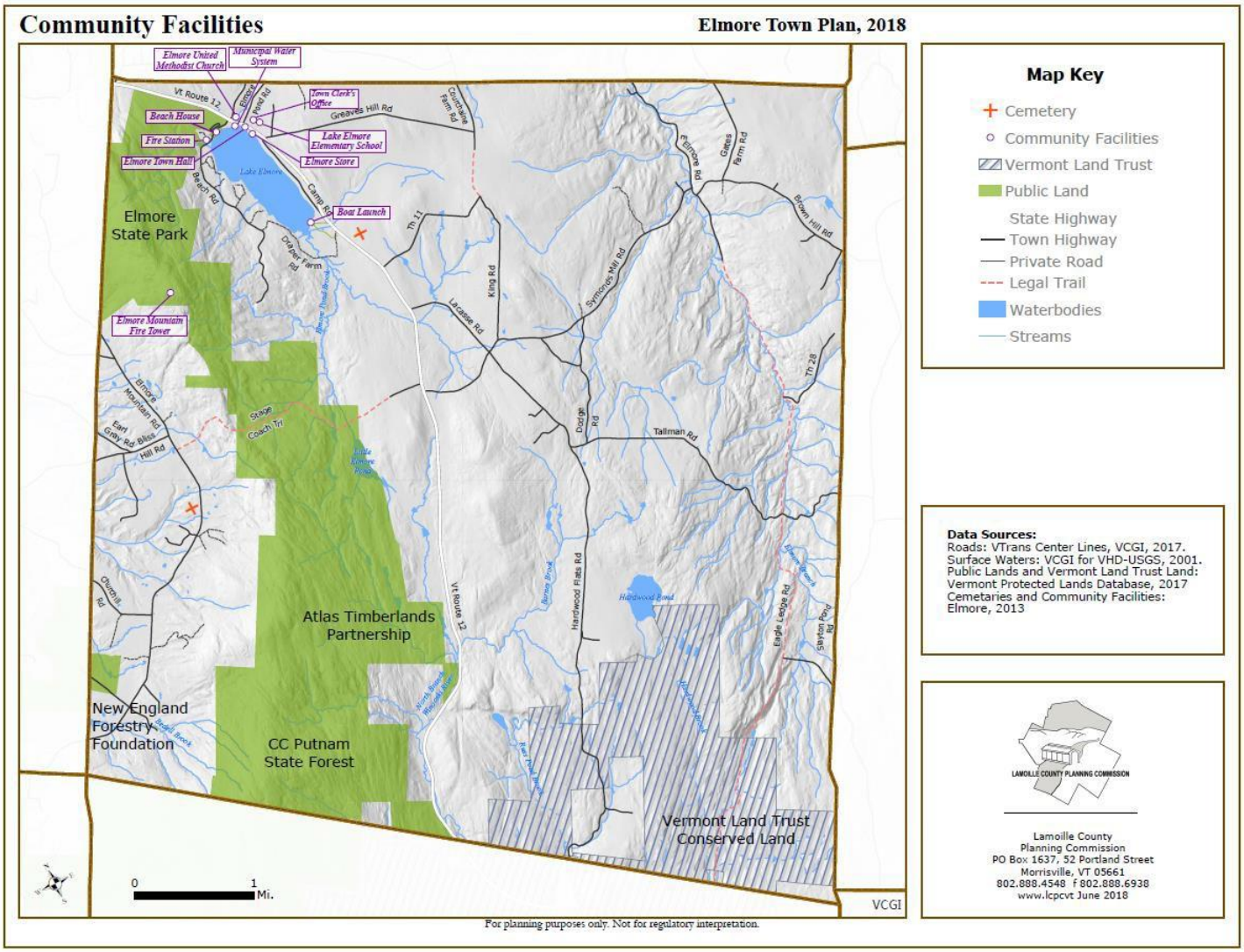
Map 4: Water Resources and Flood Hazards



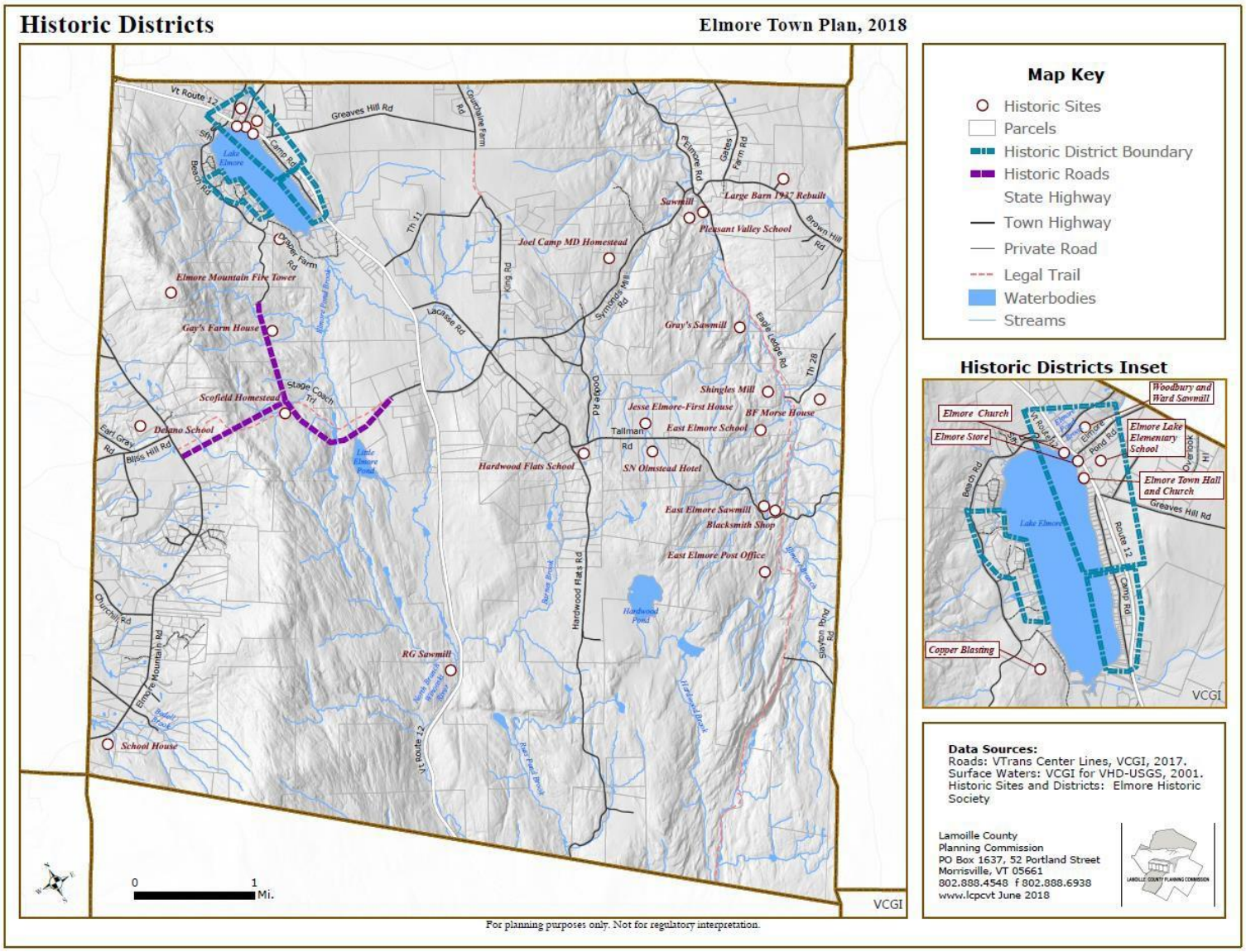
Map 5: Transportation



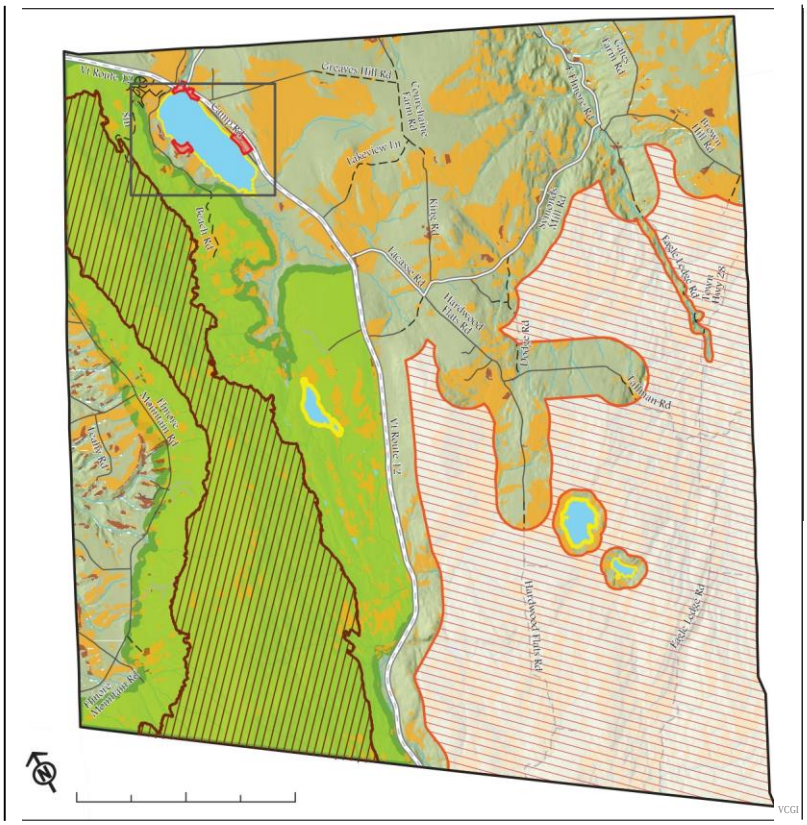
Map 6: Community Facilities



Map 7: Historical Resources



Map 8: Solar Resources



C:J Historic Districts (see note in Energy Plan)
[SSJ Remote Area Overlay
- Above 1,200 ft in Forest Reserve District (Worcester Range and Mt. Elmore)
Within 100 ft of shore in the Develo ped/U ndeve lo ped Shoreland District (see note in Energy Plan)

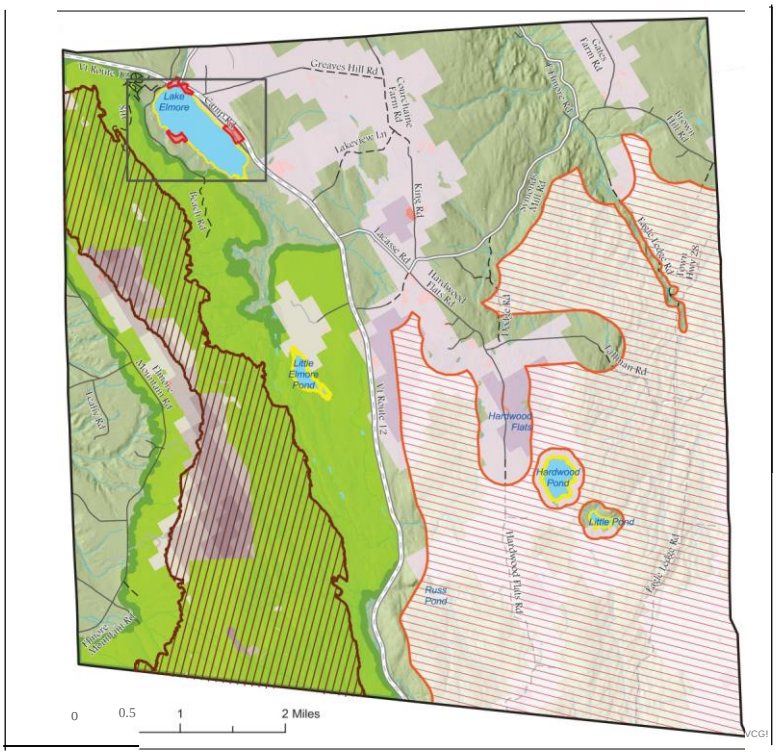
1ZZJ Above 1,500 ft in the Forest Reserve District

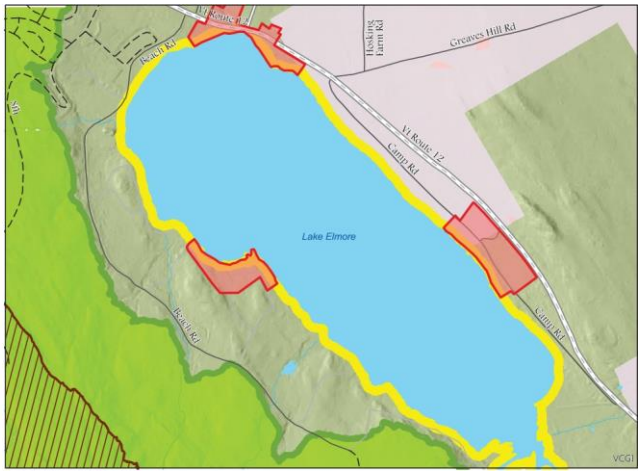
- No Constraint
Possible Constraint

State Hig hway
= Class 2 Road
- Class 3 Road
- - - Class 4 Road
Private Road
- - Legal Trail

Map 9: Wind Resources

Town of Elmore Renewable Energy Potential: Wind





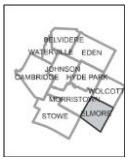
Areas unsuitable for commercial and utility scale energy development

c:J Historic Districts (see note in Energy Plan)

CSSJ Remote Area Overlay

- Above 1,200 ft in Forest Reserve District (Worcester Range and Mt. Elmore)

Within 100 ft of shore in the Develo ped/Undeve lo ped Shoreland District (see note in Energy Plan)



Areas unsuitable for residential scale energy development

IZZ) Above 1,500 ft in the Forest Reserve District

Wind Generation Potential

Prime Wind

Secondary Wind

Darker areas have higher wind speeds.

Roads

State Highway

= Class 2 Road

- Class 3 Road

- - - Class 4 Road

Private Road

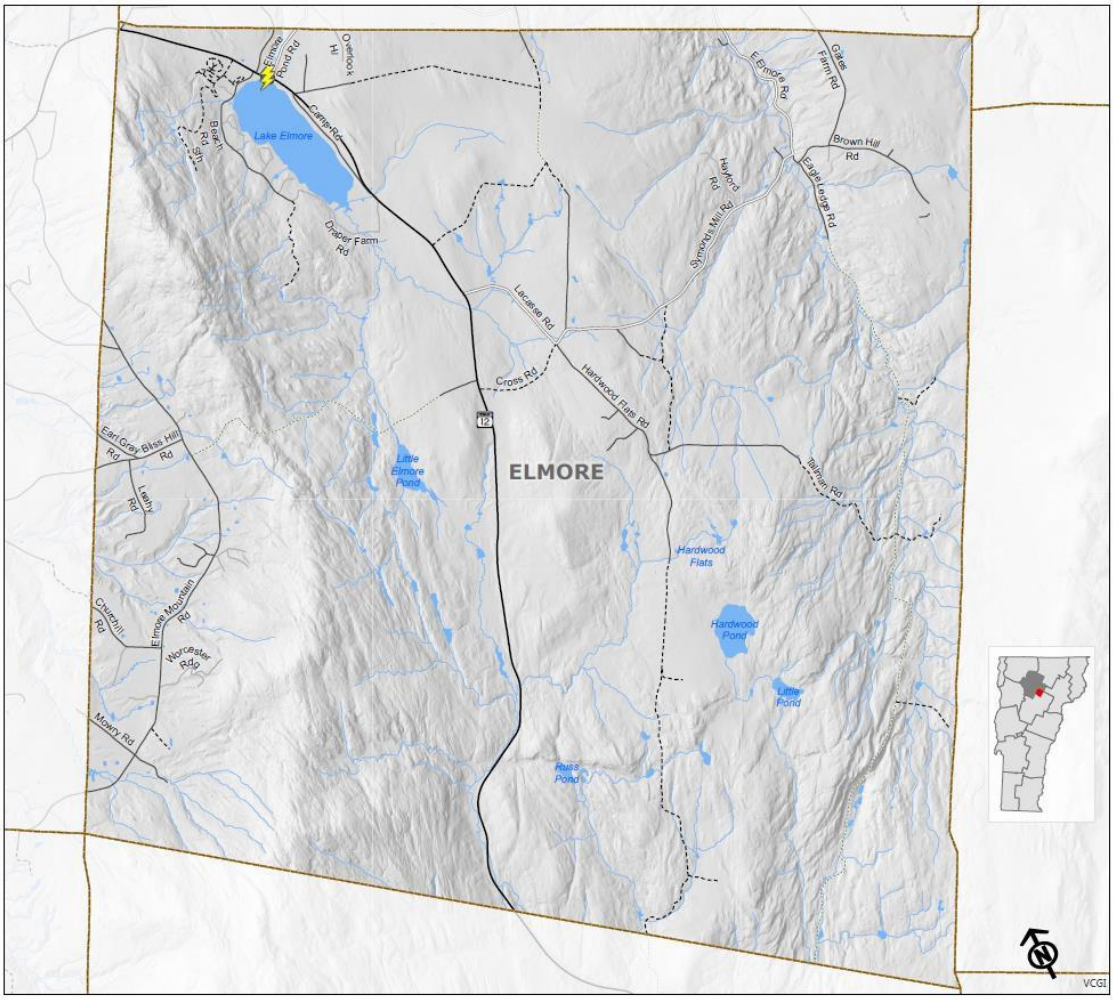
- - Legal Trail

Data Sources:
Political Boundaries: 1:24000 USGS Quadrangles. VCGI, 1991.
Roads: 1:5000 E-911 Road Data, 2016
Surface Waters: 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
Historic Districts: Digitized from State HistoricRegistry, 2017
Remote Area Overlay and Forest Reserve District: Created from Elmore Zoning Bylaw, 2017
Above 1,500 ft in the Forest Reserve District: Derived from lidar DEM, VCGI, 2016

PO Box 1637 52 Portland Street
Mooisville. VT05661
Phone:802.888.4548, Fax:802.888.6938
www.lcpcvl.OFti

For planning purposes only. Not for regulatory interpretation.

Map 10: Hydro Resources



Elmore
Renewable Energy Potential: Hydroelectric

This map illustrates potential for energy development but not necessarily suitability

Hydroelectric Facilities
- Operational Facilities

Potential sites
- < 50 kW Capacity
- > 50 kW Capacity

Energy Infrastructure
- Substations
- Transmission Lines

3 Phase power line data for areas served by Morrisville Water and Light was not available.

Hydroelectric Likely Unsuitable

Areas with low hydroelectric potential or environmental constraints have been removed and are not shown in any way on this map.

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

AOTCLASS

Methodology
This map shows areas of resource potential for renewable energy generation from hydroelectric, i.e. dams that could be converted into hydroelectric facilities as well as active hydroelectric sites. Existing hydroelectric dam information was extracted from the Vermont Dam Inventory, while potential hydroelectric sites were derived from a study conducted by Community Hydro 2007. Based on estimates conducted within the report, this map categorizes dams based on their potential hydroelectric generation capacity, and the downstream hazard risk that would be involved in hydroelectric production at each site.

Data Sources:
POTENTIAL HYDROELECTRIC SITES: VCGI, 2017
SUBSTATIONS: VCGI, 2017
3 PHASE POWER LINES: Data from town utilities and GreenMountain Power
POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.
ROADS: 1:5000 VTrans Road Data, 2017.
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.
Map created by LCPC, 2018

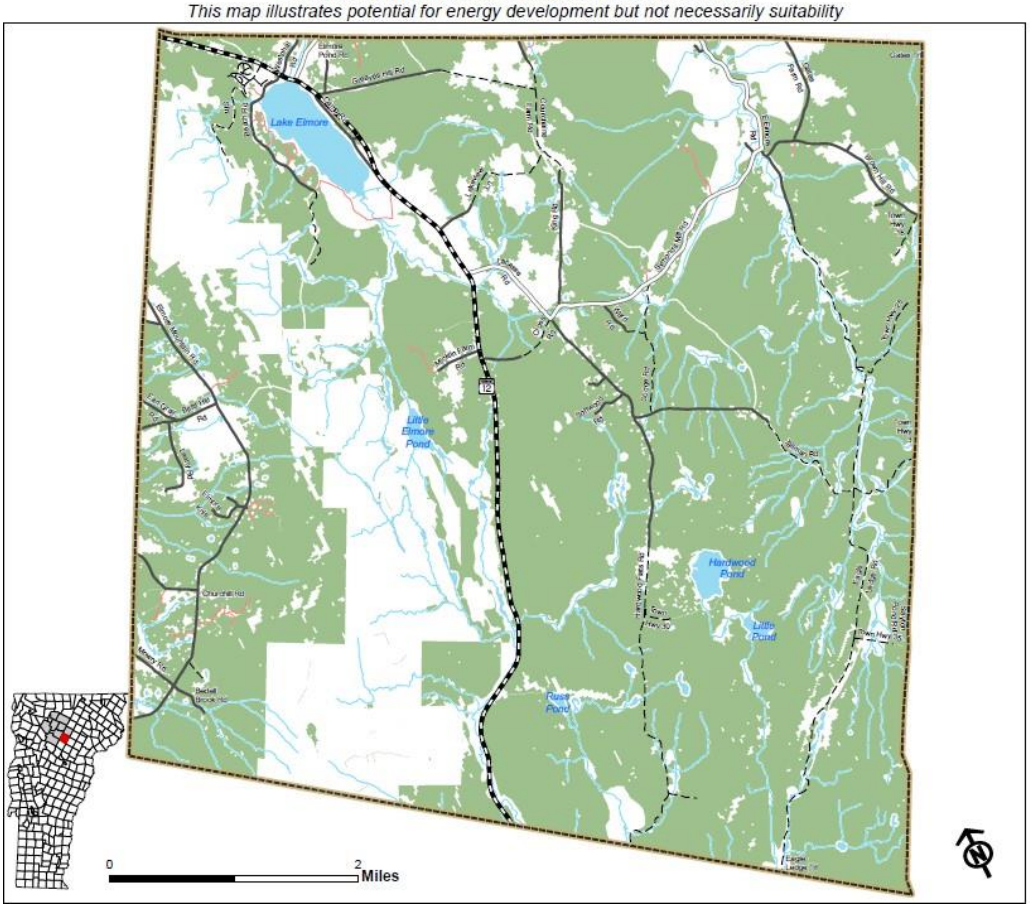
Data has not been field verified and is subject to change. Use for planning purposes only.

0 2 Miles

Map 11: Biomass Resources

Forest Area With Biomass Potential: Elmore, Vermont

This map illustrates potential for energy development but not necessarily suitability



Potential Woody Biomass Areas
State Highway
Class 2 Road
Class 3 Road
Class 4 Road
Legal Trail
Private Road
Streams
Waterbody
Town Boundary

This map shows areas of potential for woody biomass harvest and potential locations for combined heat and power facilities fed by woody biomass. The map also illustrates conditions that may limit the feasibility of extensive harvesting of wood for energy use. These conditions are referred to as constraints. Physical features (primary constraints) that make extensive harvesting infeasible which have been extracted from the biomass potential layer in this map include: FEMA floodways, River Corridors, Class 1 and 2 Wetlands, Vernal Pools, State-significant Natural Communities, Rare, Threatened, and Endangered Species, and Wilderness Areas. Secondary constraints not currently shown on this map may also pose limitations to biomass potential in these areas. Secondary constraints include:
Agricultural soils (local, prime and statewide classifications)
FEMA special flood hazard areas
Protected lands
Act 250 agricultural soil mitigation areas
Deer wintering yards
Highest priority forest blocks
Hydric soils
Secondary constraints should be evaluated on a case by case basis for all energy projects.

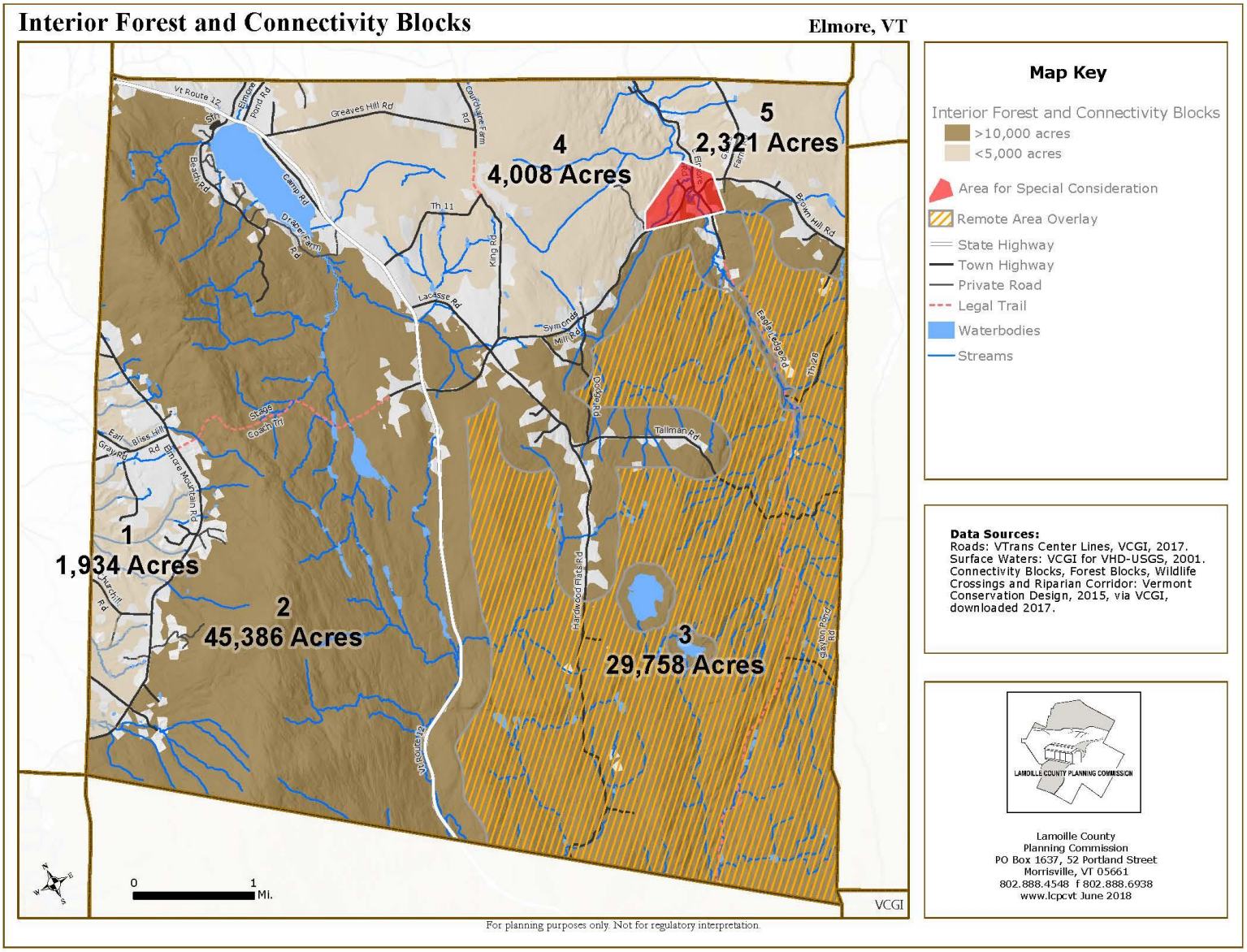
Data has not been field verified and is subject to change. Use for planning purposes only.

DATA SOURCES:
VT POTENTIAL WOODY BIOMASS AREA: VCGI, 2017
POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.
ROADS: 1:5000 VTrans Road Data, 2017.
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.

Map created by LCPC, May 2018

For planning purposes only. Not for regulatory interpretation.

Map 12: Interior Forest and Connectivity Blocks



Appendices

Appendix #1

Natural Resources

Earth Resources*:*

Sand and Gravel: Although the majority of land in Elmore consists of shallow soils on glacial till, there are a few sites of interest that have sand and gravel deposits. The largest areas of sand and gravel are west of Elmore Mountain Road, especially around the Bliss Hill Road area. A second area with sizable deposits is in the East Elmore area.

Prime Agricultural and Productive Forest Soils: Soil provides the medium and nutrients for agricultural and forest-based land uses. To this end, the state has identified Prime Agricultural (Prime Ag) and Class I Productive Forest Soils for preservation. See Map in Appendix for the distribution of prime agricultural soils in Elmore.

Water Resources: Elmore has countless important water resources that contribute to the unique character of the town, some of the most notable examples include:

Lakes and Ponds:

- Elmore Lake: 219-acre body of water that supports a variety of outdoor recreational activities, including boating, fishing and swimming.
- Little Elmore: 20-acre lake in north-central Elmore, which can only be accessed by foot, approximately three-quarters of a mile from the nearest road. It is a wilderness-like lake, which also supports a threatened bur- reed species and a rare water milfoil
- Hardwood Pond: 44-acre pond located in a remote area of the Rural East district, is among the highest elevation bodies of water in Lamoille County (1,568 ft).

Rivers and Streams: Elmore is split between the watersheds of the Lamoille and Winooski Rivers. Elmore has many streams and brooks that drain into both rivers.

Wetlands: According to the US Department of the Interior's National Wetlands Inventory, all of Elmore's wetland are designated as "Class II" which requires that a 50' buffer be maintained between the wetland and adjacent development. Some of these include:

- 144-acres south of Lake Elmore
- Area along North Branch adjacent to art 12
- Area north west of Lake Elmore

- Smaller areas are also located in East Elmore along Barnes Brook and Elmore Branch and east of Hardwood Pond.

Forest Resources: Several areas of public forestland exist in Elmore these include:

- Elmore State Park
- Putnam State Forest
- Forest Legacy Parcel

In an effort to identify forest resources for protection, the Elmore Planning Commission conducted a Forest Land Evaluation and Site Assessment (FLESA) of all parcels greater than 25 acres in size in 1991. This included 88% of the land in town (22,362 acres of 25,408), the vast majority of which is privately owned. The FLESA studied and recorded the size, points of access and soil characteristics of these parcels. Special features of value to recreation or wildlife were also noted. Any future forest conservation effort in town should review the findings of this report for guidance. Contact Lamoille County Planning Commission For more information on the FLESA study.

Wildlife Resources: Elmore's landscape of mountains, forests, lakes and riparian corridors supports extensive and diverse wildlife habitat. Sites of particular interest, as identified by the state's 1976 Natural Areas Inventory, include:

- Lake Elmore Swamp: A 70-acre deep marsh and shrub- wooded swamp located at the south end of Lake Elmore, used by waterfowl and other wildlife species in seasonal migration; and,
- Little Elmore Bog: A 120-acre wooded boggy area located within Lake Elmore State Park, used by waterfowl and other species of bird.
- Deer Wintering Areas: Elmore's mapped deer wintering areas are concentrated in the northeast region of town, along the Elmore Branch.
- Bear Habitat: Potential bear habitat exists throughout town, outside Elmore's village center.
- Interior Forest Blocks and Habitat Connectivity Blocks: The Vermont Agency of Natural Resources designates large portions of El ore as critically important Interior Forest and Connectivity Blocks, see definitions in appendix.

Scenic Resources: Elmore has many prominent scenic areas that contribute to the towns character

- Worcester Range: Includes Elmore Mountain, one of the most prominent and important natural scenic resources in Elmore. This ridge stretches from the northern tip of Elmore to the Town of Middlesex in Washington County, and is one

of the largest undeveloped mountain ranges in the state. The highest elevations in Elmore occur along the Worcester ridge.

- Lake Elmore
- Agricultural fields such as the Keith and Lacasse Farms

Appendix #2

Interior Forest Blocks

Description

Interior Forest Blocks are a selection of habitat blocks that best provide interior forest conditions in each Biophysical region. Habitat blocks themselves 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. Forests included in habitat blocks may be young, early-successional stands, actively managed forests, or mature forests with little or no recent logging activity. The defining factor is that there is little or no permanent habitat fragmentation from roads, agricultural lands and other forms of development within a habitat block. Developed lands, most roads and lands in most agricultural cover classes (including cultivated crops, grasslands and pasture) are not considered natural cover. The effects of roads on interior forests vary with road size and traffic volume and the effects generally extend 100-300 feet into the adjacent forest. To more accurately identify interior forest conditions, buffers were assigned to roads with wider buffers assigned to larger and busier roads. Class four roads and most logging roads are fragmenting features for some species, but not necessarily for wide-ranging species that are the focus of the habitat block analysis.

Priority Interior Forest Blocks are highly ranked forest blocks from all biophysical regions that provide important interior forest habitat and provide ecological support to the highest priority Forest Interior Blocks. *Highest Priority Forest Blocks*: are the largest and/or highest ranked forest blocks from all biophysical regions that provide the foundation for interior forest habitat and associated ecological functions.

Ecological Importance

Interior forest blocks support the biological requirements of many native plants and animals. They support viable populations of wide-ranging animals, including bobcat, American Marten, and black bear, that require large areas to survive by allowing access to important feeding habitat, the ability to move and find mates for reproduction, and as a result ensure genetic integrity of populations. Larger forest blocks serve as habitat for source populations of dispersing animals for recolonization of nearby areas that may have lost their original populations of those species. Such habitat, together with other important habitats such as wetlands, also supports natural ecological processes such as

predator/prey interactions, hydrologic regimes and natural disturbance. They also serve to buffer species against the negative consequences of fragmentation, maintain air and water quality. In addition, large, topographically diverse forest blocks will allow many species of plants and animals to shift to suitable habitat within a forest block in response to climate change within the next century without having to cross developed areas to other forest blocks.

Connectivity Blocks

Description

Connecting habitat is land that links larger patches of habitat within a landscape, allowing the movement, migration, and dispersal of animals and plants. Riparian areas along streams and rivers, strips of forest cover between developed areas, and even hedgerows/ fencerows all represent potential connecting habitat for wildlife and other organisms. Sometimes these areas are called “corridors” even though they are not always linear, as the term implies.

The composition and functions of connecting land are based on the scale at which it is considered. At the coarsest, eco-regional scale, connecting land in Vermont can be thought of as a “network” supporting genetic heterogeneity and movement of populations of wide-ranging mammal species across huge swaths of the landscape; such as between the Adirondacks Mountains of New York, Vermont’s Green Mountains and the White Mountains of New Hampshire. It is a network in the sense that it includes large blocks of contiguous, unfragmented core habitat, the source and principle home area of many species as well as areas of diversity in the physical landscape, and numerous smaller connecting lands either forested stepping stone blocks or riparian and surface water areas.

Habitat is also connected at fine scales, for example by Riparian Wildlife Connectivity and Wildlife Road Crossings, where individual terrestrial animals move along waterways and cross roads. This most local scale of movement may not necessarily be of regional significance, but of course, the regional connections cannot function without local movement. There can be no genetic exchange between wildlife populations in New York and Vermont, for example, without individual animals making sections of the trip, crossing roads and eventually breeding with other individuals. Therefore local and regional connectivity are both vital to the long-term sustainability of wildlife populations and the ecological functions that they support.

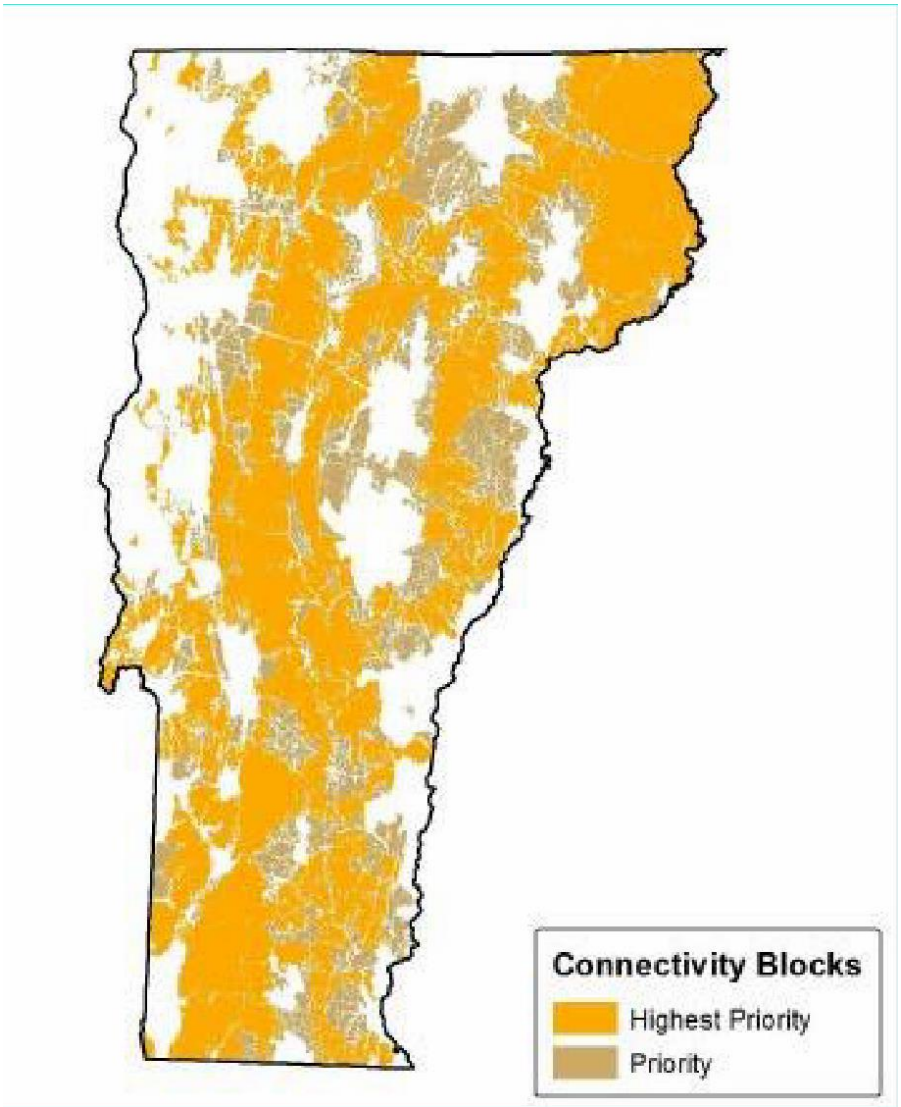


Figure 1. Highest Priority and Priority Connectivity Blocks (Source: Vermont Agency of Natural Resources 2018 BioFinder**)**

For more information on Interior Forest and Connectivity Blocks visit
www.BioFinder.vt.gov

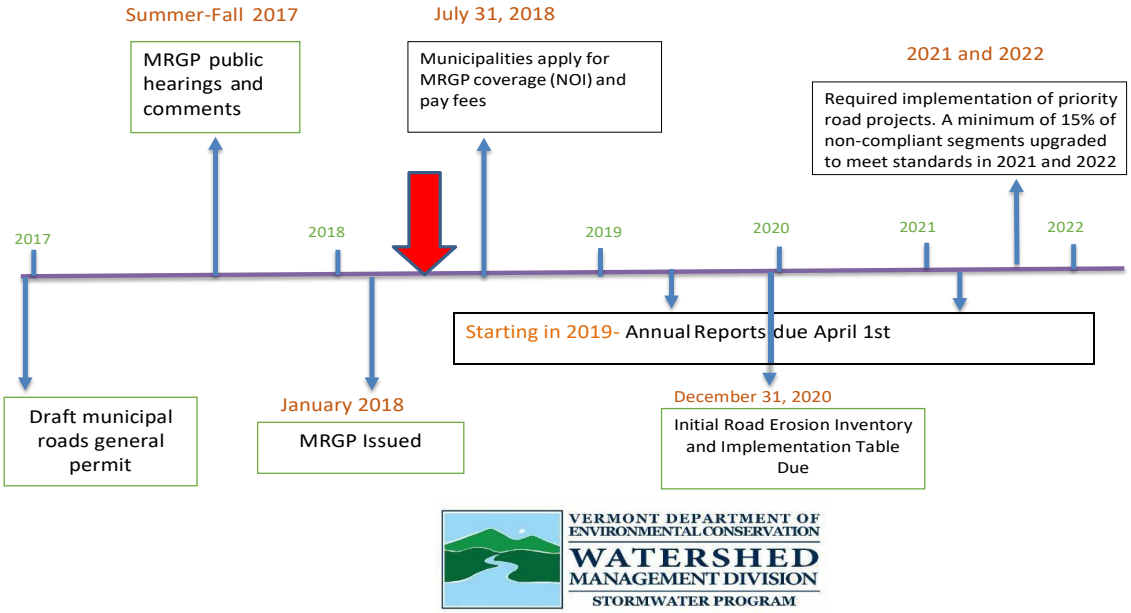
Appendix #3

Alernative Transportation Programs and Resources

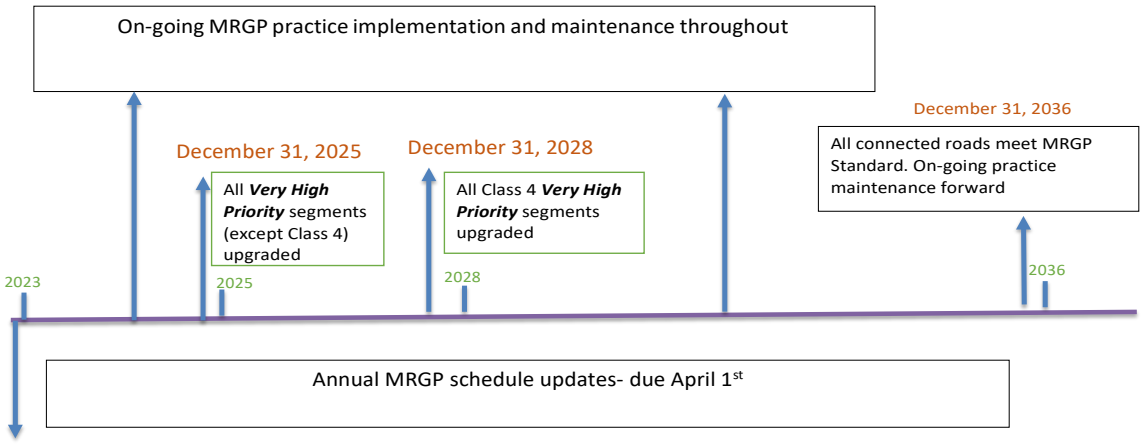
- *Safe Routes to School Program:* This nationally recognized program was designed to increase physical activity amongst today's youth, provide safer walking and biking routes to schools, and reduce in-town traffic congestion. Participating communities can receive engineering/design guidance for alternative routes to schools and infrastructure funding assistance to aid pedestrian and bike safety. For more information visit www.saferoutesvt.org.
- *Local Motion:* Local Motion is a Burlington-based organization that promotes biking events and services across Vermont. Local Motion can provide free trailers full of bikes for communities to host bike safety trainings or other local riding events. For more information visit www.localmotion .org.
- *The League of American Cyclists:* This organization offers a variety of incentives, hands-on assistance and award recognition for communities and businesses that participate in the Bicycle Friendly America Program. This program is designed to both reward and rank towns that are actively supporting biking in their community. Additionally, the League of American Cyclists offer streetscape design guidance to improve cycling opportunities and traffic safety courses. For more information on these programs and services visit www.bike league.org/.
- *Complete Streets Legislation:* In 2011, Vermont enacted "Complete Streets" legislation, requiring that new and renovated paved roads throughout the state be designed to safely accommodate motorists, bicyclists and pedestrians of all ages and abilities. Currently, all dirt roads are exempt from this law, however, towns are still encouraged to consider how different grades of gravel and sand can affect road safety. New or renovated paved roads that do not comply with Complete Streets legislation will be required to file a Rational Form, explaining the reason for not meeting the legislative requirements. For more information contact the Vermont Department of Health at 802-863-7200 or access a Complete Streets Guide at http://healthvermont.gov/family/fit/target.aspx #streets.

Appendix #4

MRGP Timeline of Deliverables (Near-Term)



MRGP Timeline of Deliverables
(Longer-Term)



VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
STORMWATER PROGRAM

MGRP Requirements for Existing Roads

As a first step, Town of Elmore will inventory the sections of their road networks that are hydrologically-connected to surface waters through ditches, culverts or other drainage structures. Hydrologically-connected roads present substantially greater risks to water quality.

The second step will be developing Implementation Tables. Implementation Tables will include current MRGP compliance status from the REIs (whether individual road segments *Fully Meet, Partially Meet,* or *Do Not Meet* standards), and road segments worked on in the previous calendar year now meeting standards. The Town of Elmore will update the Implementation Tables annually as part of their annual reporting requirements. Standards include measures such as:

- Grass and stone-lined drainage ditches, stone check-dams, and distributed flow infiltration
- Cross culverts and turnouts disconnecting road storm water
- Road crowning, removal of grader berms, and lowering of high road shoulders
- Upgrading road drainage culverts and installing outlet stabilization and/or headwalls where erosion is present
- Soils exposed by maintenance and new practice construction on hydrologically-connected roads will be seeded and mulched or otherwise stabilized
- Stabilizing catch basin outlets

Class 4 roads that are adversely affecting water quality may require the installation of best management practices to reduce severe (gully) erosion but will not be required to be open to travel as part of this permit.

Culverts and bridges:

- No new requirements to replace perennial stream crossings, but other conveyances and intermittent stream culverts will be covered by the permit and may require upgrades or retrofits.
- Maintenance and construction activities would continue to conform to the ANR Stream Alteration General Permit.

Requirements for New Projects

Designed to Vermont Storm water Manual if over permit threshold of 1 acre impervious surface, or >5,000 square foot expansion

In order to accomplish these tasks the Town of Elmore has entered an agreement with the Lamoille County Planning Commission (LCPC). This project is funded in part by an agreement with VTRANS, which stipulates that all aspects of project development must conform to federal and state regulations. The TOWN has agreed to LCPC providing Project Manager Services to fulfill the responsibilities for local project management. The following items will be performed by the Lamoille County Planning Commission (LCPC);

1. **Assemble and Review Existing Data**

Assemble existing GIS data, including statewide road erosion risk layer, hydrologically connected road layer, and previous analysis conducted by LCPC to determine locations vulnerable to water quality impacts from erosion. Indicators include steep areas with roads in close proximity to surface waters and/or wetlands. Interview road crew about trouble spots that have required ongoing maintenance.

2. **Field Mapping and Data Collection**

Conduct field surveys in accordance with Vermont Municipal Road General Permit (MRGP) guidelines. Data collected will include GPS locations, descriptive information, photographs and indicators used for site prioritization. LCPC will collect data based on the most guidance from VT Agency of Natural Resources.

3. **Erosion Area Assessment & Design**

Mapped areas will be assessed for impact to water quality and classified as high, medium or low risk. High risk sites are locations where the erosion area has the potential to directly contribute sediment to a receiving water or wetland.
The Town of Elmore will provide input to LCPC for selection of high priority project location to implement corrective measures in the near future. For the highest priority sites, LCPC will assemble typical design schematics in detail that is sufficient for Town road crew to repair the problem area. Other areas requiring a full engineering design will be noted.

Repairs will be designed in consultation with the Town road crew, Vermont Agency of Natural Resources staff and the Better Back Roads manual.

4. GIS Database Development

Mapped erosion areas will be included in a GIS database. Attributes for each erosion area will include: unique site ID, type of erosion, priority level, and status of conformance with the MRGP.

5. Summary Report

A final report will be prepared and provided to the Town.

6. Presentation of Results

Results of study will be shared and discussed with the Town.

7. Develop Capital Budgeting Plan to Remediate High Priority Erosion Sites

Using typical design schematics prepared under Item 3, the Town of Elmore will work with LCPC support to develop a project implementation budget to remediate the selected high priority sites.