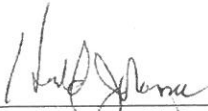

Andover Town Plan

Adopted –
September 10, 2018

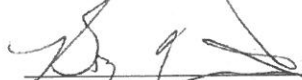
Planning Commission
Public Hearing:
August 7, 2018

Selectboard Public
Hearing:
September 10, 2018

This Andover Town Plan was adopted on this 10th day of September, 2018 by the Andover Selectboard.



Harold Johnson, Chairman



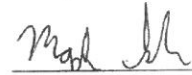
Barry Williams



Christopher Plumb



Maddy Bodin



Mark Gordon
Andover Selectboard

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Introduction

Purpose of the Town Plan

In accordance with 24 V.S.A., Chapter 117 (the Vermont Planning and Development Act), the purpose of the Andover Town Plan is “to guide future growth and development of land, public services and facilities, and to protect the environment” in the best interest of the citizens of Andover. This Plan is intended to include all twelve elements required by § 4382 and be consistent with state planning goals in § 4302.

Town Plan Process

A Town Plan is developed, and amended as needed, by the Planning Commission, and adopted by a vote of the Board of Selectmen. Town plans expire five years after the date of adoption, at which time they may be amended and re-adopted or entirely rewritten. Adoption procedures are outlined in 24 V.S.A. § 4385. The goals, policies, and recommendations set forth in this plan were prepared by the Andover Planning Commission and adopted by the Andover Board of Selectmen.

Background Information

Andover’s original charter was granted by Benning Wentworth in 1761. Andover is a mountainous town, nestled on the eastern slope of the Green Mountains with a land area of approximately 18,560 acres. The town has two villages, Peaseville and Simonsville (named after Edward Simons) and maintains a rural atmosphere (see text box to the right for what defines Andover’s rural atmosphere). As such, many of Andover’s residents travel outside of town to find work or amenities.

Andover’s rural character is defined by the following elements:

- A predominately forested landscape
- Open fields and farming and agricultural operations
- No municipal water and sewer services
- Dirt roads
- Limited, small-scale commercial businesses

Since the Town’s earliest days, residents of Andover have been actively engaged in farming and forest-related activities. Although most of these activities do not have the same economic relevance as in the past, some of the residents in the community are still employed in activities such as farming, sugaring and forestry, which utilize the land. Additionally, as Andover is a rural town, many of its residents engage in these activities in their spare time, but do not rely upon them for employment. It is also important to note that Andover has a significant number of seasonal homes.

Land area (square miles):	29.0
Persons per square mile, 2010	16.1
Number of persons, 2010	467
Number of families*, 2010	141
Number of households**, 2010	218

Table 1 - General Town Figures
Sources: U.S. Census of Population and Housing, 2010

**A family, as defined by the U.S. Census Bureau, is a group of two people or more (one of whom is the householder) related by birth, marriage, or adoption and residing together; all such people (including related subfamily members) are considered as members of one family.*

***A household consists of all the people who occupy a housing unit. A house, an apartment or other group of rooms, or a single room, is regarded as a housing unit when it is occupied or intended for occupancy as separate living quarters; that is, when the occupants do not live with any other persons in the structure and there is direct access from the outside or through a common hall. A household includes the related family members and all the unrelated people, if any, such as lodgers, foster children, wards, or employees who share the housing unit. A person living alone in a housing unit, or a group of unrelated people sharing a housing unit such as partners or roomers, is also counted as a household. The count of households excludes group quarters.*

Statement of Andover's General Goals

The following goals are based upon Andover's desire to remain a rural community:

- To preserve the rural character of the community by protecting and sustaining Andover's environment and resources;
- To preserve and protect the cultural and architectural heritage of the Town and maintain Peaseville as the administrative and recreational center of Andover;
- To control future development so that it reflects historic settlement patterns and will not place undue burden on the Town's ability to provide adequate services to its residents;
- To encourage the most desirable and appropriate use of farmlands and natural resources, the improvement of forest productivity and the preservation of open spaces through sound conservation and management practices;
- To protect public health by controlling environmental pollution (noise, air and water).
- To discourage any change of land that is destructive to the land's natural character, given that the visual landscape is one of our rural characteristics;
- To encourage the conservation of our marketable natural resources and strive to improve local use;
- To balance the rights of individual property owners with the rights of the community at large in regards to decisions made concerning health, safety, and welfare.

Population

Andover had a peak population of 1000 people in 1820 and, according to the U.S. Census, a population of 467 persons in 2010. Andover is a rural town with no urban centers. It is interesting to note that between 1950 (185) and 2000 (496), the Town's population rose steadily; however, between 2000 (496) and 2010 (467) that trend ended and the Town saw a slight decrease in population. See Figure 1 below.

The average rate of growth between 1950 and 2000 was 22.6%. This rate is slightly higher than anticipated given the large growth rates between 1970-1980 and 1990-2000; 46% and 33%, respectively. Another important trend that should be recognized is the steadily increasing number of seasonal homes in Andover. In 1980 there were 99 seasonal housing units. At the last count, in 2010, 174 were reported (2010 U.S. Census).

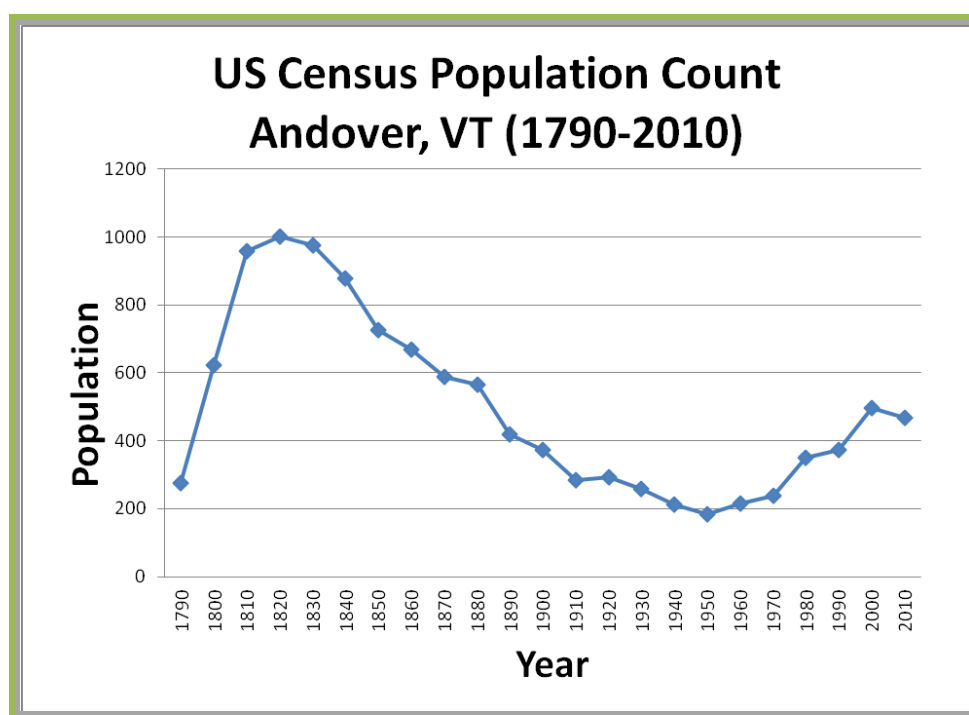


Figure 1 - Town Population 1790-2010

Population Characteristics, 2010	
Percent dependent (persons under 18 or over 64):	39.8
Percent native (Vermont born):	37.7
Population Count:	467

Table 2 - Population Characteristics, 2010

Components of Population Change:				
<u>Period</u>	<u>Initial Population</u>	<u>Final population</u>	<u>Absolute Change</u>	<u>Percent Change</u>
1970 to 1980	239	350	111	46.4%
1980 to 1990	350	373	23	6.6%
1990 to 2000	373	496	123	32.9%
2000 to 2010	496	467	-29	-5.8%

Table 3 - Components of Population Change

(Sources: Computed using U.S. Census of Population and Housing, 1970, 1980, 1990, 2000, and 2010)

Goal

- To control and direct growth so that it occurs in a reasonable and orderly fashion, with minimal impact on the environment, the Town's rural appearance, and its ability to provide services.

Recommendation

- Review the town plan, zoning bylaws, subdivision regulations and other bylaws and ordinances to determine whether changes need to be made to address community-wide issues.

Economy

According to the US Census, 2.7% of the Andover residents worked within the town in 2010. The rest of Andover's wage-earners commuted to the surrounding towns for employment. Because of this long-standing pattern of employment beyond the town's boundaries, Andover recognizes its role as a contributing partner to the regional economy. However, some of the local employers include town government, service contractors, and home occupations.

Andover's residents have, in general, fared well in the region's economic environment. In previous year's Andover's median family income has been slightly higher than the median family income for the county and the state. However, that trend no longer exists. Andover's median family income, as reported by the 2010 Census, is \$43,467, which is lower than both the County's (\$55,597) and the State's (\$56,392).

Income Characteristics, 2009			
Location	Median Household Income	Median Family Income	Per Capita Income
Vermont	\$49,406	\$56,392	\$27,478
Windsor County	\$51,229	\$55,597	\$29,053
Andover	\$51,914	\$43,467	\$24,960

Table 4 - Income Characteristics, 2009

Notes: MHI = Median Household Income, MFI = Median Family Income, PCI = Per Capita Income, NFMI = Non-family Median Income; % below poverty for family of four, per 1989 federal poverty threshold of \$12,674; N/A = information not available at time chart was created

The types of jobs available to residents in the southern Windsor County region have been steadily changing over the past 30 years. Historically, the types of work within Andover itself have been farming, forestry, and crafts. However, the decline of manufacturing, agriculture, and forestry, coupled with the increase in the ski area industries has changed the regional economy. This change has led to the number of townspeople employed in those sectors to decline steadily since 1980. It has also lead to the increase in job opportunities in the communications, public utilities, information, education, health and social services sectors. Please see the table below for actual numbers.

Total Employment, 1980-2010	
Total employment, 1980 (Persons 16 years and over):	186
Total employment, 1990 (Persons 16 years and over):	192
Total employment, 2000 (Persons 16 years and over):	267
Total employment, 2010 (Persons 16 years and over):	182

Table 5 - Total Employment, 1980-2010

Number of Workers by Industry, 1980-2010				
(Employed persons, aged 16 and over)	1980	1990	2000	2010
Agriculture, Forestry, Fisheries, Hunting and Mining	17	8	32	0
Construction	24	41	26	10
Manufacturing	46	19	32	14
Transportation	2	7	0	5
Communications, Public Utilities, and Information	0	0	5	11
Wholesale Trade	6	0	0	8
Retail Trade	26	32	37	29
Finance, Insurance, and Real Estate	12	14	8	6
Professional, Scientific, Management, Administrative, and Waste Management Services	15	18	18	12
Entertainment, Recreation Services, Accommodations, and Food Services		2	33	31
Education, Health and Social Services	23	35	50	47
Other Professional Services	7	12	18	3
Public Administration	8	4	8	6

Table 6 - Number of Workers by Industry, 1980-2010

Source: U.S. Census of Population and Housing, 1980, 1990; US Decennial Census 2000, and 2010 Longitudinal Employer-Household Dynamics (excludes self-employed)

Many Andover townspeople commute to the nearby towns of Chester, Ludlow, and Springfield. Over 50 people also commute to towns outside the region that are farther away such as Lebanon, Rockingham, Claremont, etc... According to the 2006-2010 American Community Survey the mean travel time was 22.4 minutes. The environmental, financial, and personal costs of commuting to work are an ongoing concern, in part, due to the trend of rising fuel costs. Therefore, ride sharing may be of interest to those who commute.

Child Care Facilities

Child care is an important consideration for families who have two wage earners, or for single parent households. Although Andover does not have any licensed child care providers or registered child care homes in the town, there are a number of licensed providers and registered homes in the surrounding towns of Chester, Weston, Londonderry, Ludlow, Grafton, Mount Holly and Cavendish. Another resource available to Andover families is the Early Education Collaborative. The Collaborative is a program administered by the Two-Rivers Supervisory Union dedicated to ensuring universal access to

preschool for children between the ages of three and four. Since its inception, Andover has had between 3-7 children enrolled in the program each year.

Goal

- To encourage a strong and diverse regional economy that provides job opportunities for Andover residents while maintaining the Town's unique quality of life.

Policies

- Support the creation and retention of home-based and other small-scale businesses that would be able to utilize, in an appropriate manner, the town's human and natural resources.
- Support the development and operation of child care facilities within the town.

Recommendations

- Support the continued cooperation between the Town, Planning Commission and local and regional economic development groups.
- Zoning Bylaws and other town ordinances should facilitate the creation and retention of home based and other appropriate businesses in Town.

Housing

According to the US Census, there were 408 housing units in 2010. Of these, 218 units were occupied and 190 were vacant at the time of the census. Of those vacant, 174 were seasonal homes in 2010, accounting for 42.6% of the total housing units. Seasonal homes pay taxes to help support town services which the seasonal homeowners infrequently use. However, people purchasing seasonal homes typically have more disposable income and can afford higher prices when purchasing a home. This, in turn, drives up the cost of housing in Andover.

Vermont Statute states that affordable housing is housing owned by its inhabitants whose gross household income does not exceed 80 percent of the county median income and that the total cost of the housing is not more than 30 percent of the households' gross annual income (10 V.S.A. § 6001(29)). Andover's 2010 median household income was \$51,914, slightly higher than that of Windsor County (\$51,229) (please see Table 4 above). From these figures, no more than \$1,024.58 per month should go toward mortgage payments (or rent), heat, electricity, water, housing related taxes (or fees), and other similar housing expenses for housing to be "affordable." In 2011, the average home costs in Andover were among the highest in the region and have more than doubled in price since 1996. Homes in Andover on less than 6 acres of land cost an average of \$258,333 in 2011, compared to \$108,478 in 1996 (please see Table 7 below). A 30-year mortgage at 5.0% mortgage interest rate for a home costing \$258,333 would result in \$1,386 of monthly mortgage costs. This rate is already 41% of the monthly median household income for the county, not accounting for utilities, heat, electricity, water, house related taxes and similar fees. It is likely, therefore, that the majority of people living in Andover could not afford to purchase a home there today.

One form of affordable housing is Mobile Homes. Another potential form of affordable housing in Andover is accessory dwelling units. Andover's zoning regulations include the equal treatment of housing provision which allows for accessory dwelling units. Andover recognizes that, as a rural town without municipal sewer and water, the cost of land is a large hurdle to affordable housing. Andover, as a community, supports the provision of affordable housing and is supporting it by allowing for mobile homes and accessory dwelling units.

2011 Residential Counts and Average Fair Market Values (FMV)*								
TOWN	R1** count	R1 avg. FMV	R2** count	R2 avg. FMV	MHU** count	MHU avg. FMV	MHL** count	MHL avg. FMV
Andover	156	\$258,333	207	\$422,625	8	\$3,505	6	\$97,267
SWC Region	6,755	\$173,964	2,441	\$337,324	452	\$20,541	518	\$97,983

Table 7- Residential Counts & Average Fair Market Value

* Fair Market Value (FMV) is determined by dividing the total Equalized Value for each category and dividing by the count. Data from VT Department of Taxes "Municipal Listed Values and Equalized Values by Category" 2011 Tax Year. Prepared 1/13/2012 http://www.state.vt.us/tax/pdf.word/excel/pvr/reports/2012/LVtoEQbyCAT_Mun.xls

** Property definitions are as follows:

R1 - Residential on less than 6 acres

R2 - Residential on greater than 6 acres, not including working farms

MHU - Mobile home - unlanded (set up on land not owned by the owner of the mobile home, as in mobile home parks)

MHL - Mobile home - landed (set up on land owned by the owner of the mobile home)

Goals

- To encourage a diversified housing stock so that residents and their children can afford to

reside in Andover.

- To support the efforts of the Windham and Windsor Housing Trust to provide safe and affordable housing.

Policies

- Encourage new home construction to occur in a manner that preserves the rural character of the town.
- Encourage new home construction that most local residents can afford.

Recommendations

- Review zoning and subdivision regulations for consistency with affordable housing goals.
- Consider strategies for affordable housing in zoning and subdivision regulation, such as maintaining historic density levels in historic villages, and provision of accessory living spaces within existing buildings.
- Work with the Windham and Windsor Housing Trust and the regional commission to meet local housing needs.

Education

At the time this Plan was adopted, Andover provided for the education of its children through membership in the Green Mountain Union High School and the Chester-Andover Elementary Union School districts. However, in compliance with Act 46, the State initiative mandating consolidation of local School districts into large Unified Districts, the Towns of Andover, Baltimore, Cavendish and Chester have created a new School District called the Green Mountain Unified District (GMUSD) that will, beginning on July 1, 2018, operate all the K-12 Schools in the Towns. (i.e. Cavendish Elementary School, Chester/Andover Elementary School and Green Mountain Union High School).

Number of Andover Students Attending School			
	CAES	GMUHS	TOTAL
2017	22	27	49
2016	20	17	37
2015	23	15	38
2014	22	17	39
2013	20	20	40
2012	25	27	52
2011	28	36	64
2010	25	30	55
2009	21	30	51
2008	25	25	50
2007	31	19	50
2006	27	26	53
2005	29	32	61
2004	25	26	51
2003	30	26	56
2002	33	35	68
2001	25	31	56

Table 8 - Number of Andover Students Attending School

Post High School

Vermont Community College in Springfield offers college level courses. New Hampshire Community Technical College in Claremont, NH, offers college level courses, associate degrees, and adult continuing education. There is also workforce training offered through the Workforce Investment Board in Springfield, which is located in the same building as the Vermont Community College.

Goal

- To ensure that the residents of Andover have access to adequate educational opportunities.

Policy

- Maintain and improve the quality of the education systems used by the town.

Recommendation

- Maintain active and effective representation on the Green Mountain Unified District Board.

Transportation

There is a total of 44.46 miles of publicly maintained roads and highways in the Town of Andover, including two State Highways: Route 11 and Route 100. Andover has no publicly maintained sidewalks or pedestrian trails. Bike and pedestrian consideration is therefore limited to sharing the road. The current transportation infrastructure is sufficient and no future expansion projects are planned. As such, regular road maintenance will be adequate for the duration of this plan.

In accordance with State law, local roads are classified into four groups based on their level of use, condition, and surface type. These groups are identified as Class 1, 2, 3, 4 and Legal Trails. The classifications are used to determine the amount of State Aid given to towns for transportation.

Andover Town Road Inventory	
Class 2 Town Highway	9.93 miles
Class 3 Town Highway	30.64 miles
Class 4 Town Highway	4.62 miles*
State Highways	3.89 miles
Private Roads	Approximately 3.75 miles
Legal Trails	18.86 miles
Hydrologically Connected Road Miles under the Municipal Roads General Permit	18.8 miles
Percentage of Hydrologically Connected Roadways	41.7%

Table 9 - Andover Town Road Inventory

*Not included in the Town's total mileage

Class 2 roads are the most frequently used roads in town and most of these are paved. Class 3 roads generally connect to either Class 2 roads or State highways and may be either paved or unpaved. Class 4 roads are unpaved, seasonal roads that are not plowed in winter. Towns do not receive State Aid for Class 4 roads and are not required to maintain them.

Andover has a rich history of old roads, cellar holes, family settlements, and events that are still part of the town's heritage, including 18.8 miles of Legal Trails that crisscross the town. These Trails were once class 4 roads that have since been converted. They are described and controlled by a town ordinance and depicted on the State of Vermont Highway Map.

Maintaining the existing road system is important to Andover's economic well-being and future growth. Expansion of the existing road network could have negative impacts on the town for a variety of reasons. One of which is the cost of maintaining public roads. Currently, it accounts for about 51% of the total municipal budget, not including education (2011 Town Report). However, if the road system was expanded upon, that cost could rise. Additionally, extending the existing roads or creating new roads could seriously affect the physical character of the community and lead to dispersal of housing and population.

While there are not any regional transit routes that run through Andover, dial-a-ride services are available through Southeast Vermont Transit ("The Current"). Southeast Vermont Transit also provides Elderly and Persons with Disabilities (E&D) transportation services to eligible residents, while Vermont Public Transportation Association (VPTA) provides Medicaid transportation services

to eligible residents.

Particularly on state highways, the thoughtful location and design of highway accesses, or curb cuts, directly affects the safety and efficiency of travel. The Vermont Agency of Transportation issues access permits for Routes 11 and 100, subject to B-71 standards and VT Access Management Program Guidelines. Town access permits are required for curb-cuts along all town roads under Andover's road ordinance.

5-Year Priority of Need

Project and Road Name	Priority/ schedule	Anticipated cost	Method of financing
Weston Andover Road High Bridge #9 Replacement		\$1,250,000	Town Highway Bridge Program
Repave Weston Andover Road (2 miles)			Class II Repaving Grant
Repave East Hill Road (1 mile)			Class II Repaving Grant
Replace Dorman Road culvert #13		\$120,000	VT Structures Grant
Replace Dorman Road culvert #14		\$120,000	VT Structures Grant
Replace Little Pond Road culvert #7		\$120,000	VT Structures Grant
Replace Little Pond Road culvert #10		\$120,000	VT Structures Grant
Replace East Hill Road culvert #40		\$160,000	VT Structures Grant
Strip, level and seal Andover Weston Road bridge #3 deck			VT Structures Grant
Replace Middletown Road culvert #3 with box culvert or bridge			VT Structures Grant
Replace North Hill Road culvert #5		\$225,000	

Goals

- To maintain a transportation system that is cost effective, environmentally sound, safe, convenient, and efficient for the movement of people, goods, and services.
- To encourage the use of the Legal Trail network for historical and recreational purposes.

Policies

- Careful consideration, including a review of the town's road ordinance, shall be given to all potential impacts before expansion of existing roads or construction of new roads is approved or accepted.
- Maintain a transportation system that is consistent with the rural character of the Town.
- Sound access management principles shall be used in granting vehicular access along public highways, taking into consideration safety, efficiency, and land use goals.
- Residential development shall occur within close proximity to existing town highways.
- Promote and participate in local and regional transportation planning.
- All new road expansion projects planned as part of a subdivision shall comply with Andover's zoning and subdivision regulations.
- Legal Trails networks for non-motorized use shall be managed in a manner that does not result in environmental degradation.
- Development shall not detract from the aesthetic nature of scenic roads.

Recommendations

- Review the Town road ordinance for consistency with newest Vermont codes and standards and subdivision road standards.

Town and Public Facilities

For the duration of this plan, no large public investment is anticipated. The existing Town Office, Town Hall, Highway Garage, and municipal equipment appear to be adequate for the next five years. In 1993 the Town Hall was relocated and improvements were made including adding a kitchen, bathrooms, and handicap access to the building. In 2011 and 2012, insulation improvements were made to the Town Offices. A handicap accessible ramp was added to the Town Office building in 2017.

The Town of Andover does not intend to construct or operate a municipal water system or a municipal sewage disposal system within the time frame of this plan. Owners of residential and commercial facilities are expected to provide for their own water needs and for on-site sewage disposal needs in accordance with the provisions of the State's regulations for water and wastewater.

There are no plans for any additions and/or new construction related to public recreational facilities. Additionally, the Town does not operate a transfer station. Andover residents can utilize the Springfield transfer station for disposal of their trash and recyclables.

Police protection is provided by the Vermont State Police. Andover contracts and pays for firefighting services and emergency ambulance services provided by the Town of Chester Fire Department. The present levels of Police, Fire and Emergency services are considered adequate for the duration of this plan. The Springfield Hospital is the closest full-service hospital; however, there are also community health centers located in Ludlow and in Londonderry that residents could also take advantage of.

Goal

- To maintain the appearance, safety and quality of town and public facilities.

Policies

- Encourage the use of existing Town facilities, as appropriate.
- Promote the use of Town facilities in the recognition and celebration of commemorative events and occasions of importance to the citizens of Andover.

Recommendations

- The Board of Selectmen will review the condition of town facilities and equipment on an annual basis.
- Develop a Capital Program and Budget Plan to guide town expenditures on future capital projects.

Energy

The Enhanced Energy Plan for the Town of Andover, VT, including all applicable policies and recommendations, is hereby adopted to serve as the energy element for the *Andover Town Plan*.

Andover Enhanced Energy Plan adopted by Andover Planning Commission:
December 4, 2017

Andover Enhanced Energy Plan adopted by Andover Selectboard:
June 11, 2018

Utilities

The promulgation of the Telecommunications Act of 1996 has led to the proliferation of telecommunication towers and facilities. The siting of electrical facilities, transmissions lines, telecommunication and broadcasting towers and facilities involves health, safety, and aesthetic issues. These structures can alter mountaintops and ridge lines in ways that negatively affect scenic resources vital to Andover's economic and cultural future. View-sheds and bear habitat are particularly vulnerable to impacts from the development of new communications towers. Communications towers and electrical transmission lines must meet the Federal Communications Commission's standards for Electromagnetic Fields (EMFs). In particular, new telecommunication towers or transmission lines are discouraged from the ridge lines of Terrible Mountain, East Hill, and Markham Mountain. Additionally, all new telecommunication towers and transmission lines must meet zoning standards and mitigate negative effects to the environment.

The town also recognizes the national need to conserve natural resources and reduce pollution through local efforts to reduce consumption, and to reuse and recycle existing products and materials that would otherwise become waste.

Goals

- To accommodate the necessity of utilities while minimizing the economic, aesthetic and environmental impact upon the town.
- To encourage citizens to reduce, reuse, and recycle.

Policies

- Allow new facilities and towers only as necessary to meet the changing needs of the public.
- Use of existing utilities/infrastructure shall be evaluated for viability prior to municipal permit issuance for construction and siting of new infrastructure.
- Siting of new telecommunications towers on ridge lines and mountaintops within Andover shall be prohibited.
- Encourage citizens to use recycling programs in neighboring towns.

Recommendations

- Consult the Andover Zoning Regulations for the specific conditions of construction and siting of any electrical, telecommunication or broadcasting tower or facility.

Natural and Cultural Resources

Air Quality

Andover does not have a heavy industrial base or concentrated population that has led to an air quality problem. Accordingly, the Town's good air quality constitutes an environmental resource that has aesthetic as well as human health benefits. Elements that could negatively affect air quality include: smell, particulate matter (from dust, smoke or fumes), radiation, chemical vapors, motor vehicle exhaust and power plant emissions.

Andover's ambient air quality should be maintained. Town equipment should meet emission standards. The town should take an active role in the review of development proposals or plans that could adversely affect air quality.

Goals:

- To preserve the current high air quality.

Policies:

- All town equipment shall meet or exceed Federal and State emission standards.

Recommendations:

- Consider adopting performance standards for emissions into zoning bylaws.
- Encourage local residents to keep their vehicles and equipment in compliance with all applicable emission standards.

Agricultural and forested lands

A small and continually decreasing percentage of land in Andover is utilized for agricultural purposes. This trend is a concern for the Town as farms provide open space and contribute to the rural character that people enjoy about Andover. A few of the other benefits provided by farmland include habitat for a variety of mammals, reptiles, amphibians, and birds as well as a patchwork of fields, forests, and view-sheds which together constitute an aesthetic resource.

Certain areas of town are identified as having prime agricultural soils. Primary agricultural soils are defined as those areas of land which are capable of supporting an agricultural operation and are further defined in 10 V.S.A. § 6001 (15) [Act 250]. These lands and other areas that are currently being used as farmland and/or forested land under production such as maple syrup operations should be preserved for agricultural uses when possible and, where that is not possible, the use should not diminish the lands future productivity.

The majority of land in Andover is forested. The quality and quantity of these lands contributes significantly to the rural character that is so important to town residents. Andover's forests are currently a mix of broadleaves and conifers. One species in particular, the Sugar Maple, plays an integral role in Vermont and Andover's cultural heritage as it provides colorful foliage and the sap necessary to produce maple syrup. Andover's forests also play an important role in the health of the environment. Carbon sequestration, erosion control, wildlife habitat provision and connectivity, and

flood mitigation are just a few of the many benefits provided by forestlands. Therefore, it is in the best interest of the Town to preserve the quality and quantity of their forestlands.

Goals

- To promote the continued use of agricultural and forested lands in a manner that helps to preserve the natural beauty, ecological health, function, and productivity of the lands.
- To encourage sustainable uses of Andover's marketable natural resources.

Policies

- Areas of land identified as having primary agricultural soils shall be devoted to the production of agricultural products, or to uses that will preserve such lands for future agricultural operations.
- Any development planned for agricultural or forested lands shall not reduce the natural productivity of these lands and shall minimize adverse environmental impacts.
- All logging and forest-related activity shall be done in accordance with Best Management Practices (BMP) and Required Agricultural Practices (RAP) as established by the Vermont Agency of Agriculture, Food and Markets (AAFM).
- Proposed development within mapped forest blocks and habitat connectors shall be located within only the exterior borders of the block in an effort to reduce fragmentation. If physical constraints preclude development at the edge of the block, said development shall minimize undue fragmentation of the forest block.
- Newly constructed roads longer than 1,000 feet are prohibited within mapped forest blocks and habitat connectors.
- If proposed development such as roads, driveways or utilities are in the vicinity of a mapped forest block or habitat connector, development shall be designed as such to avoid fragmentation to the greatest extent reasonably possible.

Recommendations

- Promote, through education, the correct management practices for agriculture and forest-related activities by utilizing the expertise of professionals.
- Work with area land trusts, in cooperation with land owners and the community, to educate people on the different methods available to preserve important forested and agricultural lands.
- Continue to identify areas of significant aesthetic value to the entire community.

Surface waters and wetlands

The rivers and streams that run through Andover are a valuable resource for the town and for the Williams River watershed. While most of the streams are small, many contain healthy populations of native fish and serve as the headwaters of the upper and middle branches of the Williams River. Headwater streams are sensitive to change, and land uses in this part of the watershed can affect water quality and river stability further downstream.

Due to the importance of these surface waters, it is imperative that they be protected. Protection of surface waters involves stream bank management, overseeing point source discharges of wastes, and controlling non-point sources of water pollution and storm water runoff from roads and impervious surfaces. Naturally vegetated buffer zones next to surface waters can help to filter pollutants, provide shade for fish, and habitat for birds and mammals. In addition, wide buffers provide natural greenways and wildlife corridors.

A number of ponds and wetlands are also located throughout Andover, many of which are included in the National Wetlands Inventory. Wetlands, small ponds and vernal pools (ponds that dry up in summer months) are biologically productive ecosystems and serve a variety of functions: retaining stormwater runoff, reducing flood peaks, protecting groundwater quality, filtering eroded sediment, and providing habitat for a wide diversity of plants and animals. They also provide open space and contribute to Andover's scenic landscape. According to the Vermont Wetlands Rules, Class 1 and 2 wetlands (those identified in the National Wetlands Inventory) require conditional use review prior to the issuance of a local zoning permit.

In 2015, the Vermont legislature recognized the importance of proper road Best Management Practices (BMP's) in achieving our state-wide water quality goals and tasked the Vermont Agency of Natural Resources (ANR) with developing the Municipal Roads General Permit (MRGP) as a component of the 2015 passage of Act 64 (Vermont Clean Water Act). The MRGP requires municipalities to implement a suite of BMP's along municipally owned and maintained modelled hydrologically connected roadways of 100 meters in length. Required BMP's are contingent upon the predominant slope of the road segment, with steeper slopes requiring more robust, and often costlier, BMP's. A link to the Permit and the associated standards can be found here:

http://dec.vermont.gov/sites/dec/files/wsm/stormwater/docs/Permitinformation/MunicipalRoads/sw_FinMRGP.pdf

Each Vermont municipality will be required to apply for the Permit by July 31, 2018 and are required to be fully compliant with the Permit by December 31, 2036. There are a number of grant opportunities to help Towns fund MRGP compliance projects, most notably the Municipal Roads Grants-in-Aid Program and the Vermont Better Roads Program. A source of Federal funds that can be used for costlier projects is the Municipal Highway and Stormwater Mitigation Program. Each of these funding sources require local match of 20-25%.

Goals

- Maintain or enhance the integrity and functions of Andover's surface waters and wetlands.
- Bring at least 15% of Andover's non-compliant hydrologically connected road segments into full Municipal Roads General Permit (MRGP) compliance every five (5) years until full compliance is achieved.

Policies

- Continuous areas of undisturbed vegetation along rivers and streams shall be maintained, thereby protecting shorelines, wildlife habitat, and scenic quality. Reasonable flexibility with these buffer standards shall be afforded in order to allow for recreational uses (e.g. water access, multi-use paths), water crossings (e.g. roads, driveways and utilities), and management activities (e.g. removal of hazardous trees, eradicating exotic invasive species or contaminated soil remediation).

- New development adjacent to streams or rivers must be designed to cause minimal damage to the stream environment. Any such development shall be planned so as to avoid undue sedimentation, nutrient loading, or other forms of pollution.
- Any storing or transporting of chemicals or other hazardous material shall be done in such a manner so as to have no adverse impact on streams or other water resources.
- The use of road salts and other chemicals adjacent to sensitive areas such as wetlands, streams, and steep slopes shall be minimized to the most reasonable extent possible.
- Any alteration to rivers, lakes, streams, ponds and/or wetlands shall be carried out in compliance with all Federal, State and local regulations.
- Contingent upon the availability of sufficient external funding, surface water resources shall be protected and improved in accordance with the policies and actions outlined in the most recent version of the Vermont Department of Environmental Conservation (VT DEC) Williams River Watershed Tactical Basin Plan (TBP).

Recommendations

- Review and amend zoning regulations to protect rivers and streams, ponds and wetlands not already protected under state law.
- Include high elevation streams and buffer areas in a plan for open space conservation.

Flood Resilience

Statutory Basis:

The intent of this Subchapter is to address statutory requirements of the flood resiliency element approved as Act 16 by the Legislature in 2013. This Subchapter will meet that requirement by:

1. Identifying areas in the Town of Andover that are at significant risk for flooding and/or fluvial erosion;
2. Designate those areas to be protected from such hazards; and,
3. Articulate policies and strategies that promote community flood resilience.

Background:

In 2013, the Vermont House and Senate passed H.401, which the Governor then signed into law (Act 16). Act 16 requires town plans to include a flood resilience component that identifies flood and fluvial erosion hazard areas and recommends strategies to protect these areas and “to mitigate risks to public safety, critical infrastructure, historic structures, and municipal investments.” To prevent future damage to private property and municipal infrastructure, the town shall adopt policies or ordinances in order to strengthen flood resilience in Andover.

Hazard Areas:

Areas in Andover that are particularly at risk of flooding and fluvial erosion are discussed below, and within the Andover Local Hazard Mitigation Plan, and are shown on the Water Resources Map. These hazard areas are based on mapping data from FEMA, local input, and the Vermont Agency of Natural

Resources (ANR). Mapping data for the below can be found on the ANR Natural Resource Atlas and Flood Ready Vermont websites.

1. Flood Hazard

The areas in Andover that are at higher risk of flooding (i.e. Special Flood Hazard Areas) are shown on FEMA's Flood Insurance Rate Map (FIRM), as most recently amended. These maps are also available through FEMA's online [Flood Map Service Center](#). The Flood Hazard Map depicts the Special Flood Hazard Areas (SFHA).

2. River Corridors

Rivers are dynamic and, as a result, development that is located too close to river/stream banks are at risk of potential bank erosion and/or channel migration. The River Corridor (RC), which is shown on the River Corridor Map, depicts the portions of Andover that are at risk of this type of fluvial erosion damage. The RC term is defined under State statute as "the land area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of a dynamic equilibrium condition and for minimization of fluvial erosion hazards, as delineated by the Agency of Natural Resources in accordance with the river corridor protection procedures" (24 V.S.A. §4303).

3. Williams River Stream Geomorphic Assessment and River Corridor Plan

A Phase II Stream Geomorphic Assessment (SGA) and River Corridor Plan (RCP) for the Williams River and associated tributaries, examining erosion hazards, floodplain access, bridge and culvert conditions, and other related concerns, was finalized in September, 2016. Findings from these studies, as they relate to flood resiliency in Andover, include:

- Man-made earthen berms and undersized stream crossing structures in the vicinity of Horseshoe Acres Campground is exacerbating flooding in Andover.
- The encroachment percentage along much of the Middle Branch in Andover is extreme (>75%).
- The percentage of bank erosion along much of the Middle Branch in Andover is high (>20%).

Designated Areas to be Protected:

In accordance with the Act, the following areas of Andover are designated for their role in reducing the risk of flood damage to infrastructure and improved property.

1. Special Flood Hazard Areas

Floodway and floodway fringe areas (i.e. Special Flood Hazard Areas) as shown on the most current FIRM developed by FEMA represent areas that are subject to Andover's flood hazard review procedures in order to protect properties from future flood damages. This generally requires raising living spaces to be one (1) foot above the Base Flood Elevation (BFE) or dry-flood proofing non-residential buildings, along with other requirements.

2. River Corridor

Lands subject to fluvial erosion hazards are as shown on the most recent ANR map of River Corridors. Development that is subject to State rules and procedures – including state facilities, required agricultural and forestry activities per 24 V.S.A. §4413, and projects subject to Act 250 or Section 248 review – will be required to meet standards that promote resilience from future fluvial erosion in these areas.

3. Lands Adjacent to Streams

FEMA special flood hazard areas (SFHA) are designated along only the larger rivers and streams in Andover. However, flooding is possible along all other watercourses. Therefore, Andover's Zoning Bylaws should consider an undisturbed, vegetated buffer strip of fifty (50) feet from all wetlands, streams and rivers, and public ponds.

As noted above, the water quality and flood resilience benefits of buffers along water courses play an important role. However, equally important is to allow for some exemptions to the buffer standards in order to allow for recreational uses (e.g. water access, multi-use paths), stream crossings (e.g. roads, driveways and utilities), and management activities (e.g. removal of hazardous trees, eradicating exotic invasive species or contaminated soil remediation).

4. Wetlands

Wetlands serve a number of important functions, including flood retention. Maintaining this functionality of wetlands can contribute toward mitigating flooding impacts in Andover, therefore, zoning bylaws should be considered to protect wetland functions.

5. Upland Forests

Maintaining an adequate forest cover in rural upland areas and steep slope areas helps to maximize infiltration of water into the soil and minimize or slow down stormwater runoff in ways that mitigate flooding hazards to downstream locations. Efforts to minimize heavy cutting in forestry activities, limiting the extent and densities of developments, and properly managing stormwater in these uplands areas will help contribute toward community flood resilience. Andover subdivision bylaws should consider stormwater and steep slope provisions that help to achieve this upland forest functionality.

Goals, Policies & Recommendations:

In order to protect the areas identified and designated above in this subchapter and to mitigate risks to public safety, critical infrastructure, historic structures, and municipal investments, the following goals, policies and recommendations are established.

Goal

- Encourage a flood resilient community.

Policies

- New development in identified floodways and River Corridors shall be avoided. If new development is to be built in such areas, it shall not exacerbate flooding and/or fluvial erosion.
- Infill development in River Corridors shall be allowed in accordance with the VT Department of Environmental Conservation's *Flood Hazard Area and River Corridor Protection Procedure*.
- The protection and restoration of floodplains and upland forested areas that attenuate and moderate flooding and fluvial erosion shall be encouraged.
- Where buffers are required for Act 250 projects, provide reasonable flexibility with these buffer standards in order to allow for recreational uses (e.g. water access, multi-use paths), water crossings (e.g. roads, driveways and utilities), and management activities (e.g. removal of hazardous trees, eradicating exotic invasive species or contaminated soil remediation).
- Maximize onsite stormwater infiltration to help promote flood resiliency.
- Preserve the flood retention functionality of wetlands that serve as important components of local flood resilience efforts.
- Andover's *Local Hazard Mitigation Plan*, as most currently amended, is hereby adopted by reference as a component of this Municipal Plan.

Recommendations

- Consider acquisitions of at risk properties, with assistance from applicable grant funding sources.
- Retrofit/replace existing drainage systems to allow for greater water passage.
- The Town should consider developing adequate emergency preparedness and response planning including, but not limited to:
 - a) Maintenance of an up to date Local Emergency Operations Plan;
 - b) Updating the Local Hazard Mitigation Plan on a five-year timeframe, or as needed;
- Evaluate existing regulations and standards to ensure that the goal and policies of this Subchapter are adequately addressed.
- Maintain enrollment in the National Flood Insurance Program.
- Update the bridge and culvert inventory and condition assessment and maintain an annual culvert upgrade and maintenance program to address the priority needs identified in the inventory.
- Encourage flood resiliency by prioritizing land conservation efforts for those lands that serve important flood retention or attenuation functions.
- Andover should consider updating zoning bylaws to protect river corridors and establish stream setbacks.

Wildlife habitat and endangered species

Wildlife is plentiful throughout the Town of Andover. Whitetail deer, black bear, moose, and wild

turkey are a few of the animals that can be found around town. Large tracts of undeveloped land provide the best habitat for bear, deer, and wildlife in general. However, some habitat areas are more important, or “significant,” than others. Habitat is considered more significant when it supports rare species or an unusually large number of species; provides an abundance of food, maternity sites, or other resources; provides a buffer for wildlife against the effects of development; or when it represents a small percentage of the landscape. The Vermont Department of Fish and Wildlife may consider protection of significant habitats as Necessary Wildlife Habitat under criterion 8(a) of Act 250. Additionally, the Department of Fish and Wildlife rates land according to its wildlife habitat suitability. Areas that receive higher ratings (as shown on the Wildlife Habitat Map) should be preserved. According to the Vermont Non-game and Natural Heritage Program, there are currently no endangered or rare species located in Andover.

Goal

- To preserve wildlife habitat areas.

Policies

- Encourage the conservation of contiguous properties and discourage practices that fragment mapped forest blocks and habitat connectors.

Recommendations

- Develop strategies to protect areas containing rare species, exemplary natural communities, and necessary wildlife habitat. Strategies may include public and quasi-public ownership or conservation easements protecting such lands.
- Request that the Regional Planning Commission update maps, as appropriate, indicating the locations of state regulated natural resource constraints.
- Review Andover’s subdivision regulations to ensure conformity with wildlife habitat policies.
- Discuss at town meeting and other community forums the development of a conservation program.
- Discuss the merit of creating a conservation commission.

Mineral resources

Gravel and sand are the only earth resources utilized at this time, but other resources such as granite, soapstone and talc may be present. Mining provides jobs and is a valuable source of income for rural communities. Resources from mining make activities such as building construction, road development, and a variety of other manufacturing processes possible. However, mining and mineral extraction can adversely affect a community in a number of ways. First, the road network can suffer damage due to the heavy equipment and trucks that need to be transported to and from the job site. Second, the aesthetics of the community’s rural landscape can be negatively impacted. Third, surrounding ecosystems can be negatively affected (these effects include, but are not limited to degradation of water quality, habitat fragmentation, and degradation of soil quality). Finally, the peace and quiet of a rural community can be changed due to the associated noise pollution.

Goals

- To encourage the extraction and processing of mineral resources in a manner that is appropriate and consistent with Andover's rural character.
- To minimize negative effects from mineral extraction to the surrounding ecosystems.

Policies

- The extraction of any earth resource shall be permitted only when the present and future effects of such extractions and related processing are not unreasonably damaging to the surrounding properties and the environment.
- Earth resource extraction sites shall be restored as closely as possible to their original condition in a timely manner. Bare soils left as a result of mining activities shall be seeded or otherwise stabilized within one year of the conclusion of mining activities.

Recommendations

- Review local and state regulations to assure that the public interest is protected. Amend local regulations to conform to any revised state regulations.

Cultural Resources

There are many historically significant structures located throughout Andover, thirteen of which have been identified on the State Register of Historic Places; one of these, Rowell's Inn in Simonsville, has been entered on the National Historic Register. The other state identified sites are: the Union Church, the currently active Andover Community Church, the Jacquith House, Marie Hill Farm, the Elliot House, the Hazeltine House, the Town Hall, the Bergquist House, the Hale House, the Halloway House, the Davison House, and the Town Highway 17 Bridge, over Nancy Brook. These structures, and others like them, should be protected and preserved.

Goals

- Protect and preserve the structures recorded in the state and national registers of historic places.
- Protect and preserve cultural resources as they are identified by the residents of Andover.

Policies

- The demolition of historically significant structures shall be discouraged.
- Property owners of historic structures seeking inclusion in the State or National Registers should be encouraged and assisted in their efforts.

Recommendations

- Review bylaws to strengthen protection of historic structures.
- Cooperate with local Historical Societies and the Vermont Division for Historic Preservation to build public consensus for the value of historic structures.
- Inventory cultural resources as identified by the residents of Andover.

Land Use

Existing Land Use

Andover is a small, rural town that is predominantly forested. The town consists of single family residential homes and seasonal homes (due in part to Andover's proximity to the Okemo ski area) with very little commercial development. There are a few businesses that operate in town, but most people work in surrounding towns. Development in the Town of Andover has been significantly influenced by its topography and road access. Generally, commercial development has occurred along Andover Road and Route 11 with the exception being the Tater Hill recreational area which is located in the Towns of Windham and Andover. Residential development has been limited by steep slopes, very shallow soils and poor road access. Current land use patterns continue to be influenced by many of the same limitations, but other important factors such as technological advances and availability of capital are providing opportunities for development in areas that were once considered severely limited.

Future Land Use

Historically, development in Andover has occurred in a manner that was in accordance with community interests. The rate at which the population has grown has not placed an undue burden on town services and schools, nor on the environment, primarily because the majority of development has been for single family homes or for small subdivisions. Should a proposed development place an undue burden on Town services and schools, the Town may require the project to be phased in to mitigate the effects.

In order to guide future growth with respect to the requirements of 24 V.S.A. 4382(a)(2), the following land use categories are established and shown on the Future Land Use Map. Generally, land within the delineated areas is suitable for the uses and densities proposed in this Plan; however, the physical characteristics of certain individual properties may be such that engineering or environmental considerations will further limit development. The descriptions of appropriate land uses and densities should be interpreted generally; individual properties may have additional limitations. There are currently no industrial land uses in the Town of Andover and the Town does not anticipate any in the future. However, working landscape uses such as sustainable logging or maple sugaring may be found in all of the categories; therefore, it is important that these uses minimize impacts to adjacent parcels. As a rural community without a defined downtown district, there are no areas proposed for designation under chapter 76A for historic downtown development.

Along with the development capability of the land and protection of valuable natural resources, the efficient provision of public services is the basis for Andover's land use categories. Directing growth to areas most effectively and efficiently serviced by utilities, roads, and services will help the Town achieve its stated objectives of maintaining its rural character and controlling the cost of public services. Development on the remaining, more remote land should be limited to the lowest density uses because of the steeper terrain, higher elevations, more fragile environments, wildlife habitat, and limited access to roads and other services.

Agriculture

- A. Values: farming economy, food supply, cultural heritage, rural character
- B. Desired uses:

1. Encourage the continued operation of active farms
2. Conserve both prime agricultural soils and agricultural soils of statewide importance for future use
3. Allow for low-density residential & home industry uses, but minimize fragmentation of agricultural soils

Conservation

- A. Values: wildlife habitat, outdoor recreation, educational resources, fragile natural areas, economic asset (recreation & tourism), forestlands, shorelands/flood control management areas, aesthetic
- B. Desired uses:
 1. Maintain natural conditions for current and future generations, highest level of protection from development
 2. Very low density
 3. Special care with resource management or extraction to maintain character and value of these resources

Rural Residential

- A. Values: rural character, recreation, working landscape and forestlands
- B. Desired uses:
 1. Maintain rural character
 2. Highest density settlement patterns
 3. Supports a variety of uses (residential, agricultural, forest, home occupations and other compatible uses)
 4. Discourage sprawl and strip commercial development

Commercial

- A. Values: commercial uses at a scale appropriate for Andover, job opportunities
- B. Desired uses:
 1. Commercial uses at smaller scale that are appropriate for Andover (with no public water & sewer services), such as a gas station, inn, or sawmill.
 2. Concentrate commercial uses to minimize traffic and other impacts on other parts of town
 3. Minimize undue adverse impacts on adjacent, non-commercial uses through siting, landscaping, screening and other efforts

Goal:

- Development shall be compatible with the surrounding areas to the greatest extent possible in-order to preserve Andover's rural character, open spaces, and historic land use patterns.

Policies

- Future development shall be consistent with the future land use map and category descriptions.
- It shall be the policy of the Town of Andover to control the rate of growth within the community so as to promote orderly development without placing undue burdens upon the taxpayers or the environment.

- Commercial and industrial development shall be at the appropriate scale for a small rural community like Andover.
- Residential development shall not fragment important agricultural and forest lands or lands that provide habitat for bear, moose, bobcat and other important indicator species. The Wildlife Habitat Map shows areas of Town that have high wildlife habitat suitability ratings.
- Residential, commercial and industrial development along ridgelines and/or on slopes greater than 15% shall be prohibited.
- The clustering of residential development is to be encouraged. This will result in higher densities on some parcels but will be beneficial to the proper functioning of these lands.
- Home based and small commercial enterprises are important so long as they are compatible with adjoining land uses and do not adversely affect air quality, water quality, or scenic resources.
- Employment opportunities based on tourism, agriculture, forestry, and natural resources are encouraged.
- Development along the existing road system is encouraged; the construction of new public roads is discouraged.
- The siting of public utilities shall be sensitive to Andover's aesthetic and natural resources. Specifically, the location of a utility scale wind or power generation facility is prohibited from the ridge lines of Terrible Mountain, East Hill, and Markham Mountain.
- Maintain a high quality natural environment that is available and accessible to the citizens of Andover to use and enjoy.

Recommendations

- Review the rate of population and housing growth every five years to determine rate of growth.
- Update the zoning and subdivisions regulations on an as needed basis to address growth issues.

Relationship to Local and Regional Plans

Andover is a rural town with a population smaller than that of the surrounding towns. Its two villages, Peaseville and Simonsville, have been identified in the Regional Plan as “historic hamlets” consisting of little if any commercial development. Andover aims to preserve its rural character and the cultural and architectural heritage of these hamlets. Therefore, the people of Andover will continue to depend on the surrounding towns, particularly Ludlow, Chester, and Londonderry for shopping, banking, health care, secondary educational services, employment, and recreation. For the most part, this appears to be a mutually agreeable situation between the towns.

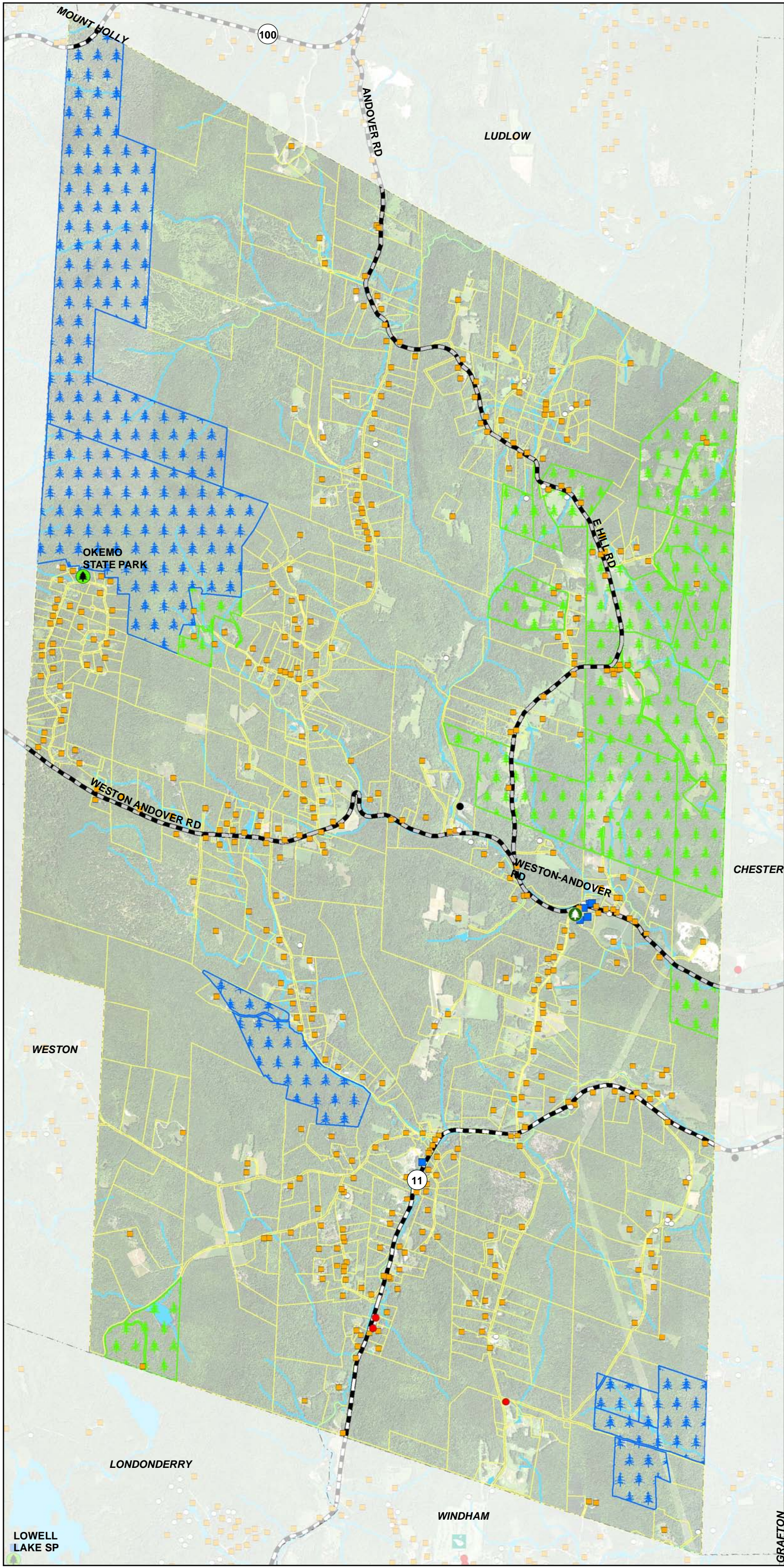
The Okemo Mountain ski resort has the greatest potential for influencing the regional planning picture around Andover in the foreseeable future. Employing approximately 1,200 people during the ski season, the success of the resort is essential to the financial stability of many families in the region. The presence of the resort also has other implications for the region, and for Andover in particular. Regional or multi-town trends in traffic patterns, land use, land affordability, and seasonal home construction should be considered when comparing Andover’s Town Plan with that of other towns.

Implementation

The primary purpose of this section is to identify immediate actions which might be taken to achieve the plan’s goals and objectives. First, a complete and updated plan is itself a product and an achievement. It can be used to justify and prioritize the use of federal funds for community development, transportation improvements, natural resource protection and management, and other investments. In addition, the town plan stands as a coherent representation of a community’s values as they pertain to the lands of the town. Act 250 requires that developers show their projects conform to the values and priorities expressed in town and regional plans. The town should update this plan as often as necessary, and at least every five years.

During the five-year term of this plan, there are several tasks which have been identified within the plan:

1. Review and adjust zoning and subdivision regulations to conform to the goals set forth in the population, economy, housing, natural resources, and land use elements of this plan.
2. Continue to participate in regional transportation coordination efforts through the Transportation Advisory Committee and Town and Village Transportation Services.
3. Develop access management guidelines for Andover’s 3.9 miles of state highway, Route 11.
4. Request that the Regional Planning Commission create and update maps indicating the locations of state regulated natural resource constraints.
5. Develop a Capital Program and Budget Plan.
6. Maintain active and effective representation on the elementary and high school boards.
7. Work with regional land trusts and the regional commission on meeting local housing needs.
8. Identify areas of significant aesthetic value to the entire community.
9. Inventory cultural resources as identified by the residents of Andover.



Current Land Use Map

Town Plan 2018
Town of Andover, VT
Adopted 9/10/2018

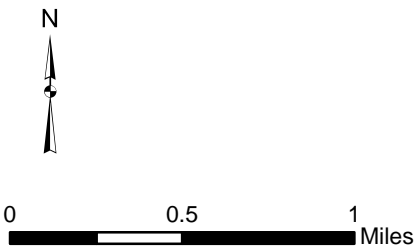
- Government and Community
- Commercial and Industrial
- Residential
- Cemetery
- Other
- State Park/ Forest/ Recreation Area
- Town Park/ Forest/ Recreation Area
- Golf Course
- Other notable recreation site
- Public Conserved Land
- Privately Conserved Land
- Parcel
- VT State Highway
- Class 2 Town Hwy
- River or Stream
- Lake or Pond

Data Sources:
Conserved Lands (RPC 2018 collating from UVM 2009 (Private), UVM 2010 (Public), and VLT 2016), Recreation sites (ANR 1999 and RPC 2014), Buildings (VT E911 Feb 2018), Roads (VTrans 2017), Waterbodies (ANR 2008), Parcels (Terra Map 2016), Town Boundary (VCGI 2016), Aerials (NAIP 2016)

VT State Plane, Meters, NAD 83

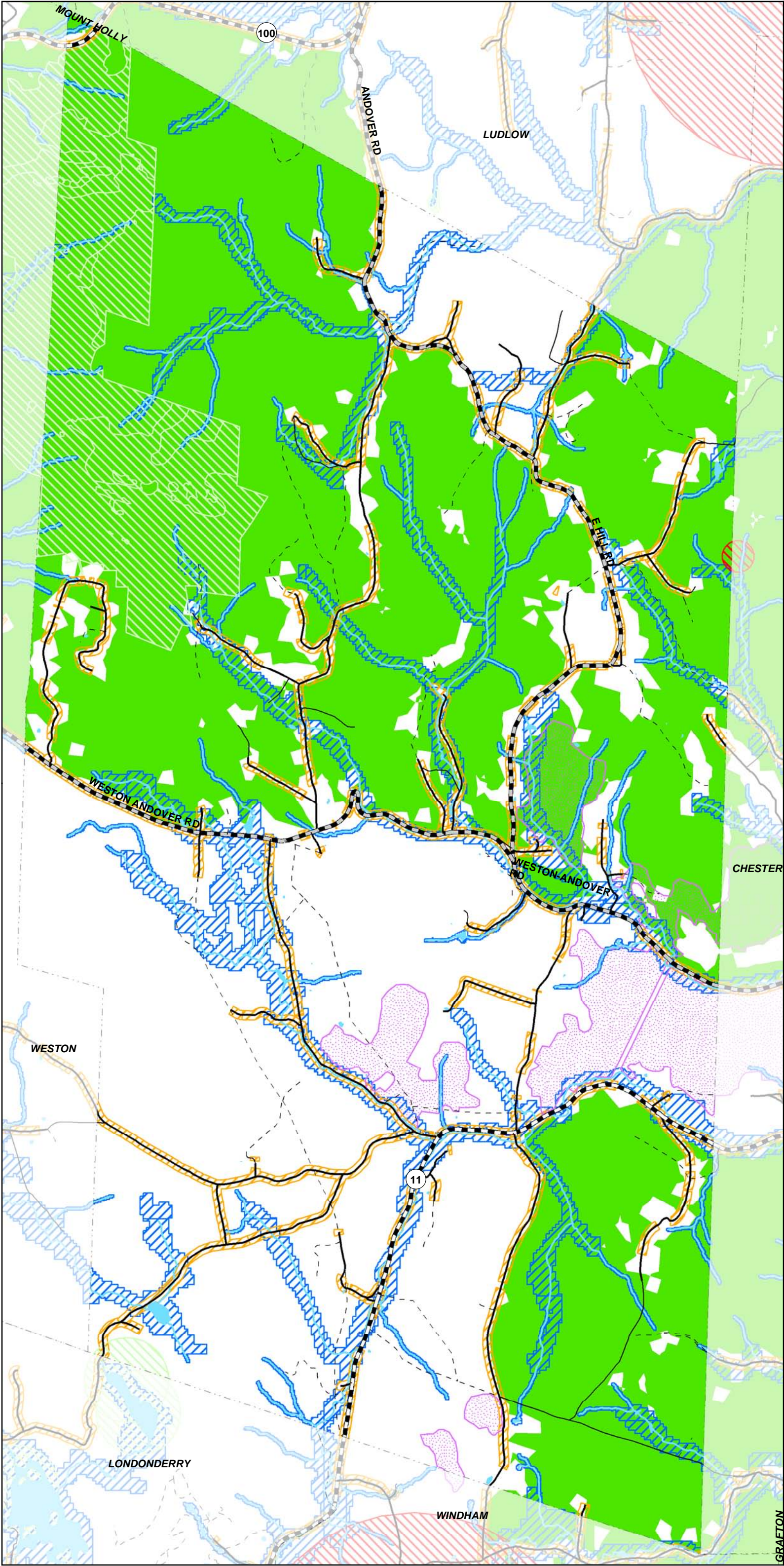
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Drawn April 13, 2018



Wildlife Habitat Map

**Town Plan 2018
Town of Andover, VT
Adopted 9/10/2018**

- State-Endangered Species
- State-Threatened Species
- Natural Community
- Deer Wintering Area
- Highest Priority Wildlife Crossings
- Highest Priority Surface Water and Riparian Areas
- Highest Priority Connectivity Blocks
- River or Stream
- Lake or Pond
- VT State Highway
- Class 2 Town Highway
- Class 3 Town Highway
- Class 4 Town Highway
- Forest Road, Legal Trail or Private Road

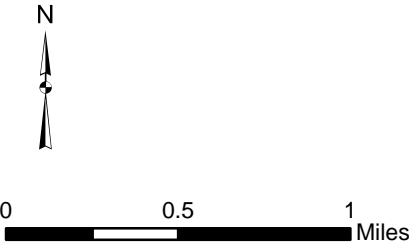
Within the town there are no Highest Priority Interior Forest Blocks.

Data Sources:
Highest Priority Interior Forest Blocks, Highest Priority Connectivity Blocks, Highest Priority Surface Waters and Riparian Areas, Highest Priority Wildlife Road Crossings (VT Conservation Design, ANR 2016), Rare, Threatened, Endangered and Natural Communities (ANR Dec 2017), Deer Wintering Areas (ANR 2017), Waterbodies (VHD 2008), Roads (VTrans 2017), Town Boundary (VCGI 2016).

VT State Plane, Meters, NAD 83

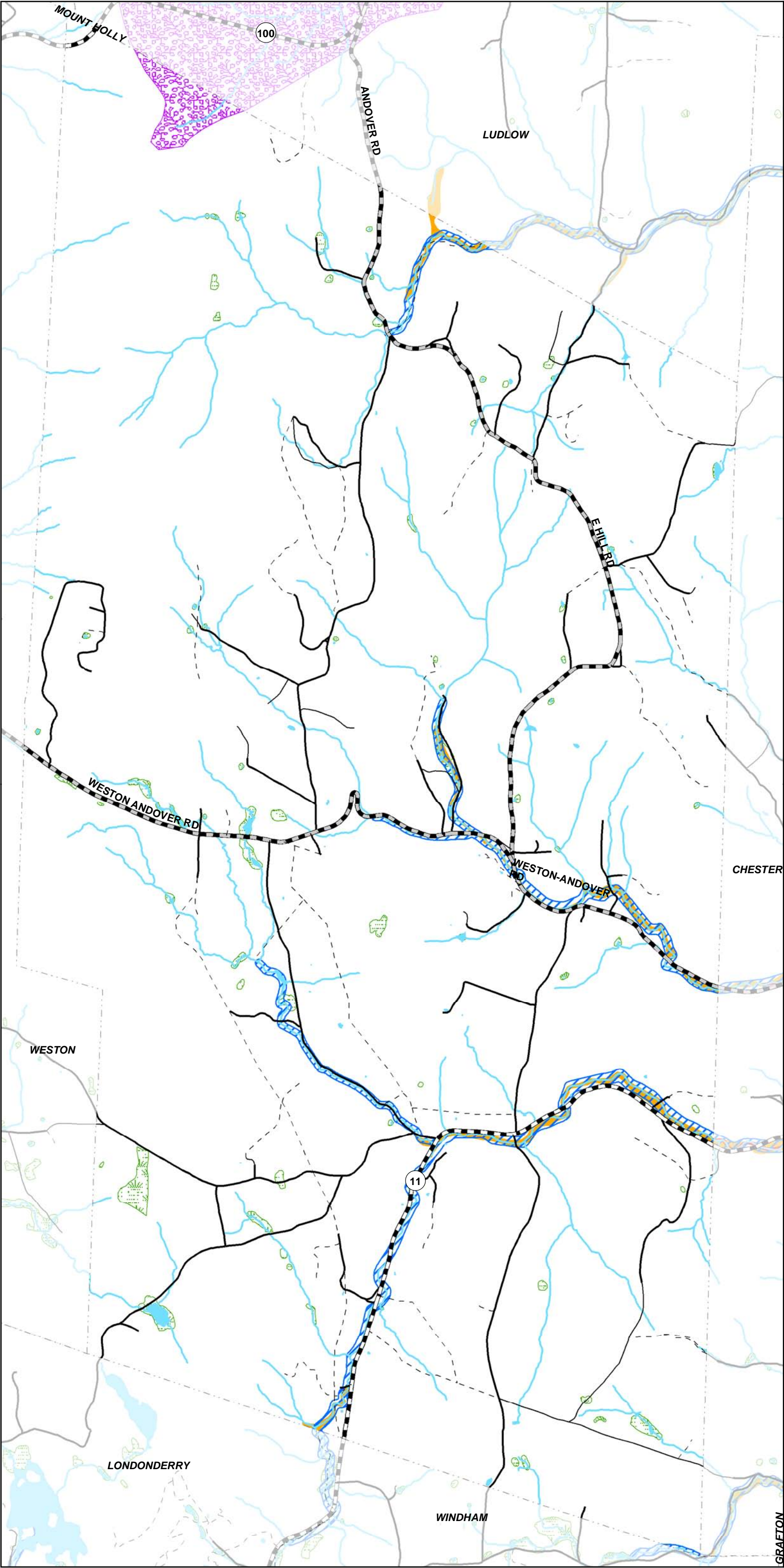
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Drawn April 13, 2018



Water Resources Map

**Town Plan 2018
Town of Andover, VT
Adopted 9/10/2018**

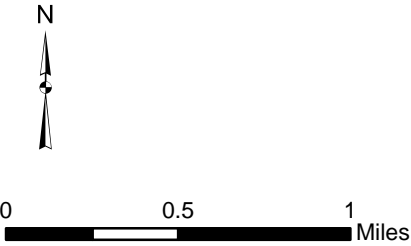
-  Floodway (Zone AE)
-  Floodway Fringe/
Floodplain (Zone A
and AE)
-  River Corridor
-  Wetland
-  Groundwater
Protection Area
-  River or Stream
-  Lake or Pond
-  VT State Highway
-  Class 2 Town Highway
-  Class 3 Town Highway
-  Class 4 Town Highway
-  Forest Road, Legal
Trail or Private Road

Data Sources:
Floodway and Floodplain
(FEMA 2008), River Corridor
(ANR Jan 2015), Wetlands
(VSWI ANR 2017),
Waterbodies (VHD 2008),
Groundwater Protection Area
(ANR 2017), Roads (VTrans
2017), Town Boundary (VCGI
2016).

VT State Plane, Meters,
NAD 83

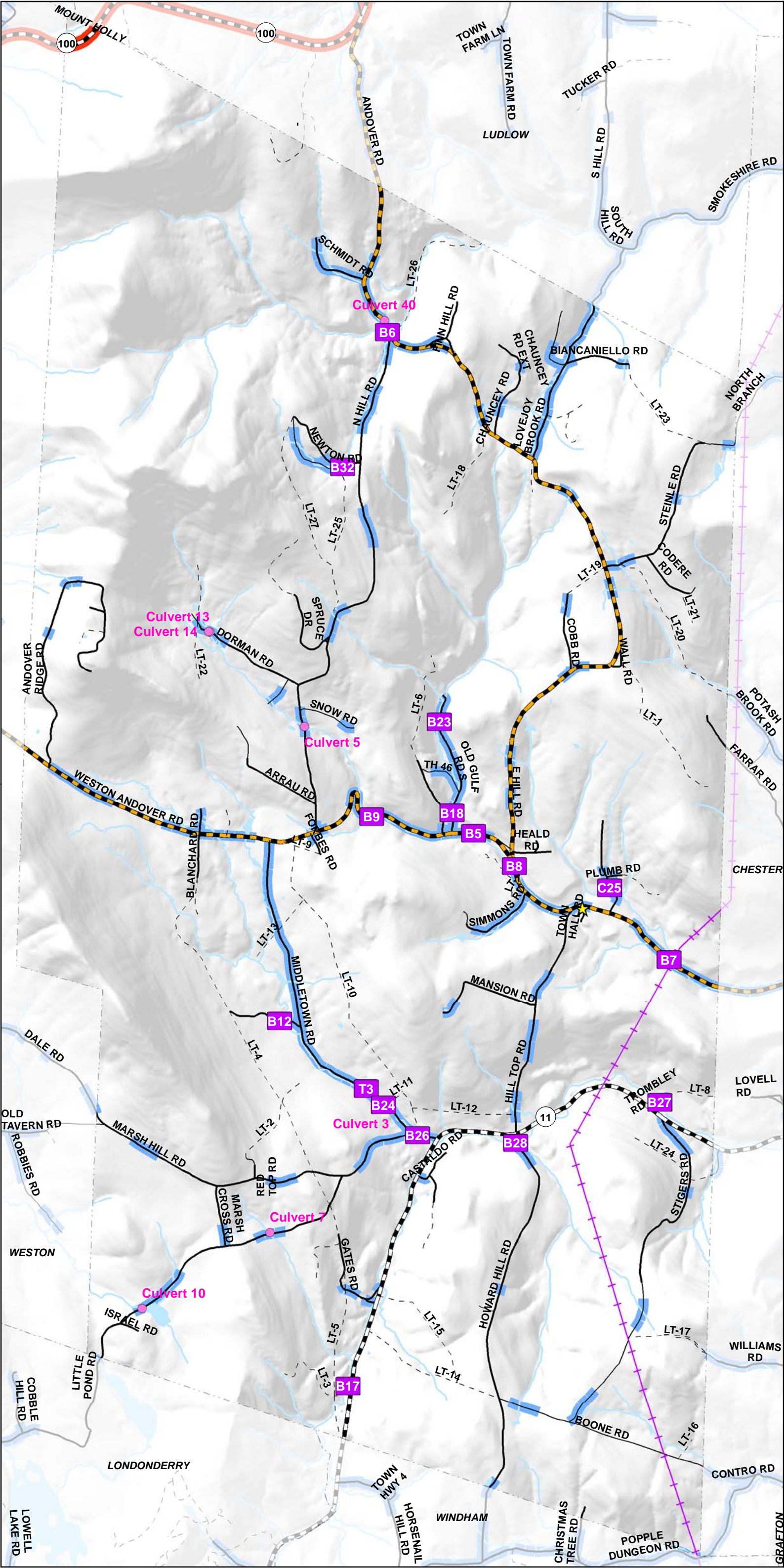
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Drawn April 13, 2018



Transportation and Utilities Map

Town Plan 2018 Town of Andover, VT Adopted 9/10/2018

★ Town Office

■ Bridge

● Notable culverts that need work

VT State Highway

Class 2 Town Highway

Class 3 Town Highway

Class 4 Town Highway

Forest Road, Legal Trail or Private Road

Hydrologically Connected Road Segment

Scenic Route 100 Byway

Electric Transmission Line Corridors

River or Stream

Lake or Pond

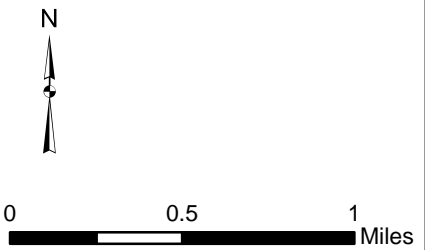
Within the town there are no airports, fixed route transit routes or railroads. There are also no schools, hospitals, libraries, emergency services, public water or sewer lines within the town.

Data Sources:
Bridges and Culverts (RPC/ Town 2018, vtculverts.org),
Electric Transmission Line Corridors (VCGI 2003 and RPC 2016), Buildings (VT E911 Feb 2018), Waterbodies (VHD 2008), Roads and Byways (VTrans 2017), Hydrologically Connected Road Segment (Municipal Road General Permit, ANR January 2018), Hillshade (derived from 10m Digital Elevation Model, USGS/ VCGI 2012), Town Boundary (VCGI 2016).

VT State Plane, Meters, NAD 83

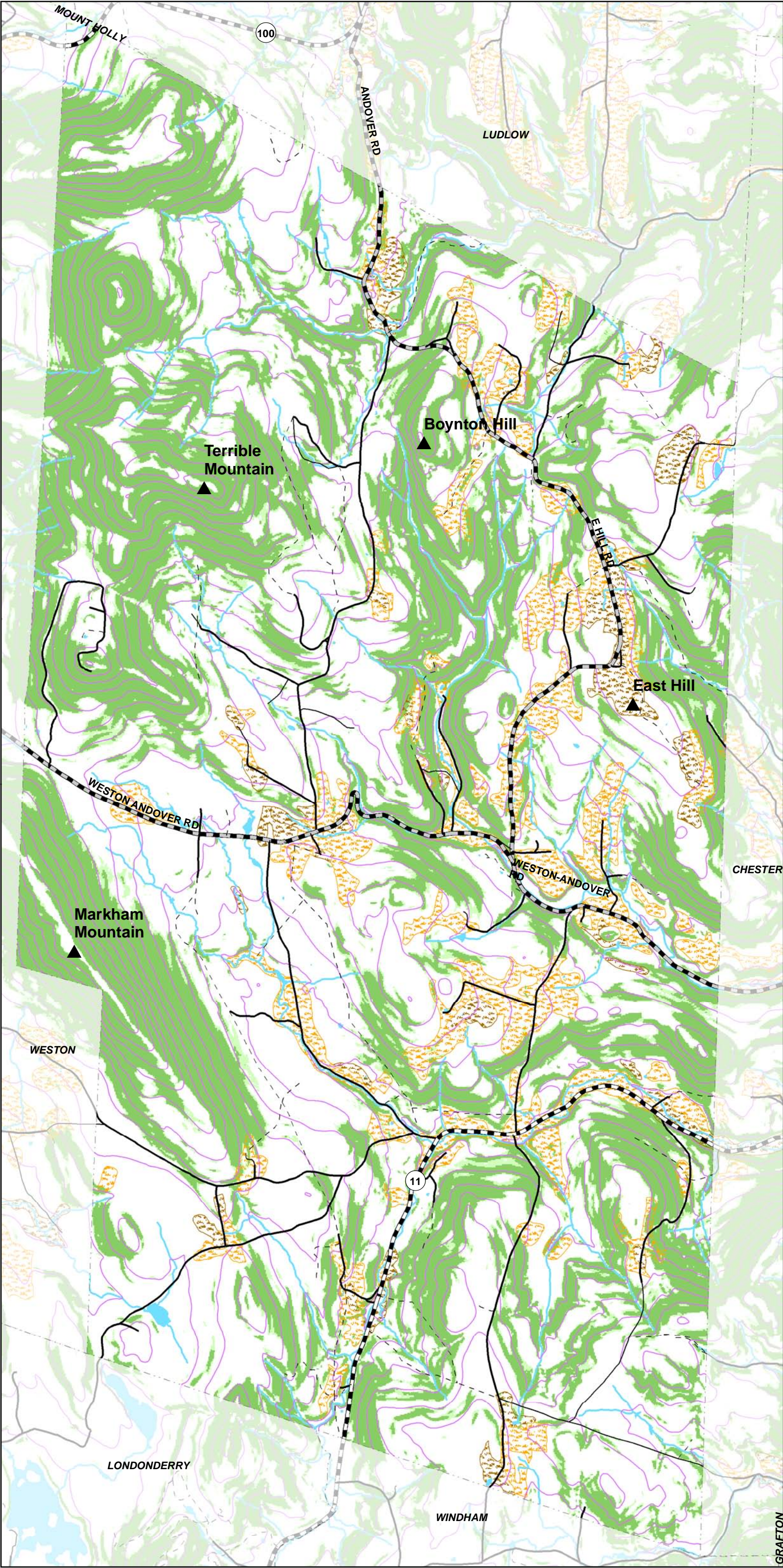
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Drawn April 13, 2018



Natural Resources
Map

Town Plan 2018
Town of Andover, VT
Adopted DRAFT

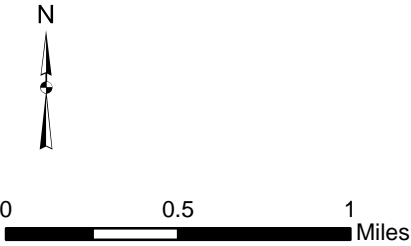
- ▲ HillAndMountainSu...
- 100ft contour
- Prime Agricultural Soils
- Agricultural Soils of Statewide Importance
- Steep slope - 20 - 23%
- Steep slope - 24% and over
- River or Stream
- Lake or Pond
- VT State Highway
- Class 2 Town Highway
- Class 3 Town Highway
- Class 4 Town Highway
- Forest Road, Legal Trail or Private Road

Data Sources:
Agricultural soils (NRCS 2015),
Slope (10m USGS/ VCGI 2012),
Contours (using 20ft VCGI 2012),
Hill and Mountains (Unknown source)
Waterbodies (VHD 2008),
Roads (VTrans 2017),
Town Boundary (VCGI 2016).

VT State Plane, Meters,
NAD 83

For planning purposes only.
Not for regulatory interpretation.

Formatted for 11x17 paper.



P.O. Box 320, Ascutney, VT 05030
802-674-9201 www.swcrpc.org

Drawn March 20, 2018



**Future Land Use Map
with Forest overlays
FOR DRAFTING ONLY**

**Town Plan 2018
Town of Andover, VT
Adopted 9/10/2018**

**Future Land Use
Categories**

- Rural/ Residential
- Commercial
- Agriculture
- Conservation
- Highest Priority Connectivity Blocks
- VT State Highway
- Class 2 Town Hwy
- Parcel

For drafting purposes from Vermont Conservation Design (ANR 2016):
- Highest priority connectivity blocks

There are no highest priority interior forest blocks.

Data Sources:
Roads (VTrans 2017), Parcels (Terra Map 2016), Future Land Use (RPC/ Town 2013), Town Boundary (VCGI 2016), Aerials (NAIP 2016)

VT State Plane, Meters, NAD 83

For planning purposes only.
Not for regulatory interpretation.

Formatted for 11x17 paper.



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P.O. Box 320, Ascutney, VT 05030
802-674-9201 www.swcrpc.org

Drawn April 13, 2018

Andover Enhanced Energy Plan

Adopted – June 11,
2018

Planning Commission
Public Hearing:
December 4, 2017

Selectboard Public
Hearing:
June 11, 2018

Enhanced Energy Plan for the Town of Andover, Vermont

A. Introduction

Andover's *Enhanced Energy Plan* is a component of the *Andover Town Plan* prepared in accordance with 24 V.S.A., Chapter 117, Subchapter 5. The intent of this plan is to address the requirements of Act 174 of 2016 and to meet the enhanced energy planning standards developed by the Vermont Department of Public Service (DPS). This document was prepared based upon the *Guidance for Municipal Enhanced Energy Planning Standards* (DPS; March 2, 2017) in order for the Andover Town Plan to be given greater weight in the Section 248 process.

The Southern Windsor County Regional Planning Commission (SWCRPC) is currently developing a regional energy plan to meet these standards in order to receive Section 248 substantial deference. Andover is coordinating the development of this municipal energy plan with the SWCRPC so that:

1. The municipal plan is informed by the ongoing regional energy planning process; and,
2. The municipal plan is compatible with the regional plan.

This Plan was developed with assistance from the SWCRPC through funding provided by the Vermont Department of Public Service.

A.1 Energy Goals

Through the 2016 Vermont Comprehensive Energy Plan (CEP), the State of Vermont has identified a number of goals and strategies to achieve energy conservation throughout the state. The most significant of these goals being;

By 2050, 90% of Vermont's total energy will be derived from renewable sources.

The CEP includes additional goals to fully achieve the overall, long-term "90x50" goal. These goals serve as the platform for determining energy policies, targets and pathways for the Town of Andover, as articulated throughout this plan.

A.2 Andover's Energy Goals

The Town of Andover hereby adopts the goals established in the 2016 CEP, and through the detailed policies and actions contained in this plan, Andover will strive to achieve these goals. Below is a list of some of the methods outlined in this plan to further energy conservation and efficiency efforts within our community:

- Reducing total energy consumption throughout all sectors, including: electricity, space heating, and transportation.
- Support efforts at the local level to choose energy efficient and renewable options.
- Create a diverse mix of energy sources to reduce the impact of supply restriction.
- Utilize local, renewable sources of energy to decrease reliance on out-of-region, and out-of-state forms of fuel.
- Select energy choices that help preserve the environment.

- Strive for both an adequate supply of electricity, as well as a distribution network to meet the region's needs.
- Maximize energy efficiency by matching fuel type to end use.
- Support adaption and lifestyle changes which are consistent with changes in future energy use and generation.
- Reduce greenhouse gas emissions.

B. Analysis of Current Energy Use

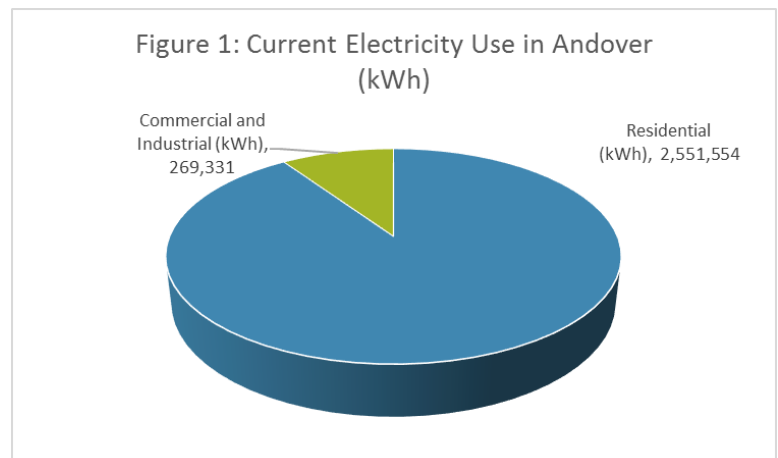
This section involves a summary and analysis of existing conditions in Andover with respect to energy use. Appendices A and B include more detailed data figures, which are summarized in this section. This section relies on data analysis provided by the Southern Windsor County Regional Planning Commission and, as such, the Regional Energy Plan for Southern Windsor County contains an important regional context for this analysis of Andover's energy use and targets.

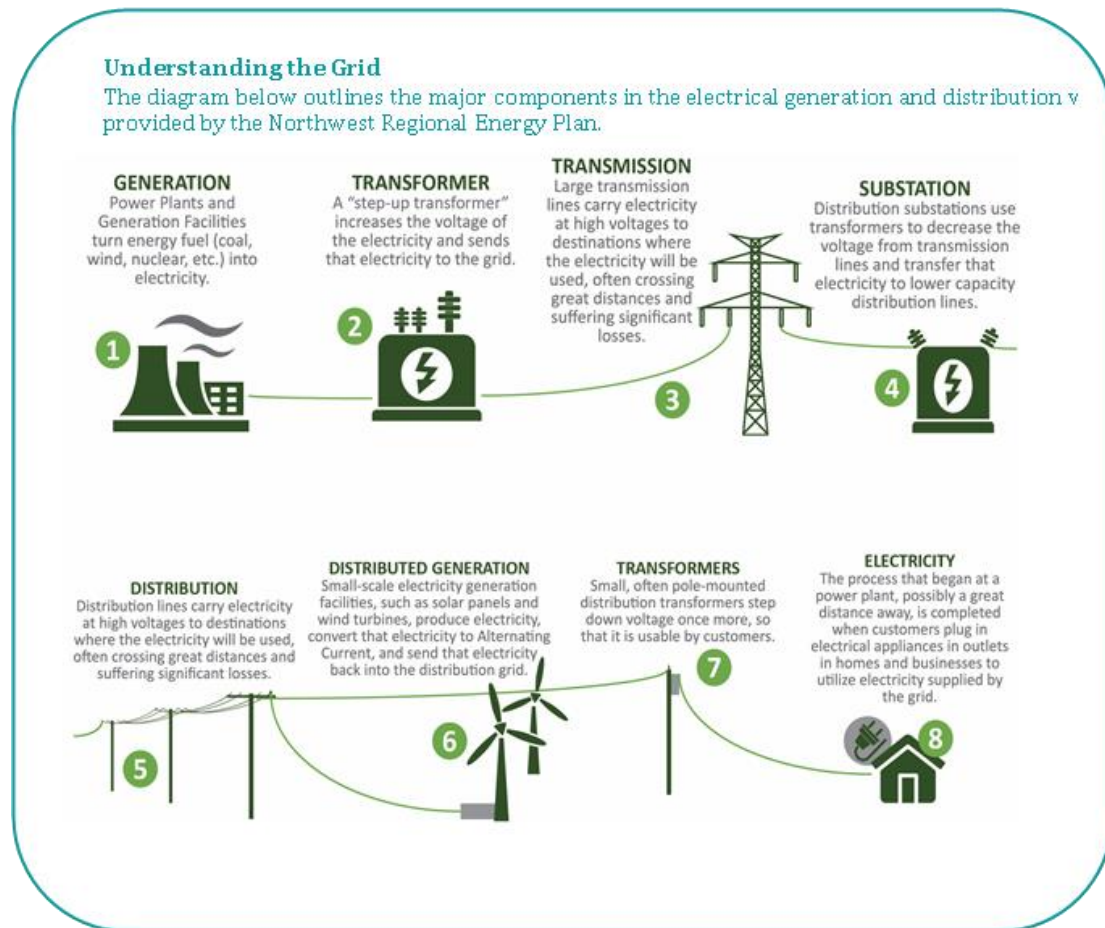
Vermont's Comprehensive Energy Plan calls for 25% of remaining energy needs to be met by renewable sources by 2025, 40% by 2035, and 90% by 2050. To help put that into perspective, existing renewable energy facilities in Andover generate about 2.9% (84,376 kWh) of the total annual electricity used in Town (2,820,885 kWh).

B.1 Electricity

Electricity is provided by Green Mountain Power throughout Andover. Presently, one transmission line more or less parallels Andover's eastern town boundary with Chester. Two three-phase distribution lines pass through Andover; one following the VT Route 11 corridor and the other is along Hilltop Road and the Weston-Andover Road. The maps in Appendix B show these facilities.

Residences accounted for 90.5% of the current total electricity usage in Andover. Andover is a very rural town, so it is not surprising that commercial and industrial use accounts for only 9.5% of the total 2,820,885 kWh used in Andover that year. See Figure 1 that summarizes electricity use data provided by Efficiency Vermont. According to Department of Labor Statistics, there are 12 commercial establishments in Andover. Electricity use has leveled off in recent years.

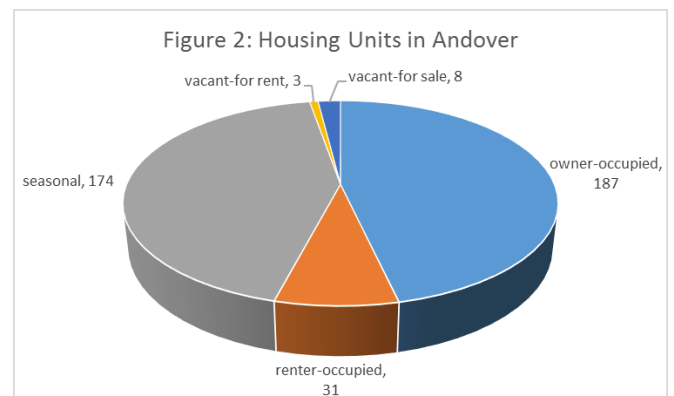




B.2 Thermal (Space Heating)

Since it is adjacent to a ski town (Ludlow/Okemo Mountain Resort), Andover has a large number of seasonal housing units (about 43% of the 408 total housing units). See Figure 2 which summarizes total housing units in Andover by type from the 2010 Census Bureau.

According to American Community Survey (ACS) data (2011-2015), the predominant ways to heat homes in Andover include fuel oil (42.9%), wood (40.8%) and propane (13.6%). See Appendix A for home heating data, including estimates for square footage heated and BTUs. The Appendix also includes data about heating the commercial and industrial establishments in Andover.



B.3 Transportation

As mentioned above, Andover is a very rural town without any dense, mixed-use village. The local transportation network is predominantly of roadways. Walking and bicycling are generally accommodated along the sides and shoulders of existing roads, some of which are better suited for those uses than others. Public transportation services are provided in Andover by The Current.

Although there are no fixed routes serving the Town, Dial-a-Ride services are available to residents. Due to the very low density development patterns, most residents rely on driving to get to most common destinations, as discussed in more detail in the Transportation Chapter. Commuting patterns are highly varied. Common work destinations for residents are Chester and other surrounding towns.

Data was compiled and is presented to understand the existing transportation energy use in Andover (see Appendix A). According to ACS data, there are about 1.5 vehicles per occupied household. The average vehicle miles traveled in a year is estimated at nearly 15,000, which accounts for approximately 250,000 gallons of total fuel used at a total cost of more than \$599,000 for fuel.

C. Scenarios (Targets)

The standards that the Department of Public Service has established for targets must be met if this Plan is to receive substantial deference in Section 248 energy siting proceedings. Andover is utilizing targets (or scenarios) developed using the Long-Range Energy Alternatives Planning (LEAP) Model and provided to Andover by the SWCRPC. The background for the targets are described in more detail in the draft 2017 Southern Windsor County Regional Energy Plan. The purpose of the targets, when combined with the analysis presented in the previous section, are intended to provide an overview of existing energy use and projections for the pace of change that is needed over the next three-plus decades. In order to meet 90% of Vermont's energy need from renewable sources by 2050, a significant amount of conservation efforts and the development of new renewable energy generation will be necessary.

In order to meet the 90% by 2050 goal, total energy use in southern Windsor County will need to decrease by 50%. Primarily this must involve a vast reduction in the use of non-renewable fuels, such as gasoline and fuel oil. At the regional level, the LEAP model includes the following generalized assumptions to reach the 90% by 2050 goal:

- Electricity use today is about 20% of total energy consumption, but it will increase to 35% of total consumption in 2050;
- The use of non-renewable fuels will be vastly reduced from about two-thirds today to about 10% by 2050;
- Renewables will increase from about 18% now to more than half by 2050. This involves wood consumption remaining relatively constant and biodiesel usage increasing substantially.

Please note that the above section is intended to summarize the assumptions made for this LEAP model. In the intervening years between 2017 and 2050, there are likely to be technological advances that may help us to achieve our energy goals and targets in ways that we cannot anticipate today.

C.1 Electricity

Targets for electricity are mixed. Significant efforts to reduce electricity usage through conservation and efficiency measures will be needed. However, the LEAP model utilizes increased use of electricity to achieve the goal for both transportation (i.e. electric vehicles) and space heating (i.e. cold-climate heat pumps). See Figure 3 below.

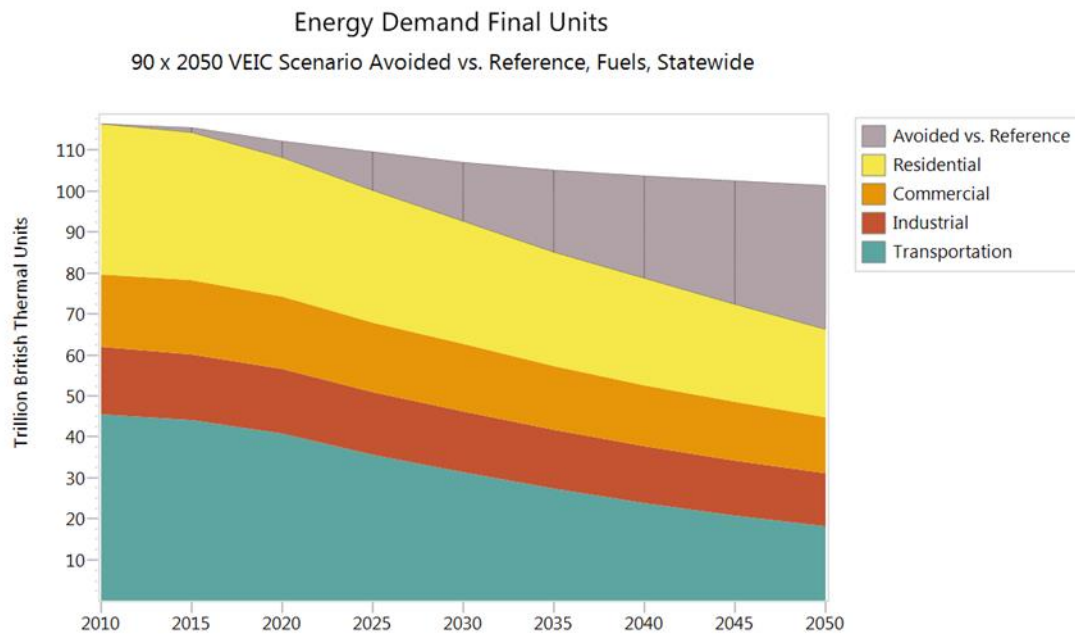


Figure 3: Vermont must significantly reduce total energy use by 2050 to be successful in implementing the goals of the Comprehensive Energy Plan. The LEAP model referenced in this Plan calls for substantial reductions in energy use by residences and transportation. The line above the grey area represents projections for if we do nothing else to reduce energy demand. The grey area itself represents efforts needed to reduce total energy demand.

Reducing electricity demand through energy conservation and efficiency measures will involve taking advantage of programs offered by Efficiency Vermont, utilization of high-efficiency/energy star appliances, LED lighting upgrades, and other efforts at energy demand management.

Electricity targets also include the development of renewable energy generation in Andover and the surrounding region. The LEAP model also includes additional imported renewable energy from sources such as Hydro Quebec. However, local generation is also required. Targets for local renewable generation are summarized below in Table 1 and discussed in more detail in the renewable siting discussion under Section D.

Table 1: Renewable Generation Targets (in MWh)			
	2025	2035	2050
Total renewable generation in MWh	2,565	5,130	10,261

C.2 Thermal (Space Heating)

The first step to reduce energy demand for space heating is to weatherize homes and businesses (e.g. air sealing, insulation). Table 2 shows the targets for weatherizing existing structures in Andover in both percentage of the total existing households and commercial buildings and the number of units of each. We assume that all new applicable structures will comply with the State energy building codes (i.e. [Residential Building Energy Standards](#), [Commercial Building Energy Standards](#)).

Table 2: Thermal Efficiency Targets			
	2025	2035	2050
Weatherize Homes (percentage, number)	17%	31%	63%
	37	68	137
Weatherize Commercial Establishments	4%	7%	15%
	1	1	2

The next step is to move toward the widespread utilization of renewable energy to heat homes and businesses. The LEAP model established the following targets for doing so in Andover. Table 3 shows the scale to which buildings should switch over to renewable heating systems in order to meet the state energy goals.

Table 3: Use of Renewables for Space Heating			
Thermal renewable energy use	2025	2035	2050
	48%	63%	93%

In order to achieve the overall renewable target for heating, the LEAP model is calling for investing in new efficient wood heating systems, cold-climate heat pumps or ground-source heat pumps. (See Table 4.)

Table 4: Thermal Fuel Switching Targets (by Number of Heating Units)			
New efficient wood heating systems	2025	2035	2050
	1	2	17
New heat pumps	41	111	214

Cold-climate heat pumps are also referred to as air-source heat pumps, mini-splits or ductless heat pumps. These systems are a good option to retrofit existing houses, and can be used to supplement the existing heating system. As explained on the [Efficiency Vermont website](#), “heat is collected from the exterior air, concentrated via an outdoor compressor, and distributed inside through an indoor room unit. Heat pumps require electricity to run, but can deliver more energy than they use.” They also provide air conditioning during the warmer months.

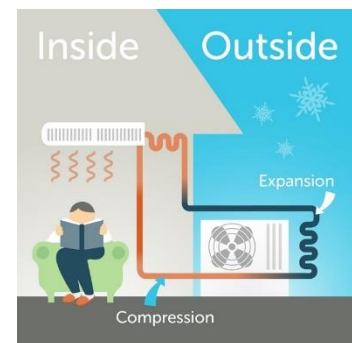


Figure 4: Illustration of how cold-climate heat pumps work. Source: Efficiency Vermont.

Ground-source heat pumps provide space heating and cooling. They work similarly to air-source heat pumps, but instead they pump water or other fluid through pipes buried in the ground to collect heat. A more detailed description for how these systems work can be found on the [US EPA website](#). These are generally a better option for new construction installations.

Heating with wood is generally encouraged as it uses a locally-available fuel. However, sustainable wood harvesting is important in order to protect the environment and provide a viable, long-term local energy source. New efficient wood stoves that are EPA-certified are encouraged. Wood-chip heating systems are considered a good option to heat larger commercial, industrial or institutional buildings. See the [Efficiency Vermont website](#) for more information. A number of schools in the region use such heating systems.

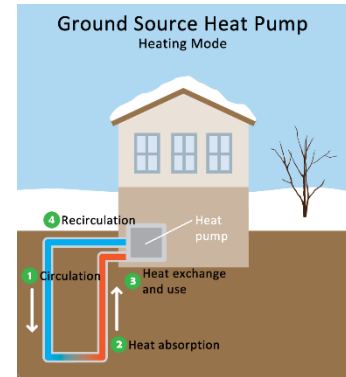


Figure5: Illustration of how ground-source heat pumps work. Source: US EPA.

C.3 Transportation

Transportation is probably the most difficult area to “bend the curve” in order to meet the energy goals. Changing behaviors is challenging. However, it must be done if we are to achieve the 90% by 2050 goal. The LEAP model used a number of assumptions in addressing this issue. The following targets are based on that LEAP model.

Table 5: Renewable Energy Use for Transportation			
Use of renewables for transportation	2025	2035	2050
	10%	31%	90%

Overall, transportation needs to shift to renewable fuel sources as shown in Table 5. The LEAP model is largely expecting this to happen through using electric vehicles, and the use of biodiesel by the trucking industry. Table 6 below shows the fuel switching targets for Andover. Efficiency Vermont has information on its [website](#) about ways to achieve transportation efficiencies. Also required to meet the goals will be additional efforts to lessen the use of energy for transportation, including land use patterns that encourage walking and bicycling, public transportation, driving less and ride sharing.

Table 6: Transportation Fuel Switching Targets			
	2025	2035	2050
Passenger cars switch to electric vehicles	26	181	374
Trucks switch to biodiesel	46	85	141

D. Implementation Actions (Pathways)

In order to meet our stated energy goals and targets, the Town of Andover identify the following implementation actions, also referred to as “Pathways”. The following sub-sections are intended to be consistent with the pathway standards used in the *Guidance for Municipal Enhanced Energy Planning Standards* (VDPS; March 2, 2017).

D.1 Pathways Standard: Conservation and Efficient Use of Energy

- a) The Town of Andover encourages the conservation and efficient use of energy.

Andover has identified the following implementation actions in Sections 6A, 6B, 6C and 6D to achieve this policy. The Town can use Andover Word and the Town email list to get information out to residents regarding many of the following implementation actions.

D.1.1: Encourage Conservation by Individuals and Organizations

Andover cannot control the use of energy by individuals and organizations. However, the Town can lead by example, serve as a resource, and encourage individuals and organizations to conserve and use energy efficiently. To do so, Andover identifies and promotes the following resources to provide guidance to individuals and organizations:

- a) Inform residents and businesses about available programs that can assist with energy conservation and efficiency improvements, including:
 - 1) Programs available through [Efficiency Vermont](#), such as workshops and educational opportunities to businesses on efficiency in new construction, retrofits, and conservation practices; and,
 - 2) Weatherization Assistance Program through Southeastern Vermont Community Action ([SEVCA](#)) for low-income households.
- b) Inform residents about Efficiency Excellence Network (EEN) contractors by providing [links to EEN information](#) through a municipal website or through other means.
- c) Provide data that demonstrates why these improvements make sense for residents (e.g. estimated return on investment, case studies).
- d) Hold an information forum at the Town Hall and invite residents to speak about the energy improvements that they have made to their homes.

D.1.2: Promote Efficient Buildings

Space heating for buildings accounts for about 30% of all energy consumed in Vermont. Creating more efficient buildings can be achieved through weatherization and high-performance construction methods. Andover identifies the following to encourage efficient buildings:

- a) Promote the use of Vermont’s [residential building energy label/score](#).
- b) Promote the use of the residential and commercial building energy standards:
 - 1) The Administrative Officer will distribute State energy code information to all applicants seeking a zoning permit for a structure that is heated or cooled.
 - 2) The Administrative Officer will not issue a certificate of occupancy until the applicant provides a certificate that ensures compliance with the State energy code.
- c) Promote benchmarking (using the free [EPA Portfolio Manager tool](#) and/or with assistance from Efficiency Vermont) for commercial buildings.

- d) Encourage that all residential and commercial projects follow the [stretch energy code or guidelines](#).
- e) Promote the use of [landscaping for energy efficiency](#).
- f) Offer house inspections to check on energy savings measures appropriate to that particular house.

D.1.3: Promote Decreased Use of Fossil Fuels for Heating

Heating buildings accounts for about 30% of all energy consumed in Vermont and is the second largest contributor to greenhouse gas emissions. Home heating is heavily reliant on fossil fuels at this time. Solutions to address this situation involve high-efficiency heating system upgrades and fuel switching. Andover identifies the following to encourage using less fossil fuels to heat buildings:

- a) Provide educational presentations on ways to decrease the use of fossil fuels, in coordination with Efficiency Vermont.
- b) Promote the use of [cold-climate heat pumps](#) for retrofitting existing buildings.
- c) Encourage the use of [ground-source heat pumps](#) for new construction.
- d) Promote wood stove change-out programs that take older non-[EPA certified stoves](#) out of service and replace them with more efficient and lower emitting cordwood or pellet stoves.
- e) If renewable energy systems are not practicable, encourage homeowners to replace old furnaces or boilers with [high-efficiency models](#).

D.1.4: Demonstrate the Municipality's Leadership by Example with Respect to the Efficiency of Municipal Buildings

Andover wishes to lead by example and demonstrate to individuals and organizations the benefits of building efficiency through the following efforts:

- a) Seek support and guidance from Efficiency Vermont for efforts to improve the efficiency of municipal buildings.
- b) Assess the life cycle costs of potential energy improvements during design and construction planning. For example, investment in a new, efficient heating system may be more expensive up front, but more economical to operate over time.
- c) The municipality will construct all new public buildings according to standards of energy efficiency at least equivalent to U.S. EPA Energy Star rating or similar certification where it can be demonstrated to be cost-effective.

D.2 Pathways Standard: Transportation

- a) The Town of Andover encourages the reduction of transportation energy demand and single-occupant vehicle use.
- b) The Town of Andover encourages the use of renewable or lower-emission energy sources for transportation.

Andover has identified the following implementation actions in Sections 7A, 7B, 7C, 7D and 7E to help achieve these policies.

D.2.1: Encourage Increased Use of Public Transit

Public transit utilization at a meaningful scale to make a difference toward this goal is not likely considering Andover's rural, very low density development patterns. However, improving access to

public transit services is a priority. Andover will implement the following actions to encourage public transit:

- a) Improve awareness of existing public transit services available to residents (e.g. Dial-a-Ride services from The Current). For information about public transportation services, see the SWCRPC's [A to B Mobility Study](#).
- b) Coordinate with the SWCRPC and neighboring towns to investigate park and ride lot opportunities that might better connect residents with public transit services.

D.2.2: Promote a Shift Away from Single-Occupancy Vehicle Trips

Existing public transit services can meet the mobility needs of only a limited number of residents. Additional efforts will be needed in order to reach the energy goals for reducing transportation energy use. Feasible options to do this in a very rural town are limited. Andover will work to encourage the following actions to encourage a reduction in single-occupant vehicle trips:

- a) Encourage better utilization of the existing high-speed internet speeds to enable telecommuting by residents.
- b) Promote the [Go Vermont](#) webpage, which provides rideshare, vanpool, public transit and park-and-ride options.

D.2.3: Promote a Shift Away from Gas/Diesel Vehicles to Electric or Other Non-Fossil Fuel Transportation Options

To meet State energy goals, municipalities will need to contribute toward efforts to reduce the number of vehicle-miles traveled (see 7B), and switch to renewable, non-fossil fuel transportation options. Andover has identified the following pathways to shift toward electric vehicles and other non-fossil fuel travel:

- a) Increase awareness of the benefits of electric vehicles and alternative-fuel vehicles through education and outreach efforts.
- b) Seek grants to fund the installation of electric vehicle charging infrastructure at the Town Offices or at a suitable location along the VT Route 11 corridor.
- c) Encourage the use of biodiesel in all diesel vehicles in a manner that does not compromise the manufacturer's engine warranty.

D.2.4: Facilitate the Development of Walking and Biking Infrastructure

Active transportation, such as walking and bicycling, offers significant health benefits and requires no outside energy resources. As a very rural town, there are very few transportation trips between 0.5 and 2 miles in length that residents routinely make within Andover (e.g. distances that are generally suitable to make by walking or bicycling). However, Andover will strive to make reasonable accommodations to facilitate safe walking and bicycling along certain roadways. Winter conditions limit walking and bicycling for many residents, so these facilities are likely to experience seasonal use. In order to do this, Andover has identified the following pathways:

- a) Maintain roads in order to better accommodate travel by walkers and bicyclists. For example, this includes paving/overlays to maintain a smooth roadway surface on major roads as well as modest shoulder widening in areas where pedestrian activity is observed or desired.
- b) Continue to maintain the existing trail networks for walking and other suitable uses.

D.2.5: Demonstrate the Municipality's Leadership by Example with Respect to the Efficiency of Municipal Transportation

In order to meet the State energy goals, municipalities should lead by example and demonstrate to individuals and organizations the benefits of energy efficiency in transportation. Andover wishes to do so through the following ways:

- a) Install an electric vehicle charging station.
- b) When purchasing new vehicles, the Town will seek a model with the best fuel efficiency standards available.

D.3 Pathways Standard: Land Use Patterns and Densities

- a) The Town of Andover encourages maintaining the historic settlement pattern of compact village centers surrounded by rural countryside in accordance with [24 V.S.A. §4302](#), recognizing that the entire Town of Andover functions as the rural countryside. The centers of Chester and Ludlow are the closest compact village centers in this context, nearby Londonderry and Weston may also serve in this capacity as it relates to the surrounding rural countryside in Andover.
- b) The Land Use Chapter of the Andover Town Plan encourages maintaining the rural countryside in keeping with the above state planning goal.
- c) Zoning bylaws adopted by the Town are consistent with the goals of the Town Plan.
- d) Andover does not have a village core area that is suitable for designation as a Village Center under 24 V.S.A. Chapter 76A.

The DPS anticipates that if municipalities are actively participating in the above statutory frameworks for community planning, they will likely meet Pathways Standard 8. Andover continues to be active with the SWCRPC in order to plan for broader, regional land use development patterns and densities that encourage the conservation of energy.

D.3.1: The Plan Includes Land Use Policies (and Descriptions of Current and Future Land Use Categories) that Demonstrate a Commitment to Reducing Sprawl and Minimizing Low-Density Development

According to the enhanced energy planning guidance, the reduction of sprawl and low-density development not only reduces energy consumption but also can improve the local and regional economy.

- a) The Land Use Chapter in the Town Plan limits commercial activity to a few very small clusters indicated on the Future Land Use Map, and it generally calls for low density rural development patterns elsewhere in keeping with the rural countryside aspect of the state planning goal.
- b) Also included in the Land Use Chapter of the Town Plan is a statement that discourages sprawl and strip commercial development in much of the land area in Andover.
- c) The Andover Town Plan calls for sound access management, especially along VT Route 11.

D.3.2: Strongly Prioritize Development in Compact Mixed-Use Centers

As indicated in the enhanced energy planning guidance, households within a compact, mixed-use center typically use less energy than those located in outlying areas. As noted above, Andover does not have any compact, mixed-use centers within the Town. Andover is the rural countryside that surrounds the centers of Chester, Ludlow, Londonderry and Weston. Since prioritizing development in village centers is outside of Andover's direct control, the Town chooses to encourage this by:

- a) Working with the SWCRPC to plan for broader, regional land use development patterns and densities that encourage the conservation of energy.
- b) Evaluating future Andover Town Plan updates within the broader, regional context as described above.

D.4 Pathways Standard: Statement of Policy on the Development and Siting of Renewable Energy Resources

The heating, transportation and conservation targets and pathways combined are not sufficient to meet the 90% by 2050 energy planning goal. The LEAP model also assumes the purchase of additional out-of-state renewable energy will help to reach this goal; however, that is also not sufficient to meet the energy goals. New local renewable energy generation is also needed in order to achieve the ambitious “90x50” energy goal. The following sections discuss how the municipality wishes renewable energy generation to take place in Andover.

D.4.1: Evaluate Existing Renewable Energy Generation

There are currently 11 known existing solar sites in Andover, representing 69 kW of installed capacity and 84,376 kWh of generation output. There are no other grid-tied renewable energy generation sites in Andover at this time. In other words, there are no known net-metered wind turbines, hydro power, or biomass power facilities in Andover currently. However, there are at least two wind turbines in Andover at this time that are not connected into the grid. See Appendices A and B or the [Community Energy Dashboard](#) for more detail.

D.4.2: Analyze Generation Potential from Preferred Sites and/or Potentially Suitable Areas

An analysis of renewable energy generation potential was conducted for Andover by the SWCRPC. This consisted primarily of an analysis of available GIS mapping data and based upon the guidelines established by the DPS for enhanced energy planning. Table 7 below summarizes the findings of this analysis.

Table 7: Potential Renewable Energy Generation

Type	Installed Capacity (MW)	Generation Output (MWh)
Roof-top Solar	0.55	672
Ground-mounted solar	285	349,570
Wind	2,121	6,502,220
Hydro	0	0
Total	2,406.55	6,852,462

Based upon this analysis, there is significant potential to generate power from renewable sources in Andover, primarily through ground-mounted solar and wind. There is no realistic potential for new hydropower, based upon assumptions about the challenge of permitting new hydro projects. There is potential to generate about 6.5% of Andover’s target through rooftop solar alone. Ground-mounted solar and/or some forms of wind will be needed in order to meet the “90 by 50 goal”.

D.4.3: Identify Sufficient Land for Renewable Energy Development to Reasonably Reach the 2050 Targets

Table 1 in Section C.1 summarizes Andover’s overall targets for renewable energy generation. There is more than an adequate land area in Andover that has potential for solar to meet our 2050 renewable energy target of 10,261 MWh. That target is the equivalent of approximately 8.4 MW of ground-

mounted solar at the installed capacity. The guidance assumes 8 acres of land is generally needed to support 1 MW of solar. This would amount to about 67 acres of land needed to meet this target. This represents about 3% of the total land area in Andover that is estimated to have potential to generate solar power.

A mix of renewable generation types are desirable in order to meet the overall renewable targets for Andover. The following more detailed targets in Table 8 represent one scenario for how Andover can meet the overall renewable generation target for the municipality. Rooftop solar is desirable. Ground-mounted solar is encouraged as long as it meets our siting criteria as articulated in this plan. Residential-scale wind is also encouraged.

Table 8: Detailed Renewable Generation Targets (in MWh)

Type	2025	2035	2050
Roof-top solar	187	299	672
Ground-mounted solar	2,225	4,524	8,976
Residential-scale wind (30 meter hub height)	153	307	613
Total renewable generation in MWh	2,565	5,130	10,261

Wind power – specifically utility-scale (70 meters+) and commercial-scale (50 meters) – is a politically charged issue in Andover and surrounding towns. In addition, we understand that the proposed new state noise standards will make it difficult to permit utility-scale wind turbines in the State of Vermont. This plan embraces the “90x50” goal and we believe that the above analysis demonstrates that Andover’s plan for new renewable energy is adequate to meet our future needs and the renewable energy generation target. Therefore, Andover expressly prohibits utility-scale and commercial-scale wind turbines.

D.4.4: Ensure that Local Constraints do not Prohibit or Have the Effect of Prohibiting the Provision of Sufficient Renewable Energy to Meet State, Regional or Local Targets

Local constraints for renewable energy generation are as summarized in this section. These constraints have been analyzed, and the Town of Andover does not believe that these constraints prohibit or have the effect of prohibiting sufficient renewable projects needed to meet the state, regional or local energy goals.

The following resources are not appropriate locations for renewable energy projects based upon the mapping methodology in the enhanced energy planning guidance and are hereby excluded from the potential wind and solar sites, as depicted on the map (i.e. “known constraints”):

- a) Vernal pools with a surrounding 50 foot buffer;
- b) DEC river corridors;
- c) FEMA floodways;
- d) State significant natural communities and rare, threatened and endangered species;
- e) National wilderness areas; and,
- f) Class 1 and Class 2 wetlands.

Also based upon the enhanced energy planning guidance, the following list represents constraints that will likely require mitigation and which may prove a site unsuitable after a site-specific study has been conducted based upon state, regional or local policies that are adopted and currently in effect (i.e. “potential constraints”):

- a) Agricultural soils (NRCS-mapped prime agricultural soils, soils of statewide importance or soils of local importance);
- b) Act 250 agricultural soil mitigation areas;
- c) FEMA special flood hazard areas (floodplain);
- d) Protected lands (state fee lands and private conservation lands);
- e) Deer wintering areas;
- f) ANR conservation design highest priority forest blocks; and,
- g) Hydric soils.

D.4.5: Statements of Policy to Accompany Maps

Andover hereby promotes the development of renewable energy generation in order to achieve the energy goals and targets as established in this plan. The following statements of policy apply to renewable energy projects:

- a) Andover supports rooftop solar projects.
- b) Andover supports residential-scale wind turbines.
- c) Utility-scale wind and commercial-scale wind projects are not in keeping with goals and policies of the Andover Town Plan and, therefore, must not be allowed within Andover. (These types of facilities are politically very unpopular. Andover has demonstrated that there is ample opportunity to meet our energy needs through other types of renewable energy projects.)
- d) Biomass is suitable only for space heating.
- e) Ground-mounted solar projects and wind turbines must not be located in the following areas:
 - 1. Vernal pools with a surrounding 50 foot buffer;
 - 2. River corridors as most recently mapped by the Vermont DEC;
 - 3. FEMA floodways;
 - 4. State significant natural communities and rare, threatened and endangered species;
 - 5. National wilderness areas; and,
 - 6. Class 1 and Class 2 wetlands.
- f) Ground-mounted solar projects must demonstrate that the proposed project siting is appropriate in scale as it relates to the character of the area in which it is to be located, and the applicant must also demonstrate that all reasonable options have been considered in siting the facility.
- g) All ground-mounted solar projects must meet or exceed the setback standards in 30 V.S.A. §248(s).
- h) All ground-mounted solar projects of 150 kW capacity or greater that are within view of public roadways (i.e. state highways, US routes, and Class 1, 2 and 3 town highways) must provide adequate landscaping in order to screen the project from the view of the traveling public.
 - 1. This landscaping must consist of a mix of native plants that provide adequate screening during all months of the year (i.e. conifers or a mix of deciduous and conifers).
 - 2. All landscaping materials must be planted at a size that provides adequate screening within a period of three years.

- i) The applicant must maintain any required landscape mitigation for the entire life of the project, including the replacement of any dead or diseased vegetation serving as part of the landscape mitigation measures throughout the life of the project or until the project ceases commercial operation.
- j) The applicant must provide a plan for the site to be adequately decommissioned at the time when the project ceases commercial operation. This would involve the removal of all parts of the project from the site including, but not limited to, the solar panels or wind turbine, inverters, metal framework that supports the solar panels, fencing, and any necessary site reclamation.
- k) Ground-mounted solar facilities and residential-scale wind turbines must not have undue adverse impacts on significant wetlands, significant wildlife habitat, wildlife travel corridors, stormwater, water quality, flood resiliency, important recreational facilities or uses, scenic resources identified in this plan, or inventoried historic or cultural resources. Project proposals must consider placement of such facilities in locations where aesthetic and wildlife impact is minimal or employ reasonable measures to mitigate undue adverse impacts.

Undue Adverse Effect (Impact):

An adverse impact that meets any one of the following criteria:

- (1) Violates a clear, written community standard intended to preserve the aesthetics or scenic, natural beauty of the area;
- (2) Offends the sensibilities of the average person (i.e. it is offensive or shocking because it is out of character with its surroundings or significantly diminishes the scenic qualities of the area); or,
- (3) Fails to take generally available mitigating steps that a reasonable person would take to improve the harmony of the proposed project with its surroundings.

D.4.6: Maximize the Potential for Renewable Generation on Preferred Locations

Preferred locations include specific areas or parcels that are specifically identified to indicate preferred locations for siting a generator or a specific size of type of generator. Identifying preferred sites informs the community where renewable generation is desired. The identification of such sites can help to streamline the permitting process.

Preferred sites for Andover include:

- a) A canopy over paved parking lots;
- b) Brownfield sites; and,
- c) Disturbed portions of extraction sites (i.e. gravel pit, quarry).

D.4.7: Demonstrate the Municipality's Leadership by Example

The Town of Andover will lead by example through the following means:

- a) Working collaboratively with the Springfield Regional Development Corporation and other partners to identify opportunities for local renewable energy generation that benefits the community and furthers the goals and policies of this plan.
- b) Consider installing solar systems on the roofs of town buildings.
- c) Create a capital reserve fund to pay for energy improvements to Town buildings.

Appendix A: Enhanced Energy Planning Data

Appendix A: Energy Data



Population

Total Populationⁱ (2015): 550
Proj. Annual Avg. Growth Rateⁱⁱ: ↑ 0.00106
Population Density: 19.12 persons/
square mile



Households

Owner-Occupied Unitsⁱⁱⁱ: 187
Renter- Occupied Unitsⁱⁱⁱ: 31
Total Householdsⁱⁱⁱ: 408
Avg. Household Sizeⁱⁱⁱ: 2.14 people/
household



Businesses^{iv}

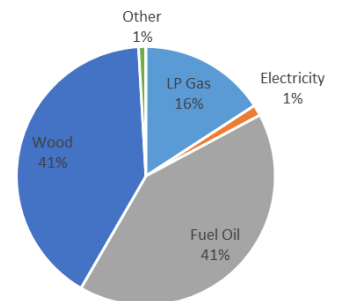
Total businesses in Andover: 12
Employees working in Andover: 36
Average wage: \$34,275



Heating

Residentialⁱ (see figure)
Businesses^v:
Estimated avg. building space: 2,298 sq. ft.
Total energy use: 998.3
million BTUs
Estimated total annual cost: \$23,806
Avg. annual cost per business: \$1,984

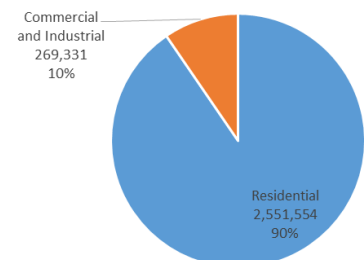
Home Heating Fuels in Andover (2015)



Transportation

Number of vehicles: 323
Estimated vehicle miles traveled: 6.2 million
Estimated gal. fuel used per year: 288,848
Estimated fuel cost per year: \$989,306
Residents driving alone to work: 69%
Average commute time: 22 minutes

Electricity Usage by KWh in Andover



Electricity Use

Electricity Usage in 2015^{vi} (see figure)
Avg. Residential Usage: 6,465 KWh
Total Usage (2014-2016): ↓ 229,958 KWh
↓ 7.5%

Appendix A: Energy Data



Energy Generation

Existing Renewable Energy Generation

Solar	11 sites	69 KW	84,376 KWh
Wind	0	0	0
Hydro	0	0	0
Biomass	0	0	0

Renewable Energy Generation Targets^{vii}

2015 (Baseline)	84.4 MWh
2025	2,565 MWh
2035	5,131 MWh
2050	10,261 MWh

Potential for Renewable Energy Generation^{viii}

Rooftop Solar	0.55 MW	672 MWh
Ground-Mounted Solar	285 MW	349,570 MWh
Wind	2,121 MW	6,502,220 MWh
Hydro	0	0

ⁱ U.S. Census Bureau, American Community Survey (ACS) 2011-2015

ⁱⁱ Based on Scenario B population projections for 2030 (VT ACCD, 2013)

ⁱⁱⁱ U.S. Census Bureau, Decennial Census (2010)

^{iv} Vermont Department of Labor Statistics (2015)

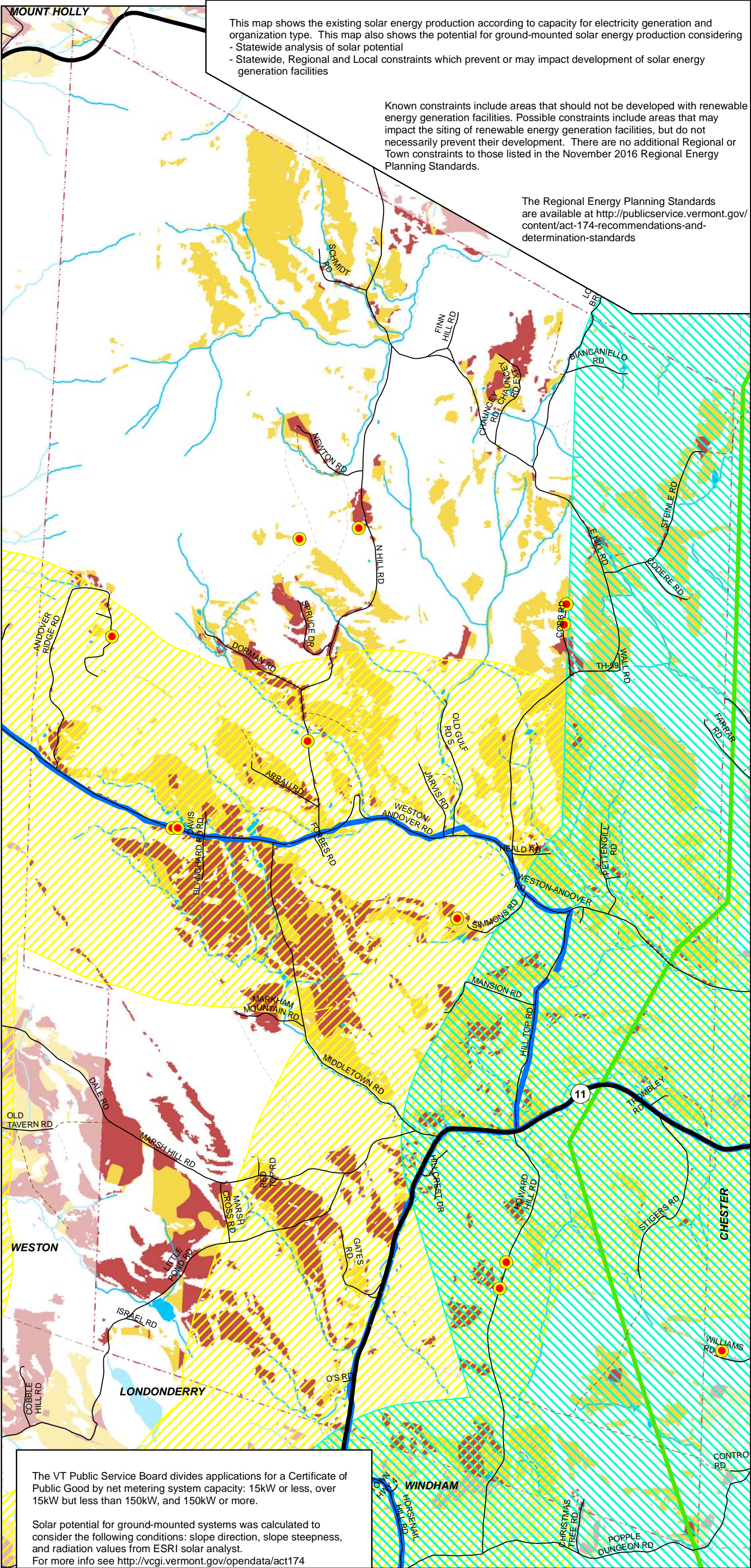
^v Estimated based on number of units, estimated floor space, heating fuel types and average fuel costs for 2015. Floor space was estimated from average commercial/manufacturing floor space per employee from the U.S. Energy Information Administration.

^{vi} Efficiency Vermont (2017)

^{vii} SWCRPC

^{viii} Based upon an analysis of GIS data mapping data (i.e. land area shown on the solar and wind potential maps)

Appendix B: Enhanced Energy Planning Maps



Solar Resources Map
Town Energy Plan 2017
Town of Andover, VT
Adopted: 9/10/2018

Existing solar energy generation sites

- Business, Institution or Municipality with a capacity of 150kW or more
- Business, Institution or Municipality with a capacity of 15kW or less
- Business, Institution or Municipality with a capacity of 15.1kW - 150KW

- Residential, Capacity of 150kW or more
- Residential, Capacity of 15kW or less
- Residential, Capacity of over 15kW but less than 150kW
- Substation

- Electric Transmission Line
- Three Phase Electricity Distribution Lines

- River or Stream
- Within 1 mile of existing electricity transmission lines (SWCRPC 2016)
- Area within 1 mile of existing three phase electricity distribution lines

- Lake or Pond
- State Highway
- Class 2 and 3 Town Highway
- Class 4 Town Highway
- Forest Road, Legal Trail, or Private Road
- Town Boundary

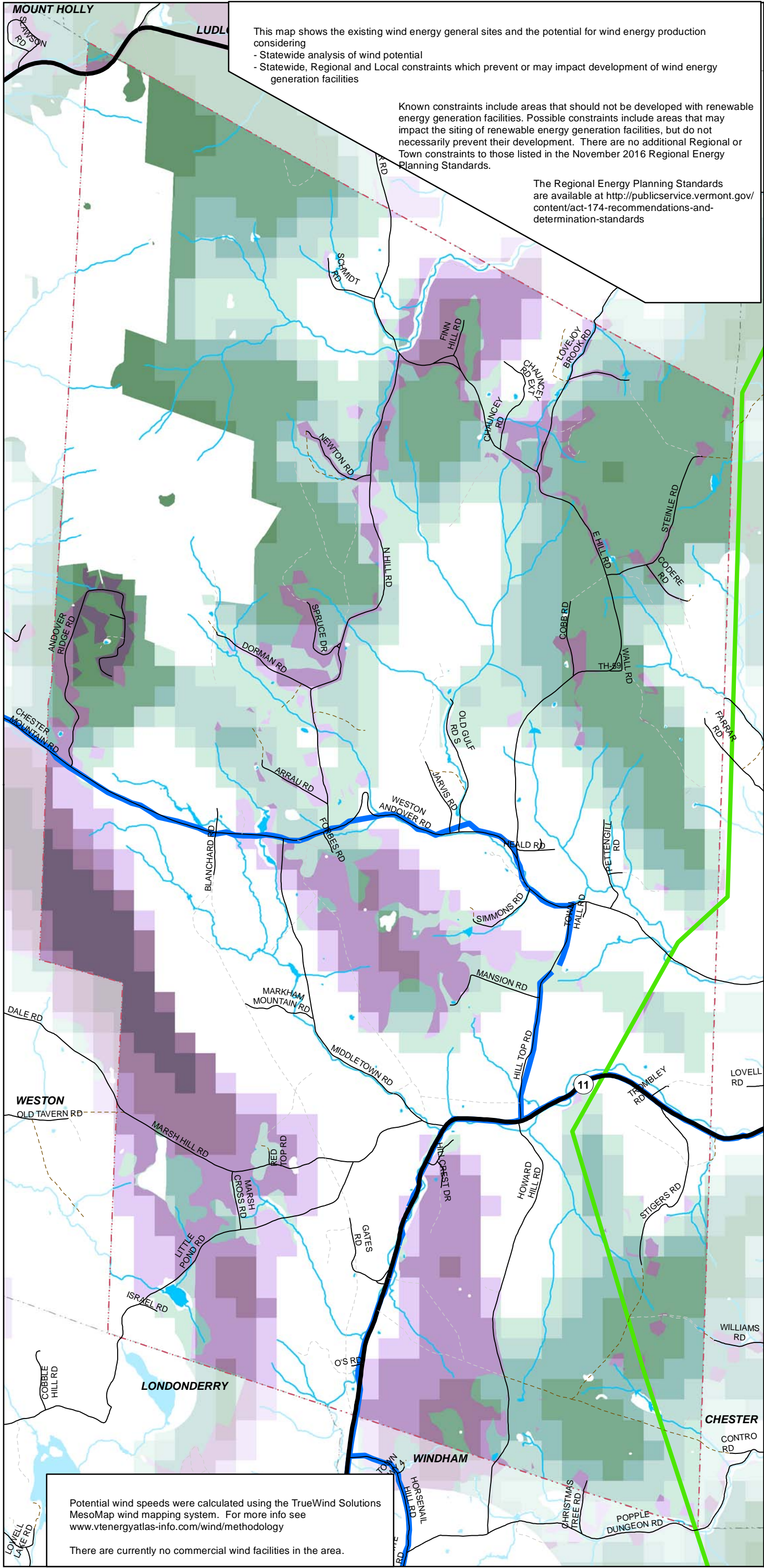
Data sources: Solar Facilities (VT Energy Dashboard. Sites listed on Atlas on 02/03/2017), Prime and Secondary Solar Potential (VCGI 2017) (No additional Regional or Town Constraints), Substations (BCRC 2015 and SWCRPC 2016), Three Phase Electricity Lines (BCRC 2015) with buffers (SWCRPC 2017), Transmission Lines (RPC 2016) with buffers (SWCRPC 2016), Waterbodies (VHD 2008), Roads (VTrans 2016), Town Boundary (VCGI 2012).

VT State Plane, Meters, NAD 83



P.O. Box 320, Ascutney, VT 05030
802-674-9201 www.swcrpc.org

For planning purposes only
Not for regulatory interpretation
Drawn August 30, 2017



This map shows the existing wind energy general sites and the potential for wind energy production considering

- Statewide analysis of wind potential
- Statewide, Regional and Local constraints which prevent or may impact development of wind energy generation facilities

Known constraints include areas that should not be developed with renewable energy generation facilities. Possible constraints include areas that may impact the siting of renewable energy generation facilities, but do not necessarily prevent their development. There are no additional Regional or Town constraints to those listed in the November 2016 Regional Energy Planning Standards.

The Regional Energy Planning Standards are available at <http://publicservice.vermont.gov/content/act-174-recommendations-and-determination-standards>

Wind Resources Map

Town Energy Plan 2017

Town of Andover, VT

Adopted: 9/10/2018

Prime Wind Potential
Areas identified with high wind potential and no known or possible constraints. Darker areas have higher wind speed.

Secondary Wind Potential
Areas identified with high wind potential and no known constraints. May have one or more possible constraints. Darker areas have higher wind speeds.

- Prime Wind Potential**
- 10.070000 - 10.94 mph
 - 10.940001 - 12.10
 - 12.100001 - 13.82
 - 13.820001 - 16.46
 - 16.460001 - 25.70

- Secondary Wind Potential**
- 10.070000 - 11.45 mph
 - 11.450001 - 12.82
 - 12.820001 - 14.32
 - 14.320001 - 16.46
 - 16.460001 - 25.70

- Commercial Wind Facility
- Residential Wind Facility
- Substation
- Electric Transmission Line
- Three Phase Electricity Distribution Lines
- River or Stream
- Lake or Pond
- State Highway
- Class 2 and 3 Town Highway
- Class 4 Town Highway
- Forest Road, Legal Trail, or Private Road
- Town Boundary

Data sources: Wind Facilities (VT Energy Dashboard. Sites listed on Atlas on 02/03/2017), Prime and Secondary Wind Potential (VCGI 2017) (No additional Regional or Town Constraints), Substations (BCRC 2015 and SWCRPC 2016), Three Phase Electricity Lines (BCRC 2015), Transmission Lines (RPC 2016), Waterbodies (VHD 2008), Roads (VTrans 2016), Town Boundary (VCGI 2012).

VT State Plane, Meters, NAD 83

0 0.5 1 Miles



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Potential wind speeds were calculated using the TrueWind Solutions MesoMap wind mapping system. For more info see www.vtenergyatlas-info.com/wind/methodology

There are currently no commercial wind facilities in the area.