TOWN PLAN
for
HARTLAND, VERMONT

Approved January 4, 2017
by the Hartland Planning Commission:

Adopted May 15, 2017
by the Hartland Selectboard

Assistance on this Plan was provided by the Two Rivers-Ottauquechee Regional Commission

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PREFACE

This Plan is a guide to the future of our Town. It lays out basic facts, describes current conditions, sets goals, and gives a series of recommendations that are meant to move the Town in the direction of the goals. This Plan has chapters that focus on the desired use and development of land, and it also encapsulates our desires in several other areas, many of which are required by Vermont law. The Plan will hopefully guide other municipal actions, as well as help influence state or even federal actions in a way that Hartland desires.

The Plan has been created by the Hartland Planning Commission with assistance from our regional planning commission – Two Rivers-Ottauquechee Regional Commission. It was subject to review and commenting at a public hearing that was held by the Planning Commission. The Planning Commission reviewed these comments and this Town Plan reflects those comments that were deemed appropriate. The Selectboard held additional hearings of its own prior to final review and adoption.

This Plan is meant to be largely visionary, providing policies and recommendations to be implemented. However, the Plan may be used in some proceedings, such as Act 250, in a way that gives it more force. During those proceedings the Plan should be able to stand on its own, and so the words used in this Plan have been chosen with care. Words like "shall" or "must" in these type of proceedings mean just that, while words like "consider" or "should" express a preference, but give some room for other choices.

This Plan is meant to represent the Town's inclinations at a certain time under certain conditions. The lifespan of this Plan ends in eight years and will need to be updated at that time in order to reflect changes that have taken place. If any significant need arises within those eight years that this Plan does not address well, the Town may amend the Plan ahead of schedule to deal with unforeseen developments.

For specific definitions or clarification of terms, please refer to Chapter 11, which defines commonly used words and phrasing that are used throughout the Plan.

OVERVIEW AND STATEMENT OF OBJECTIVES

The Hartland Town Plan provides a statement of objectives and a vision of the manner in which the future of Hartland should unfold. In general, this Plan is guided by six major goals in areas that are of primary concern and that are central to both our present and future well-being.

Major Goals

1. To provide Town services and facilities that meet the education, public safety, and health needs of current residents and the anticipated needs of a growing population in a cost effective manner.
2. To guide industrial and commercial development in a way that will provide for appropriate economic activities on a scale that largely maintains the Town's existing settlement patterns.
3. To preserve open space, the rural character, and present population distribution of the Town.
4. To protect agricultural and forestry land uses by promoting practices that are economically viable and that protect natural resources.
5. To provide orderly development in the village areas by planning for transportation, water, sewage, and public recreation facilities through public funding.
6. To conserve natural areas, unique habitats, and the quality of ground and surface waters.

Explicit goals, policies and recommendations that address particular issues can be found in each of the individual chapters of the Plan.

CHAPTER 1: LAND USE

Existing Land Use

The growth and development of Hartland have been influenced mainly by its road network and geography. Cultural and social factors have also been important in shaping this growth. Hartland's pattern of settlement is one of small, localized centers - villages and hamlets - containing relatively high densities of residential and commercial use. These centers are surrounded by less densely settled rural areas that consist of a mixture of low density residential, agricultural, and forest land.

Hartland has become what it is by a process of slow growth and had, for most of its history, been free to develop without the influence of outside pressures. In recent decades, there was a period of increasing pressure towards growth and a demographic shift, exerted by both regional and national factors. The burgeoning employment centers of the Hartford-Lebanon-Hanover areas and the expansion of their institutions have attracted many people to the area. The emergence of Quechee, Woodstock, and West Windsor as recreational, second home, and tourist-oriented areas has led to dramatically increased property values. The people employed in resort areas, as well as Upper Valley employment centers, often cannot afford to live there.

Traditionally, growth has tended to be on an individual lot basis. Until recently, when a piece of land was sold, it was usually to an individual for a house site. In 2014, the median price of houses in Hartland was $255,000 (VT Department of Taxes). Since 2000, Hartland's population has grown, but its elementary school enrollment has decreased, which indicates a clear demographic shift. In 2010, 41.3% of Hartland's population was over the age of 50, and the median age of its residents was 45.5 years old. Figure 2 indicates that in 2010 the largest portion of residents in Hartland were between the ages of 45 and 54. More recently, slower growth has been generated by a larger number of mature Hartland residents who have built or restored large and expensive homes for both seasonal and year-round use. The increased average age of residents and increased price of houses have changed the way growth has occurred in Hartland.

Growth Rate

Hartland witnessed rapid growth during the 1970's and 1980's, but that growth has significantly decreased in the past two decades. According to U.S. Census figures, which are portrayed in Figure 1, Hartland's population in 1970 was 1,806, in 1980 was 2,396, in 1990 was 2988, was 3,223 in 2000, and had reached 3,393 by the year 2010. This represents a population growth rate of 33% during the 1970's, 25% during the 1980's, 8% during the 1990's, and a 5.3% increase from 2000 to 2010 .

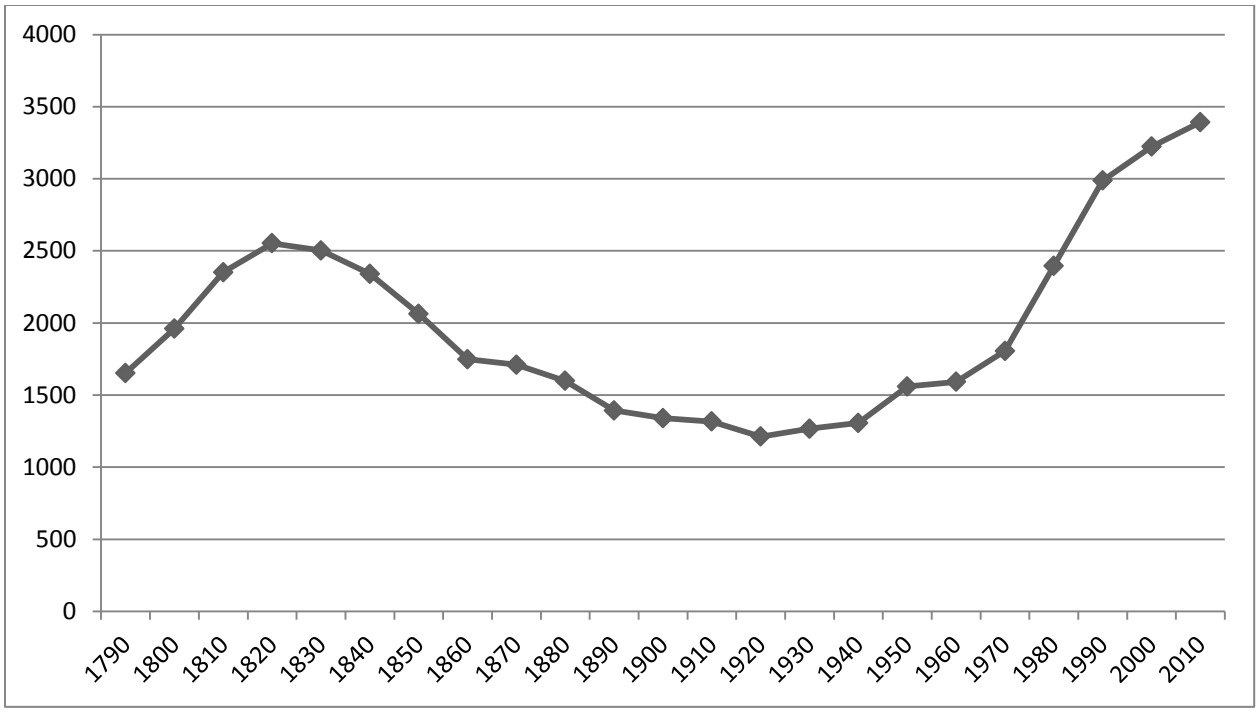

Figure 1 : Population in Hartland (U.S. Census)

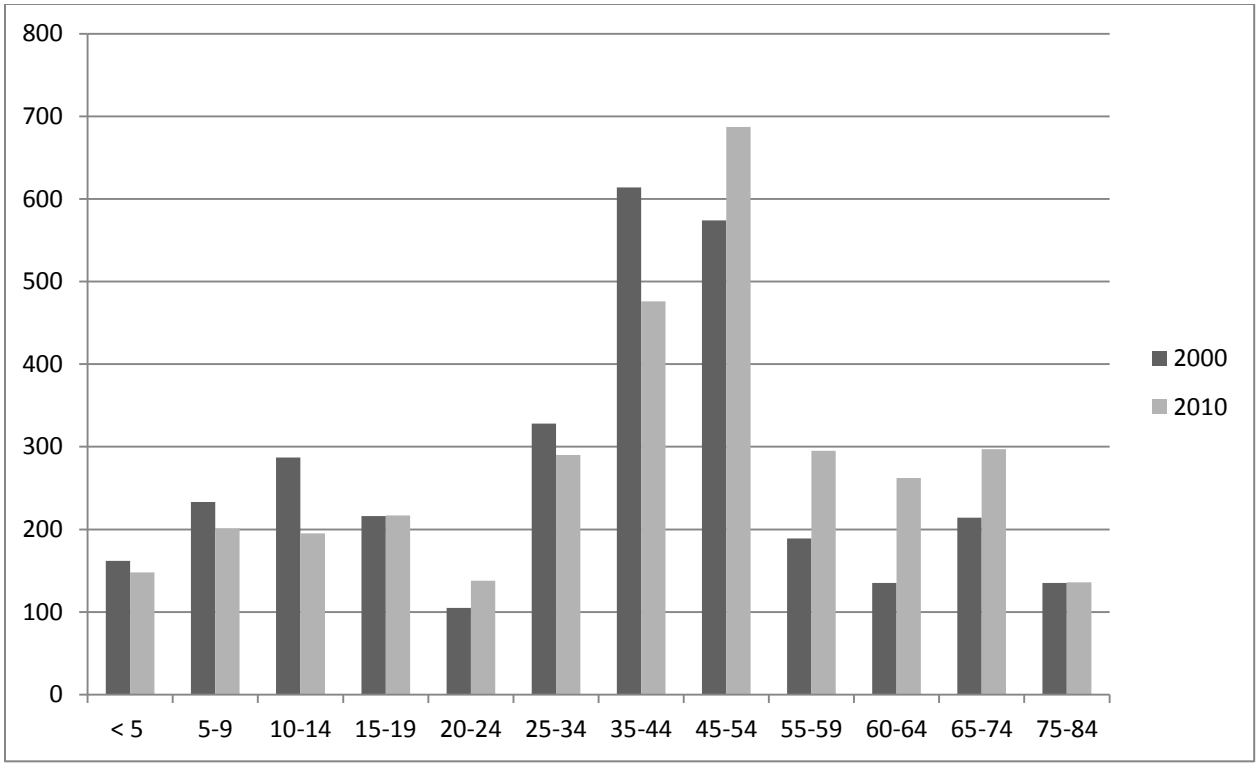

Figure 2: Age Distribution in Hartland (U.S. Census)

A similar pattern to Hartland's growth rate has been seen in the number of new homes built, as shown in Figure 3. In the late 1970's, an average of 29.4 housing units were built per year. In the 1980's, the average number of house built per year was 27.7, while in the 1990's the average number of new homes built each year had fallen to 9.5. In 2010, there were 1,584 total units in Hartland, an increase of 202 units from 1990. An average of 20 homes was built per year in the 2000's, and this represents a 14.6% increase of total housing units from 2000. 167 of the total houses in Hartland were vacant in 2000, and 90 of those considered vacant were used for seasonal, recreational, or occasional use. The need for expanding Town services, including but not limited to roads, schools, and emergency services related to growth has lessened with the plateau in growth rate.

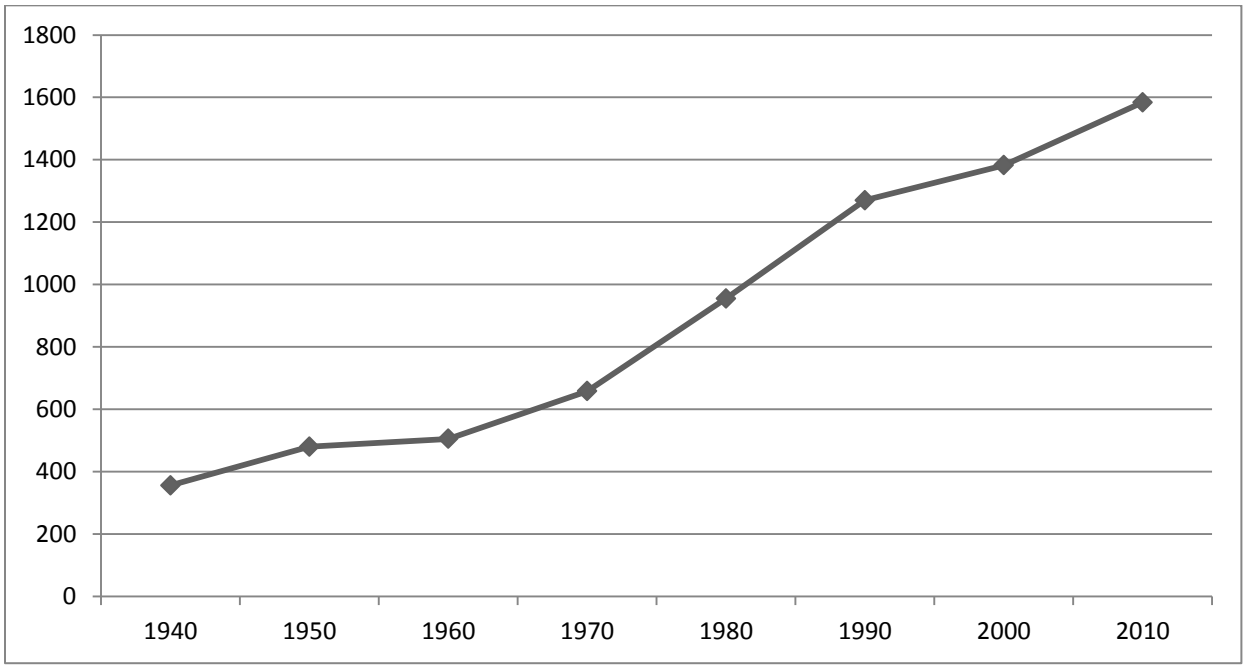

Figure 3: Total Housing Units in Hartland

Hartland is primarily a "bedroom community", in that most residents work in other towns. Only 7.4% of those Hartland residents who are employed, work in Town, while 92.6% commute to other towns, mostly by means of personal transportation.

Hartland Planning Survey

In 2014, the Hartland Planning Commission mailed a planning questionnaire to 1,790 households in Hartland. 42.5% (761) were completed, and 83% of those responses were by resident landowners. 46.6% of responses valued the "small town atmosphere" as the best aspect of Hartland, and 45% of responses specified "town land use-zoning regulations" as the best means to preserve Hartland's small town atmosphere. This percentage of respondents in favor of land use regulations decreased from 68% when the survey was completed in 1997. The majority of support was shown for then regulation of mobile home parks, shopping complexes, truck stops,

service stations, gravel pits, industrial land use, multifamily dwellings, and subdivision of land. Most respondents believe that future residential growth should occur either in present villages or along existing roads between these villages, and that future commercial growth should occur at the I-91 interchange going towards Windsor.

Siting Issues

The existing pattern of development indicates that some people have elected to live in villages in relatively close proximity to one another, and others have chosen to live in rural areas where dwellings are farther apart.

With a few serious exceptions, homes have been located in areas suitable both for building and for subsurface disposal of sewage. In recent decades, development of rural areas has not been related to farming, with its relatively large open spaces between dwellings, but rather to single family homes for year-round or vacation use.

In preparing this Town Plan, the Commission has carefully considered natural components of Hartland's landscape that it feels are basic in making recommendations for future land use or development. These critical elements are vital both to the maintenance of public health and the environmental quality of the Town; they are fragile in nature, and they have irreplaceable value. These critical elements include steep slopes, unsuitable soils, and the Town's scenic and agricultural resources

The steepness of the land, called slope, directly affects water runoff and erosion. Generally, as the slope increases, the suitability for development decreases. When vegetation is removed in order to construct roads and buildings on slopes steeper than *25%,* severe environmental damage can result. Development becomes abusive when the removal of trees and other vegetation results in increased runoff, increased soil erosion, increased stream sedimentation, reduced groundwater supply, higher flood levels, polluted streams and groundwater, unsafe roads, and unstable construction.

Safe sewage disposal ensures the protection of groundwater sources as well as surface water. New households will continue to be served by individual subsurface disposal systems. Properly designed and installed systems safely treat household wastes so as to render them harmless to the public health and the environment. Because wells will be the source of drinking water for most new homes constructed in rural areas, the natural water purification process must work effectively. The regulations controlling the construction, use, and maintenance of private sewage treatment was entirely taken over by the State of Vermont in July 2007.

Hartland is a rural town with many hills. The tops and sides of those hills are very important to the appearance of the Town. To date, the pattern of settlement has been relatively little construction of structures on the tops of hills, with continuing extensive forestry and agricultural use of the hillsides. The ridgeline may be determined by the contour of the highest elevation, but in most places is actually formed by vegetation, usually trees. Indiscriminate removal of trees breaks the natural ridgeline and detracts from the natural beauty of an area. Structures placed on or near a ridgeline or on a hillside are more visible to others. The views available at a particular

house site must be balanced against the desire of the Town to retain scenic areas and maintain agricultural and forestry resources. Thus, placement of structures, access roads, and utilities needs to be done carefully.

In past years, subdividers often created distorted lot shapes in order to minimize road frontage and still have parcels large enough (the former 10.1 acre "loophole") to avoid state Act 250 review. "Spaghetti" or "bowling alley" lots were the result. Though the reason for such large lots has gone away, due to revision in State septic permitting, there is still a natural tendency to minimize frontage. Such development has the potential to produce hazardous traffic problems, and resulting lot shapes can make management of forest and agricultural parcels nearly impossible. In addition, it reduces the availability of private land for recreational uses such as hunting, snowmobiling, skiing or walking.

One way to minimize lot sizes while preserving open areas in sizes and shapes useful for conservation, farming, or forestry is through the concepts of clustering development, decreasing setbacks, using density instead of lot size, and even transferring development rights among parcels so that large blocks of farm or forest land are retained and smaller amounts are used for house lots. This can often be done at no loss to the landowner. Density provisions give a town the ability to permit the same number of units in total, but at greater densities in parts of the original parcel while less or none in the remaining areas. The purpose of this kind of development in rural areas, as stated in the Vermont Planning and Development Act, is "to encourage flexibility of design and development of land in such a manner so as to promote the most appropriate use of land, to facilitate the adequate and economical provision of streets and utilities, and to preserve the natural and scenic qualities of the open lands and forests in the town."

Land Use Goals, and Siting Policies and Recommendations

Land Use Goals:

1. Maintain and improve the accessibility and economic viability of Hartland and its regional growth centers.
2. Encourage growth and development in designated village centers and downtowns.
3. Protect the rural character of Hartland and its natural resources by avoiding sprawling development and incompatible land uses.

Siting Policies:

1. *Slopes steeper than 25% shall be permanently protected by forest, erosion-resistant cover, or a natural wilderness state. Development on these areas shall be permitted only if it can be certain that such development will not be harmful to the environment. Moderate slopes of 15-25% require special consideration to ensure development is planned in a manner which will not result in erosion or sedimentation.*

2. *In all areas where soils have severe limitations, development shall be permitted only where it can be adequately proven that such development will not be harmful to the environment or to the health and wellbeing of the community.*

3. *While land use may change and become more intense, and while technology may make land alterations easier, the continued use of productive soils for agricultural and forestry purposes shall be one of the primary considerations in lot layout and building siting plans.*

4. *The preservation of open space in the community and along corridors between settlement centers shall be encouraged to preserve the attractiveness of the landscape, and to preserve agricultural, forestry, and recreational uses.*

5. *Structures, roads, and utilities on hillsides shall be placed downgrade of the ridgeline, placed to preserve agricultural and forestry land uses, and constructed in a manner so as not to exceed (be taller than) the nearby natural or vegetative ridgeline as viewed from public vantage points.*

6. *If and when different land use is considered for open spaces, especially for fields, planners shall consider ways of preserving or maximizing agricultural, forestry and scenic potential. For example, dwellings, access roads, and utilities should be placed on the perimeter of the open space.*

7. *Clustering of buildings and multiple-use support facilities for preservation of acreage for agricultural, forestry or other open space purposes is highly encouraged. Encouragement may include appropriate incentives such as increased overall density when indicated. The protection of open space by outright purchase or gift and by obtaining easements, especially in scenic areas and along natural waterways, is also encouraged.*

8. *As development occurs in the rural areas, it must not only respect the physical limitations imposed by topography and soil characteristics, but shall also be in harmony with the existing landscape and adjoining land uses. Future development shall be guided by and related to the existing pattern of settlement.*

9. *Major considerations in determining lot sizes and density shall include:*
    - *the existing pattern of development,*
    - *the provision and maintenance of roads, and*
    - *the proper installation and operation of sewage treatment systems.*

10. *The Town encourages use of density limits, versus minimum lot sizes, for dwelling units on large parcels particularly as a means to preserve agricultural land and other important resources.*

11. *Generally, one acre, except in the village, is to be considered the minimum lot size throughout the Town, with smaller lots of half acre if public sewer or water is available and one-quarter acre if both were available).*

12. *Mobile home parks should be located off of paved roads and may have smaller lot sizes and higher housing density than otherwise permitted.*

Siting Recommendations:

1. *Continue to utilize the assistance of the Regional Planning Commission for land use planning and development.*

Future Land Use Areas

Village Area

The future land use in the town of Hartland follows existing settlement patterns. Village centers are areas in the region that accommodate existing development and are suitable for future development. These areas consist of a mixture of uses; contain existing or planned public spaces; contain community focal points and common areas; have a higher land density than areas outside of growth centers; are conducive to pedestrian, non-vehicular traffic, and support public transit; and result in compact concentrated areas of land development that are served by existing or planned infrastructure. Historically, the villages of Hartland Three Corners, Hartland Four Corners and North Hartland have had the most intensive development, and these are designated village centers. Each of these centers contains a variety of housing types mixed with small retail businesses, personal services and offices. Village centers, by definition, exclude strip development which is linear commercial development along an arterial highway leading away from a village center or connecting two centers. Characteristics of strip development include individual curb cuts for each project along the highway; lack of connections between projects; one-story, single types of use; lack of pedestrian circulation between projects; separation of projects by parking lots; exclusively automobile access to projects; lack of coordination between projects; and narrow depth and broad street frontage of parcels to arterial highway.

Village Center Designation is determined by the Vermont Downtown Development Board as part of the Vermont Downtown Development Act of 1997. Village designation makes commercial property owners eligible for state tax credits toward the rehabilitation of historic structures, façade improvements, or building code improvements; and makes designated villages priority candidates for Vermont Housing and Urban Development and Municipal Planning Grant programs, Village designation lasts 5 years after approval by the Downtown Board, and must be renewed by the municipality. Hartland's village designations terminate in November 2017. The map below shows Hartland's designated village downtowns outlined in orange (Vermont ANR).

Figure 4: Designated Villages in Hartland

Hartland Three Corners is the location of all municipal offices, the Town equipment garage, a fire station, and the Hartland Elementary School. Its location at the junction of U.S. Route 5 and Vermont Route 12 and its proximity to the interstate 91 interchange, have influenced its growth. The expanded availability of services to Hartland citizens has been of benefit to the community. Concentration of commercial activities in this area has been mostly a positive development, although improvements are needed to better accommodate growing numbers of vehicles and pedestrians.

North Hartland and Hartland Four Corners are also areas of relatively greater density containing predominantly single-family dwellings and a few commercial establishments. North Hartland has a fire station and a community water supply system with fire hydrants.

Future growth of these villages in a compact manner is closely related to greater public supply of safe water and the provision of sewage disposal. As activity increases in these centers, the need for ensuring appropriate traffic patterns, adequate parking and pedestrian safety also increases.

Near each village are farmlands that provide open space and benefit the community economically, as well as adding to the rural aspects of the area. It is this working landscape that is a major feature of Hartland's uniqueness. If the fields are lost to development, Hartland will be just another suburban town. If the fields are allowed to grow up to brush, then the Town becomes like so many rural places that lack the contrast of field and forest. Surrounding

agricultural resources provide economic and aesthetic benefits to the community and help give each village its own identity.

Density in the villages is naturally limited by the ability of the soils to accept wastewater without causing groundwater quality to fall below drinking water standards. Care must be taken through density controls, careful siting of wells and on-site septic systems, upgrading and maintenance of septic systems, and water quality monitoring to protect this essential resource. The protection of surface and groundwater is very important.

Land Use Goals:

1. Maintain and improve the accessibility and economic viability of Hartland and its village centers.
2. Encourage growth and development in designated village centers.
3. Protect the rural character of Hartland and its natural resources by avoiding sprawling development and incompatible land uses.

Village Area Policies:

1. *Business development should be encouraged in the village areas, but must be carefully reviewed to ensure that the activity will be conducted in a manner which would not be likely to result in undue or unreasonable adverse impacts on nearby residences or on town services and facilities and natural resources.*
2. *The scale of business development in the villages should be in keeping with that of existing businesses.*
3. *The development density in the Village Areas should be consistent with the existing village development patterns, unless and until provision is made for public water and/or sewer. For now, the land to be developed should have a one-half acre minimum lot size per principal building, when suitable for the installation and continued function of sewage disposal systems and water systems compatible with such density.*
4. *The Village of Hartland Three Corners should be the location of the Town's major commercial activity and should continue to provide most of the civic, cultural and educational activities*
5. *Areas along Route 12 between the Village of Hartland Three Corners and Hartland Four Corners should be considered for mixed use excluding principal retail. Appropriate usage for this area includes small professional offices, small businesses, and inns. Strip development, factory outlets, large grocery stores, fast food establishments, and shopping malls are inappropriate for this area.*
6. *All the villages should continue to accommodate a mix of housing types.*
7. *Commercial and service growth in the village areas should be focused primarily on serving the needs of the community. Appropriate types of businesses include offices, personal services, small retail and day care. It is not Hartland's desire to have these areas become regional development centers.*
8. *The characteristics of the villages that make them attractive, safe and practical places to live shall be preserved and promoted.*

9. *Future development of the villages shall be a logical extension or infill of the existing village areas within the areas designated Village on the Future Land Use Map (see Appendix), but should not occur on prime agricultural soils or other critical resource areas such as stream banks or floodplains*
10. *The type, variety and density of dwelling units in the villages should remain basically as they are now. Buildings over three stories, or 50 feet in height, or very dense concentrations of housing are contrary to the existing settlement patterns, and may unduly stress or threaten water resources or capability for sewage treatment.*
11. *Established village areas are an appropriate place for commercial growth.*

Village Area Recommendation:

1. *Hartland shall renew its village designations in 2017 when they expire.*

US 4/VT 12 Junction

The land along Route 4 east of Route 12 has scenic views. The area includes important arteries serving regional and local traffic. At present, the intersection of these routes is dangerous because of occasional heavy traffic volume and inadequate sight lines, however, with careful planning, further development in this limited area can be done.

This area of Hartland is designated as rural. Small service businesses, small professional offices, and inns are acceptable land uses for the Route 4/12 Junction Area provided that such uses are planned as relatively small in size or scale, are not primary or dominant uses in an area, do not unduly conflict with existing or planned residential, forestry or agricultural uses, and do not unduly affect rural character.

U.S. 4/VT 12 Junction Policies:

1. *Commercial (excluding primary retail and strip development) and additional light industrial development may take place in the proposed Route 4/12 Intersection Area along Route 4 east of Route 12, and in an area west of the intersection on the northerly side of Route 4. This would extend approximately 600 feet west of Town Highway 51 (Morrill Road) to the edge of a present field at an existing tree line. Land along Route 12 is not designated for this purpose.*
2. *Direct access to Route 4 in the proposed Route 4/12 Intersection Area must be limited for safety considerations. Additional access to Route 4 in the area northwest of the Route 4/12 intersection will add to an already busy and potentially dangerous traffic situation. Therefore, until the State of Vermont improves sight lines along this section of Route 4, access should be restricted to Town Highway 51. Proposed development that shares an existing access may also be acceptable, but will need careful review.*
3. *Development in the proposed Route 4/12 Intersection Area should also be planned with respect for the natural beauty of the surrounding hillsides, the Ottauquechee River and the natural wetland areas that exist around this intersection. Commercial uses should not obstruct or compete with scenic vistas or view for driver attention. Any proposed development should not conflict with the character of the following area and shall be consistent with the scale and design of existing buildings.*

4. *Primary retail enterprises (including factory outlets, large grocery stores, fast food establishments, and shopping malls) are inappropriate in the US 4/VT 12 Junction Area. Primary retail enterprises that are located within village centers must be of a scale and intensity that fits with the existing development that is present.*
5. *Development that meets the definition of strip development is not appropriate in this area. This includes, but is not limited to, convenience stores, banks, large chain retail stores and fast-food establishments.*

US 4/VT 12 Junction Area Recommendations:

1. *Any proposal for development in the Route 4/12 Intersection Area that would result in a significant increase in traffic volume or significant change in the character of traffic shall be accompanied by a traffic analysis. This analysis must show that the proposed mitigation of the impacts of additional traffic would prevent any decrease in safety.*

I-91 Interchange Area

Hartland's I-91 interchange at Exit 9 is one mile from the existing Hartland Three Corners commercial district. It serves many roles and provides many benefits to the Town and surrounding communities. Easy access is provided for commuters working in the job centers to the north (e.g., Hanover, Lebanon and White River Junction). Businesses are afforded a link to the northeastern population centers for shipping, deliveries and business travel. The interchange also serves as the region's gateway for many visitors to Vermont. Expanded tourism in the region can be expected to add to the numbers of visitors using this interchange. A park-and-ride lot is located at the southeast corner of the interchange to serve some of the needs of residents and visitors.

The interchange area is currently the site of several small low-intensity businesses of varied types, styles, layout, and placement relative to Route 5. In recent years these have included an auto-repair facility, a snowmobile sales center and a small trucking business. Most of these have grown up around existing older residences and farm buildings. Much of the land surrounding the interchange remains undeveloped pasture that serves as an important scenic resource, providing visual contrast to the highways. This variety is one important component of the rural business area character that sets it apart from, and makes it more visually interesting and pleasant than commercial strip development that exists at many other interchanges. An area of particular interest for development at the interchange is at the northeast corner in a natural bowl situated at the rear of the Varney property near the terminus of a town road called 42nd Street. This area has good access to the interchange, yet has a natural setback and visual barrier that maintains the rural character of the area. This bowl could be an extremely suitable site for a variety of businesses (these include, but are not limited to professional offices, a hotel, clean light industry, certain traveler services, farming heritage or other museums, and nurseries.)

I-91 Interchange Area Policies:

1. *It is Hartland's desire to maintain a balance between the potential benefits to the community associated with the presence of the interchange, such as jobs and additional tax base that would result from increased business development, and the positive image*

of scenic rural Vermont that the gateway currently provides. At the same time, potential development must also be evaluated in terms of the additional cost to the Town for services.

2. *Route 5 has been designated as a local bicycle route. It is important that shared vehicular access in the interchange area be used as much as possible in order to reduce traffic congestion and enhance vehicle, bicycle and pedestrian safety.*
3. *The principle guiding commercial development in this area should be compatible with rural surroundings. Compatibility depends on both the character and nature of the use.*
4. *The nature of any proposed development should be consistent with the following attributes:*
    - *The overall development should not be in conflict with the character of the surrounding community.*
    - *Development shall not adversely affect the vitality of the village center.*
    - *Development should not be one that could contribute to strip-type development that, by its nature, attracts similar businesses (this includes, but is not limited to, factory outlets, large grocery stores, shopping malls, convenience stores, large chain retail stores and fast-food establishments.)*
    - *Development shall not affect the quantity or quality of water resources at or near the interchange. There is also a potential aquifer beneath this area and site design plans shall ensure protection of this important groundwater resource. Impervious surfaces shall be kept to an absolute minimum, thus reducing the potential run-off from a variety of pollutants.*
5. *The character of any proposed development in the interchange area shall be consistent with the following attributes:*
    - *Modest size of structures that are appropriate to the scale of existing buildings and similar in design*
    - *Development design plans should maintain or enhance the scenic value of the surrounding rural landscape.*
    - *The hours of operation and nature and volume of traffic should not be disruptive to nearby residences. Preference should be given to development plans that are not 24-hour in nature and that feature low noise and limited lighting levels (e.g., low-level lighting that would be switched off by 11:00 p.m.) Design of development in the area should be in keeping with the rural Vermont business image and should enhance, rather than detract from, a visitor's positive impression of the scenic quality that makes Vermont an attractive place to live and visit.*
    - *Buildings and signage should meet design guidelines recommended for maintaining Vermont's scenic character and, as such, should not compete with the scenic views for driver attention.*
    - *Landscaping must be provided and varied in style, using native vegetation as much as possible. The landscaping plan should offer legitimate visual access to the business*

by the public; however, the plan must offer as much of a buffer as possible to enhance the scenic quality of the area.

6. *Primary retail enterprises (including factory outlets, large grocery stores, fast food establishments, and shopping malls) are inappropriate in the I91 Interchange Area. Development that meets the definition of strip development is not appropriate in this area. This includes, but is not limited to, convenience stores, banks, large chain retail stores and fast-food establishments.*

I-91 Interchange Area Recommendations:

1. *In accordance with Vermont's "Downtown Initiative," Town officials should encourage businesses compatible with village centers to locate at the I-91 interchange area.*

Industrial Area

Three areas are designated as appropriate for industrial growth. The purpose of the proposed Industrial Areas is to provide for local employment opportunities of an industrial nature, to expand the tax base, and to enable commercial uses that specifically serve the industries or their employees.

As shown on the Future Land Use Map (see Appendix), the three areas designated for industrial use are in the northeast corner of town, in North Hartland south of North Depot Road along the railroad track, and along Ferry Road and Depot Road between the Interstate and the Connecticut River. Each of these areas includes or borders land currently used industrially and each is on the rail line.

The North Hartland industrial area straddles the railroad tracks south of North Depot Road (TH 16). This area consists primarily of two existing industrial properties. North Hartland Tool Corporation and the North Hartland Dry Kilns. The proximity to the railroad and the history of industrial activity make this use appropriate at this location.

The area designated for industrial use at Ferry Road is the largest of the three. Existing industrial uses include several sand and gravel operations, including one owned by the Town of Hartland. This site is isolated by the railroad tracks which run through it, 1-91, and the Connecticut River. A few residences are located in the area, most on the west side of the railroad. This area is appropriate for continued or expanded industrial operations. Transportation is available via rail, or by truck from Route 5. Much of the area has been cleared or impacted by sand and gravel extraction, which may provide more area for industrial activities as these resources are exhausted.

On the Hartland-Hartford line and encompassing land in both towns is a large tract that has been used for many years for extraction of earth resources. The Hartland portion of the area is currently the site of an undeveloped 175-acre regional landfill owned by the Greater Upper Valley Solid Waste Management District (GUVSWMD). Twenty to thirty acres of the permitted landfill are being considered for a five megawatt solar array also owned by GUVSWMD. However, the solar project has not moved forward at the time of this Plan’s adoption.

This area is appropriate for the continued and expansion of its current industrial activity. Completed construction of the bridge in Hartford facilitates truck access in this largely industrial area.

Industrial Area Policies:

1. *Industrial development must be carefully reviewed to ensure that the activity will not be conducted in a manner which would be likely to result in undue or unreasonable adverse impacts on nearby residences or on town services and facilities.*
2. *New industries shall be located within or adjacent to existing commercial and industrial areas, before additional land is developed for this purpose.*

Rural Residential Area

In areas especially surrounding the villages but also throughout the Town, a density of development has occurred that is somewhat higher than typically found in the more rural areas, but lower than that found in the village itself. These areas have a greater distance between homes than in the villages, but more of a "neighborhood feel" than is typically found in the rural areas. Rural residential development typically occurs in five acre parcels.

Rural Residential Area Policies:

1. *An overall density of one residential structure unit, with no more than two dwelling units, per five acres is in general considered appropriate in these areas although soil, slope conditions and other resource protection considerations may not permit this density at some locations.*
2. *A minimum lot size of one acre per residential structure, with no more than two dwelling units, is appropriate to ensure proper water supply and wastewater treatment.*
3. *To ensure more appropriate lot configurations, a lot created in the Rural Residential District should have a minimum public highway frontage of 200 feet. Lots without frontage may be created and accessed by a 50-foot right-of-way so long as there is only a single access to such lots.*
4. *Reduced dimensional requirements may be appropriate in the case of clustered development.*

Rural Area

Maintaining the Town's natural resource base, agricultural economy, and forest industry are primary objectives of the Town Plan to be implemented through the Rural Area. In these areas, only low density residential development with home occupations will meet these objectives.

Rural Area Policies:

1. *Typically no greater than one dwelling unit per ten acres is an appropriate density in this District. However for preexisting lots greater than 10 acres and less than 20 acres with adequate soils, one subdivision should be allowed,*

2. *A lot created in the Rural District should have minimum public highway frontage of 400 feet. Lots without frontage may be created and accessed by a 50-foot right-of-way so long as there is only a single access to such lots.*
3. *Forestry, agriculture and related activities are encouraged.*
4. *Larger projects within the Rural District, including subdivisions of more than 5 lots, shall be configured such that at least 80% of land is left in contiguous undeveloped acreage. Locally enforceable permit conditions, conservation easements, or similar mechanisms on the undeveloped portion of the lot shall be required sufficient to maintain this land as open space.*
5. *Any development in the District on previously undeveloped hilltops or extending more than 800 feet into previously undeveloped lots, merits additional review and greater restrictions. Mandatory provisions shall include that no structures may break the natural tree canopy or disturb the silhouette of high points of land (as seen from public highways), and buildings not screened by vegetation will reduce their visibility through muted colors and less reflective materials.*
6. *Subdivisions that keep more than 90% of the land undeveloped may have a density of one dwelling unit per 7.5 acres.*

Rural Area Recommendation:

1. *Any new private road constructed off VT Route 12 or the Hartland-Quechee Road should be of limited length and not connect to other town highways so as to limit through traffic, and to avoid fragmentation of forest blocks, agricultural lands, or critical wildlife habitat.*

River Area

The River District is a small strip of land along the downstream portion of the Ottauquechee River (as shown on the map) and Connecticut River that is meant to limit development that would either be in danger of being undermined by changes in the river, or would itself contribute to destabilizing the rivers' banks.

River Area Policy:

1. *In this district, non-agricultural development activities shall not occur within 200 feet of the top of the bank. To the fullest extent practicable, natural vegetation shall be maintained within this buffer area to protect water quality, important habitat areas (wildlife, plants, aquatic habitat, and corridors), and the scenic value of the River. Other siting considerations related to the protection of ground and surface water resources are discussed in the Water Resources Chapter.*

Excavation and Mining

The western bank of the Connecticut River in Hartland is the site and source of an extensive and extraordinarily valuable amount of gravel. This is a finite resource currently being extensively exploited by commercial extraction companies. It is also used by the Town of Hartland for the

maintenance of its roads. In the 2014 planning survey, 57% of survey responses favored increased local regulations related to excavation in gravel pits.

This resource borders one of New England's most beautiful rivers. It is important that the Town help protect the quality of the Connecticut's waters. Safety concerns and the potential for disturbing the peace and quiet of residential areas are other considerations in regulating this activity.

Excavation and Mining Policies:

1. *This plan supports the Town Ordinance prohibiting the mining and milling of fissionable materials. Other commercial and private mining and extraction projects shall be reviewed carefully for concerns of safety, traffic, noise and other environmental and social concerns, including aesthetics.*
2. *Upon completion of excavation or mining such activities, the ground surface shall be left in a safe and vegetated condition as close to its natural surroundings as possible.*

CHAPTER 2: NATURAL, HISTORIC and SCENIC RESOURCES

Introduction

Natural resources include all of the raw materials on the earth that are needed to support life, such as clean water, healthy soil, and fresh air. They can be further expanded to encompass the many forms of plant and animal life, including humans and the habitats they live in. As we continue to change the world we live in, the beauty of the landscape around us is increasingly being recognized as a natural resource. Features of our historical background tie us to the past and remind us of our evolving relationship with the natural world in ways that are important to our sense of community and its unique identity.

The Natural, Historic and Scenic Resources Chapter was written with several objectives in mind. First, it is designed to provide Hartland residents with an overview of the importance of natural resources, including some of the benefits and challenges of conserving them. Second, it is to act as an introduction to many of the significant natural resources of Hartland. The third intent of this chapter is to identify courses of action the Town could take to protect its natural and historic resources. Most importantly, this chapter of the Town Plan is created to assert Hartland's commitment to preserving the Town's rural character, scenic beauty, environmental health, and the exceptional quality of life that its residents have come to expect.

While natural resources are typically divided into a number of categories for management purposes, it is important to remember the interrelatedness of all aspects of the environment that supports us. As in any system, an activity in one part of the environment can have broad reaching effects on others. For example, in New England during the 1800's heavy logging on hilltops and steep slopes resulted in soil erosion and increased runoff into streams and rivers. The increase in silt and runoff changed the character of the streams and rivers, negatively affecting the fish and wildlife dependent upon them. Further, flooding became a problem for cities and towns located along streams and rivers, since vegetation that once absorbed rainfall and stabilized banks had been removed. Therefore, although this chapter has been separated into several sections, conservation efforts should address natural resources as a whole.

This chapter of the Town Plan has four sections: historic resources; agricultural and forestry resources; natural areas, fragile areas, and wildlife habitat resources; and scenic resources. Water resources are considered in the next chapter. For each section of this chapter, a set of goals and polices has been identified with regard to protecting and preserving resources. Finally, a range of recommendations has been outlined as a means of attaining the stated goals in each section. While these policies and recommendations do not cover all of the possibilities for managing Hartland's natural resources, they serve as guidelines for developing solid natural resource conservation practices.

Historical Resources

Hartland's recorded history began on July 10, 1761, when New Hampshire Governor Benning Wentworth granted a charter that divided the land into 71 equal shares. The grant was called

Hertford, and that name continued until an act of the 1782 Legislature attempted to lessen the confusion with Hartford by changing the name to Hartland.

As set forth by Nancy Darling in a 1913 article in *The Vermonter,* the first recorded Town Meeting was held in 1767; another may have been held as warned in 1763 by the Subscriber Clerk of the proprietors, Oliver Willard. 1763 was also the year that Timothy Lull arrived with his family. He and others, however, may well have taken up land before then, perhaps immediately after the charter was granted. In 1778 the Town was first divided into school districts; that same year the first deed was recorded. By then the original grantees had been bought out by Captain Willard, who had confirmed the holdings of the various settlers; he also had prudently obtained confirmation of the grant by New York State. In 1780, a three-acre common was accepted by deed from Mr. Bugbee; this year is also commonly accepted as the date of the first church building.

Early Hartland had many separate settlements and a surprising number of industries and commercial establishments. Most of the settlements had a sawmill, a tavern, and a blacksmith shop. North Hartland had, in addition to an imposing woolen mill, two rope-walks, a place where handmade cloth was heckled with teasels (i.e. combed with a wire brush to make it more soft), as well as other establishments. Because sheep and cattle were raised extensively after the War of 1812, tanneries were set up. Broom manufacturing was carried on; at least two distilleries were active; there were foundries, additional woolen mills, a carding mill, gun manufacturing, a marble shop, grist mills, as well as hotels. Certainly there may have been others not mentioned.

The Town was also known for its fine agricultural and forest products. This tradition persists as Hartland farms continue to yield a variety of goods and some of the Town's best farmland remains in active production. Its forests still provide lumber and a number of wood products.

A date long impressed on Hartland school children was 1825, for in that year the town was honored by a visit from General Lafayette. The visit was recreated in a 1913 celebration.

Early Town records suggest an active road building program. Two roads leading from Windsor to Woodstock were established early. One passing through what is now called Fieldsville was called the County Road.

This brief review of Hartland's past provides us with excellent incentives to conduct our local affairs in a manner that will ensure that this town will continue to be an agreeable place in which to live and raise our families.

The emphasis of this Plan is to ensure that Hartland's rich heritage, including its historical, cultural, and scenic resources are maintained for future generations to experience. They include among others:

- houses, barns, mills, and other buildings;
- stone/masonry structures, such as walls, bridges, and foundations;
- covered bridges and railroad bridges;

- farms, hayfields, etc;
- traditional recreation areas, and other picturesque sites; and
- cemeteries.

These features/resources lend Hartland its classic New England charm, provide its residents with an exceptional quality of life, and foster a strong sense of community identity. However, while the Town has been able to preserve its rural character to a great extent thus far, current trends in rural development indicate that Hartland will be challenged to do so in the future (refer to the **Land Use Chapter** of the Hartland Town Plan for more details). Therefore, by establishing these goals and policies, Hartland is stating its dedication to preserving and protecting the town's historical features.

Several programs are available to assist towns trying to retain these features, including Historic Preservation grants from the VT Division of Historic Preservation and the Preservation Trust of Vermont.

Identification of Hartland's historical resources is a major step toward preserving the Town's character. In 1991 the Hartland Historical Society published In Sight of Ye Great River: History & Houses of Hartland, Vermont. This book serves as an excellent resource about the Town's historical features, as it chronicles the changing face of Hartland and its villages, as well as identifies the historical buildings and sites within the town. It exemplifies the Hartland Historical Society's commitment to the Town and its future, as it relates to its colorful past.

Historical Goals, Policies, and Recommendations

Historical Goal:

1. *Protect historical resources within the Town.*

Historical Policy:

1. *Encourage a sense of connection between the town's past, present, and future.*

Historical Resource Recommendations:

1. *The Historical Society should promote activities which educate residents about the Town's history.*
    a. *Encourage events such as Old Home Day which tie the Town's past to its present.*
    b. *Encourage walks or presentations that tour some of the historical sites in Town.*
2. *The Town should assist residents in protecting their historical homes, barns, and structures for future generations by educating residents about grant programs, as well as educating residents about the process of having their home/barn entered in the historic register.*
3. *The Town should consider adopting ordinances and/or practices, such as establishing an advisory design review process that may serve to protect Hartland's historical, cultural, and scenic resources.*

Agriculture and Forestry Resources

Forestry and agriculture have played a major part in the history of Hartland and continue to do so today. Since Oliver and Aaron Willard built the Town's first sawmill along McArthur Brook in 1767, Hartland has seen a pattern of land clearing for crops or pasture (mainly for sheep) and timber harvesting for building materials, wood products, and fuel. As was the general trend in New England during the latter half of the Eighteenth Century and first half of the Nineteenth Century, much of Hartland was converted to farmland or pasture. After farming became less profitable toward the latter half of the Nineteenth Century and many farmers moved west, many of these fields and pastures returned to forest land.

Presently a small percentage of the Town is in agricultural use, while most of the remaining area is forested. Both agriculture and forestry continue to contribute to the Town's economic well-being. Dairy products, beef and veal, sheep, and hay are produced by Hartland farms. Equine pursuits are another common farming activity within the Town. Aside from the lumber and wood products industries, the Hartland-Woodstock area is home to a large concentration of maple syrup producers. Forested lands also support important wildlife habitat in the region. Both agricultural and forested land provides the residents of Hartland with exceptional scenic and recreational opportunities.

Undeveloped land, such as forest and farmland, is one component of open space. Besides playing a key role in the visual character of the Town, open space land provides wildlife habitat and migratory corridors for animals. Further, it is well-established that in the long run, open space can save the town money, since the tax revenues from developed property often do not cover the costs of providing services to it.

To maintain open space and preserve their land for future generations, landowners who own undeveloped parcels larger than 25 acres can choose to put their land in "current use." Vermont’s Use Value Appraisal Program offers tax break incentives to landowners who enroll their property in current use land protection. The landowner can continue to use the property for agriculture or forestry, but agrees not to develop it. People that do develop land enrolled in the program pay a hefty penalty. The taxes paid to the Town do not change as the state makes up the difference between the current use value and what would be paid if the parcel was not in the program. While every new business or resident pays taxes to the Town, providing services to those people generally costs more than the revenues they generate. The costs of police and fire protection, utilities, and public education, as well as those associated with increased traffic and road maintenance (a substantial part of the Town budget), are among the problems facing growing towns. Thus, by limiting growth and preserving open space, especially in the harder to reach areas, a town can keep its expenses down, while retaining its rural character. Recognizing the benefits of open space, Hartland residents had 13,743 acres of land listed under the current use program as of 2013.

Vermont’s Municipal and Regional Planning and Development Act states that "preservation of the agricultural and forest productivity of the land, and the economic viability of agricultural units, conservation of the recreational opportunity afforded by the state's forests, streams, and lakes, wise use of the state's nonrenewable earth and mineral reserves, and protection of the

beauty of the landscape are matters of public good," and that "it is in the public interest to identify areas that have the potential to sustain agriculture and forestry and to develop ways for maintaining an active agricultural and forestry industry...".

Agriculture and Forestry Goals, Policies, and Recommendations

Agriculture and Forestry Goals:

1. *Protect agricultural and forest lands within the Town, in coordination with regional planning and environmental objectives*

Agriculture and Forestry Policies:

1. *Forestry and agricultural practices shall reflect the need to protect the Town's natural resources, including soil, water, and scenic resources, as well as wildlife habitat areas.*
2. *Given the economic, aesthetic, historical, and environmental value of Hartland's forest and farm land, continued efforts to protect and preserve these resources are critical to its well-being.*
3. *Local conservation efforts will be coordinated with State and regional conservation and planning goals.*

Agriculture and Forestry Recommendations*:*

1. *The Town should work with area groups and the State to sponsor workshops on soil conservation, land management, forestry practices.*
2. *The Town should promote the well-being of its agriculture and forest-related enterprises.*
3. *The Town should create a public information area at the Town Offices which contains maps, pamphlets, and other documents related to natural resource preservation.*
4. *Area land trusts should assist interested landowners in conserving their property, including providing information and technical assistance to landowners interested in protecting their land through fee simple acquisition conservation easements, deed restrictions, and mutual covenants.*
5. *The Town should support State, Federal, and private acquisition of land, through donation or conservation easements, which will protect the Town's agricultural and forestry resources.*
6. *The Town, regional chambers of commerce, and regional development corporation should assist agriculture and forest-related businesses through participation in State, regional, and local programs. Support these enterprises by encouraging local retailers to feature products made in Hartland.*
7. *Coordinate land use and conservation efforts with adjacent communities.*
8. *Consider assisting residents in protecting open space so as to preserve the agricultural and forestry traditions which have served to shape Hartland's history by educating residents about the benefits of open space, providing residents with information about the*

Vermont Use Value Appraisal Program, and working cooperatively with landowners and local land trusts and conservation groups to acquire high-quality resources.

Natural Areas, Fragile Areas, and Wildlife Habitat Resources

Hartland considers its natural and fragile areas, wildlife habitats, and the plant and animal species they support as important elements of the overall character and well-being of the town. The Town is committed to preserving these special areas and the wildlife they harbor. Hartland provides a home for rare species. The Eshqua Bog, which has been conserved by The Nature Conservancy, has been known as a site for rare orchids since the late 1800's and served as an early focus for the Hartland Nature Club, which was founded over a century ago in 1907. Also, a specimen of Jesup's Milk Vetch (a plant in the pea family), collected in Hartland in 1891, was designated as the "type specimen" or essential example of this subspecies. A small population of this plant still grows here, one of only three known to exist throughout the world.

The Connecticut River, as it flows through Hartland, is one of the few remaining sections of this great river which is both undammed and undeveloped. Development along much of the river elsewhere has severely affected the river floodplain, particularly the floodplain forests which provide habitat for many species. Thus, the relatively untouched portion of the river in Hartland provides a last haven for a number of rare species of plants and animals. Biologists have noted for decades that several species of freshwater mussels, having disappeared from much of the Northeast, are still found below Sumner's Falls.

State and Federal agencies provide protection for threatened and endangered species of plants and animals, as well as rare natural communities. Protected species occurring in Hartland include the Bald Eagle (*Haliaeetus leucocephalus*), Dwarf Wedge Mussel (*Alasmidonta heterodon*), Fowler's Toad (*Anaxyrus fowleri*), Jessup's Milk Vetch (*Astragalus robbinsii*), and Cobblestone Tiger Beetle (*Cicindela marginipennis*). Rare natural communities considered worthy of statewide recognition include floodplain forests, riverside outcrops, river cobble shores, and fens. Further information about these efforts, including lists of threatened and endangered species and rare communities, can be obtained by contacting the Natural Heritage Inventory at the Vermont Department of Fish and Wildlife.

Areas of critical concern include wetlands and deer wintering areas, sometimes referred to as "deer "yards". Wetlands are covered in the Water Resources element of this Plan, and include swamps, bogs, fens, marshes, and some floodplains. These different natural communities support many plant and wildlife species and most serve an important role in flood prevention and maintaining water quality in rivers, lakes, and groundwater aquifers.

Deer yards are wooded areas consisting of mainly coniferous trees (softwoods such as hemlock and pine.) that provide shelter. Since snow tends to be less deep under the canopy of softwoods, it is also easier for deer to search for food on the ground. Deer yards are typically near significant sources of food, such as stands of beech and oak trees that bear edible fruits, and generally have a southern exposure. Other important winter foods include the buds and twigs of saplings, particularly those of maples. Without such areas, many deer would not survive the long

winter months. Thus, by protecting wetlands and deer yards, Hartland is both preserving the quality of its natural resources and providing important wildlife habitat.

Development pressures on the landscape provide another major problem towards wildlife habitat. Many animals, particularly large ones, require unbroken areas of forest and field to satisfy their needs of food, shelter, and breeding and wintering habitat. Further, most animals have favorite travel corridors, or paths they use when migrating or searching for food. Breaking up or fragmenting wildlife habitat, even by just a road or driveway, disrupts movement patterns, reduces the core habitat areas and travel corridors that are critical to wildlife communities, and may increase predation. For some smaller animals a road is a significant barrier. Poorly sited housing or commercial development can have deleterious effects on many species of wildlife. Therefore, to prevent habitat fragmentation, the needs of local wildlife are important considerations when planning for and reviewing development with the Town.

Hartland, in the Green Mountain Piedmont exhibits a high degree of fragmentation already in place; however larger hills across the north and west of Town (and adjacent towns) support larger blocks of land with more stable and diverse wildlife. Functional connections among these blocks should be maintained in such a way to allow for wildlife dispersal and movement safely across large areas.

Narrow habitat connections may function more like a trap than a viable connection. Wooded habitat on both sides of the road for 1,000' or more is the model for wildlife movement. Some of this connectivity can be realized in the riparian zones of surface water and wetlands. Steep slopes adjacent to roads are also functionally useful for wildlife such as bobcats and bears. Guard rails can create a barrier to wildlife vision and safe movement.

Connectivity in aquatic habitats is important for fish and mammals such as otters and other aquatic organisms. Fragmentation of aquatic habitats can occur in situations with dams or perched culverts.

To maintain excellent wildlife habitat we will need to keep critical habitats functionally linked with larger blocks of habitats (forested lands and other natural communities). These large "core" habitats need to be bordered by compatible uses and need to be interconnected by unfragmented open spaces and contiguous forest.

Hartland's Conservation Commission serves several functions related to natural resource conservation. It provides residents with a source of information on the natural features of Hartland, as well as environmental issues facing the Town. The Conservation Commission represents its residents, providing them with a means to voice concerns about the environmental problems in the Town. It also acts as a watchdog for the Town, monitoring activities that may be detrimental to the health of its natural resources.

The Town has collected several maps showing the location of many of these natural features and habitats, including wetlands and water features, deer yards, locations of rare habitats and conservation land. These may provide useful information for individuals interested in wildlife and habitat conservation or those who are planning activities in or near these resources.

Natural Areas, Fragile Areas, and Wildlife Habitat Resources Goals, Policies, and Recommendations

Natural Areas, Fragile Areas, and Wildlife Habitat Goals:

1. *Protect natural areas, fragile areas, and critical plant and animal habitats (such as deer wintering areas and wetlands), including those of State and regional significance.*
2. *Foster an appreciation among Town residents of the special natural and ecological features of Hartland.*

Natural Areas, Fragile Areas, and Wildlife Habitat Policies:

1. *Land use planning goals shall be sensitive to the needs of Hartland's wildlife.*
2. *Support cluster development, the use of existing roads and field lines, and the establishment of buffer strips along watercourses to reduce wildlife habitat fragmentation.*
3. *Require adequate buffer zones when development is planned in the vicinity of rare and threatened species habitat, significant natural communities, or critical habitat.*
4. *Support State, Federal, and private acquisition of land, through donation or conservation easements to protect the Town's wildlife resources.*
5. *Hartland should take an active role in ensuring the preservation of rare and threatened species and their habitats, significant natural communities, and areas of critical habitat.*
6. *Encourage conservation of contiguous properties to maintain the connecting links and corridors for wildlife.*
7. *Installation of fencing, such as barbed wire, that would act as a barrier to wildlife movement is discouraged except when needed to retain farm animals.*
8. *The Town's conservation plans should be coordinated with local (adjacent towns), State, and regional efforts to protect natural and fragile areas, wildlife habitat, and regional wildlife corridors.*

Natural Areas, Fragile Areas, and Wildlife Habitat Recommendations:

1. *The Conservation Commission should educate landowners about the importance of protecting, maintaining, and enhancing wildlife habitats; and provide support and encouragement for their efforts, as well as information about a variety of regional, State and Federal programs and incentives involving wildlife and habitat preservation.*
2. *The Conservation Commission should work with others to provide workshops and presentations on wildlife with an emphasis on preserving the Town's natural and fragile areas and wildlife habitats and corridors.*
3. *The Conservation Commission should create a public information area at the Town Offices which supplies maps, pamphlets, and other documents related to endangered and threatened species and wildlife habitat preservation.*

4. *The Conservation Commission should educate landowners, foresters, and developers about the importance of using buffer zones for wildlife habitat protection.*
5. *The Town should consider redirecting the proceeds from the State's Land Use Change Tax into the Town's Conservation Fund instead of the Town's General Fund.*
6. *The applicant for subdivisions subject to Act 250 shall evaluate the impacts of their development on any identified core habitat areas.*
7. *The Conservation Commission, in cooperation with other organizations, should identify existing core habitat areas and travel corridors within the Town, identify desired wildlife protection areas, and sponsor efforts to educate the public about the importance of protecting wildlife habitats and the importance of interconnecting these habitats.*

Scenic and Aesthetic Resources

The rolling hills of Vermont, dotted with picturesque pastures and forests of evergreens and hardwoods, have long captured the hearts of many. Nestled within the Connecticut River Valley, in view of Mount Ascutney, the Town of Hartland exemplifies characteristic beauty and New England charm. From both Interstate 91 and Route 5, travelers are treated to spectacular views of the valley and portions of the River, as it courses past Hartland.

Hartland offers a warm and inviting sense of community. Like most Vermont towns, it is composed of several villages, including North Hartland, Hartland Three Corners, and Hartland Four Corners, each displaying a variety of architectural designs and scenic landscape features. These scenic characteristics are both part of the Town's history and a major reason why most have chosen to live here. Scenic vistas are very sensitive to activities such as intensive development and road construction. Therefore, to preserve the character of the Town, it is essential to ensure the future of these scenic resources.

Hartland has a number of natural and recreational areas. The North Hartland Flood Control Dam and Recreational Area, Lull's Brook Fish and Game Area, Sumner's Falls, the Hartland Town Forest, Class 4 roads and trails, Eshqua Bog, Densmore Hill Wildlife Management Area, and the Connecticut River are all available to Hartland residents. Swimming, boating, hiking, fishing, and nature observation are among the recreational opportunities these areas provide. Protection of these resources is very desirable.

Maintaining the scenic and recreational features of Hartland and preserving the character of the Town continues to be a challenge. Development at the intersections of major roadways or along their length may lead to sprawl if not monitored closely. Unprotected open space can be quickly sold off and subdivided, changing both the scenic nature of the Town and eliminating important natural resources. Activities along highly visible portions of rivers or hillsides, such as clear cutting of forests or development, can severely alter the beauty of Hartland. Further, poorly sited development atop hills, including houses, transmission towers, and power lines, can all make the town less attractive for residents and tourists. Buildings, signs, and lighting which do not fit the traditional character of the Town can be eyesores. Loud noises that aren't typically associated with regular activities in the Town can also be aversive, such as the sounds of increased traffic, heavy construction, or shooting ranges.

Balancing the need for growth and prosperity in Hartland with that of sustaining the scenic character of the Town is an important task shared by the Selectboard, Planning Commission, and Conservation Commission, as well as the residents they represent.

Scenic and Aesthetic Resources Goals, Policies, and Recommendations

Scenic Goals:

1. *To preserve Hartland's scenic and aesthetic resources, including recreational and natural areas, views and vistas, traditional land use patterns, and overall character.*
2. *To foster a sense of pride in the scenic nature and rural lifestyle that Hartland offers.*

Scenic Policies:

1. *Open space and natural resources which relate to the historical, cultural, and scenic character of the Town should be preserved.*
2. *Growth or activities that would contribute to sprawling development along major roads and highways is discouraged.*
3. *The scenic value of ridgelines, hilltops, and hillsides should be maintained.*

Scenic Recommendations:

1. *The Town should coordinate land use and conservation efforts with adjacent towns and cities.*
2. *The Town should consider a noise ordinance to ensure the Town's aesthetic environment, including quiet, is preserved. Land uses should not be so noisy as to interfere with neighbors' lives.*
3. *The Town should work cooperatively with landowners, local land trusts, and conservation groups to acquire high-quality scenic resources.*

CHAPTER 3: WATER RESOURCES

Introduction

Hartland's water resources are a highly valued feature of the landscape. The Connecticut and Ottauquechee Rivers, Lull's Brook and numerous smaller brooks contribute to the scenic environment, provide important habitat, and present a variety of recreational opportunities. This chapter discusses surface water resources, including rivers, brooks, floodplains, and wetlands, as well as groundwater, from which all of Hartland's water supply is drawn. This chapter makes recommendations to ensue current values remain viable for the use and enjoyment of future Hartland generations.

Although, for organizational purposes, topics such as wetlands and groundwater are presented in subsections, an important characteristic of water resources to keep in mind is their interconnectedness. All water in the environment is part of the hydrologic cycle. Rainwater falling on the ground may become runoff, which flows to brooks or percolates through the soil to become groundwater. Groundwater re-enters surface waters via springs or seeps. Wetlands discharge to surface waters and recharge groundwater supplies. Because the water in one part of the hydrologic system at a given time may be part of another at a future time, the same is true for pollutants entering the system. Additionally, alterations to one feature of the system may lead to changes in another. Similarly, water resources know no political boundaries. Surface watersheds and groundwater recharge areas follow the topography and subsurface deposits of the land. Consequently, activities that take place in one community often affect the residents of other communities.

Planning Survey Results

The results of the 1997 and 2014 community attitude surveys conducted by the Planning Commission show that Hartland residents and landowners place a high value on the Town's water resources.

The 1997 planning survey included a question listing natural and cultural features and asking which ones respondents would like to see local regulations to preserve or protect. Streams and rivers were indicated by the largest number of respondents (76%). This continued to be the top priority in 2014 with 73% in support of protecting rivers and streams. Local wetland regulations were also supported by a majority in both surveys (63% and 59%).

Taken as a whole, the survey results reflect both a high regard for and awareness of the need to protect the Town's water resources.

Surface Water Resources

Rivers, Brooks, and Ponds

All of Hartland resides within the Connecticut River watershed. In the south/southwest portion of town, surface waters drain into Lull's Brook, which enters the Connecticut River east of the I-91 interchange. Tributaries include Cady Brook, Densmore Brook, Weed Brook, and Alder Meadow Brook along Route 12 south of Hartland Hill Road. Upland portions of the Lull's Brook watershed extend into Woodstock, West Windsor, and a small area in Windsor. In the north/northwest portion of Town, brooks and stormwater runoff enter the Ottauquechee River, which joins the Connecticut in North Hartland just southeast of the Willard Covered Bridge and the railroad bridge. Ottauquechee River tributaries include Babcock Brook which follows Route 12 north from Hartland Hill Road and enters the Ottauquechee just beyond the Route12/US 4 intersection, and Fulling and Harlow Brooks which enter the river where it flows nearest to Clay Hill Road. In between the Ottauquechee and Lull's Brook are smaller brooks which flow directly to the Connecticut. These include Shepard Brook, which follows Gilson Road to join the Connecticut just above Sumner Falls, and McArthur Brook which originates north of Mace Hill and enters the Connecticut just north of Ferry Road. Quite a few very small ponds are scattered throughout Town, as well. Many of them are beaver ponds, which constantly change in shape and location. These small ponds are essential elements of Hartland's fire protection system and provide important habitat.

Surface water pollution can result from a variety of human activities within a watershed. In general, the closer the activity is to the shoreline, the greater its impact on surface water quality. The topography of much of Hartland consists of narrow valleys surrounded by steep hillsides with shallow soils. These valley bottoms provided a easier path for road-building and development, but also created conflicts with streams. The topography and associated land use patterns combine to make Hartland's brooks particularly susceptible to sedimentation and other pollutants carried by runoff from nearby roads and development.

Much can be done at the local level to prevent degradation of surface water quality. Shoreline protection, including vegetated buffer strips, and erosion and sedimentation control can both be used to reduce the amount of pollution that would otherwise enter surface waters as a result of a given development or activity. Siting structures and septic systems away from surface waters, including streams, rivers, and ponds, can greatly reduce the level of nutrients and sediments entering the surface water. Vermont recently reenacted state shoreland regulations for larger lakes and ponds, but in Vermont it is left up to communities to regulate stream buffers through local land use regulations. The only State regulatory provisions are below the top of bank, or if the project triggers either Act 250 or a stormwater permit. A local shoreland regulation, which can be part of a flood regulation, can address such things as building locations, and maintenance of a vegetated buffer.

Maintenance or restoration of a natural vegetation buffer within the shoreline setback is important to water quality. The reasons for this are many and include: the shading produced by the vegetation leads to cooler water temperatures which can contain more oxygen, which both supports a healthier ecosystem and increases the streams' capacity to assimilate wastes; the presence of the vegetation and leaf litter slows runoff so that sediments, nutrients, pathogens, and

toxins are broken down and incorporated into plants, soil, and microorganisms before reaching the water; and soil erosion is reduced as woody vegetation and its root systems tend to hold soils in place.

While in general larger setbacks provide higher levels of protection, the optimal buffer width varies according to site characteristics such as soil type and slope, as well as the type and density of vegetation. Studies have shown that, in most cases, the majority of pollutants (60% - 90%) can be removed within the first 100 feet of naturally vegetated buffer. The Vermont Agency of Natural Resources (ANR) recommends a minimum 50-foot foot vegetated buffer along the shoreline from the top of bank of all streams and rivers, with a 100 foot of buffer on unstable reaches. ANR, under the Vermont Shoreland Protection Act, now regulates development on lakes and ponds that are at least 10 acres. The only water body larger than 10 acres is the 215 acre North Hartland Lake, which is owned and operated by the U.S. Army Corps of Engineers. Crucial to the proper functioning of a vegetated buffer for pollutant removal is the maintenance of healthy shrubs and undisturbed ground cover.

Buffers larger than 100 feet are also required by many wetland and riparian species for breeding, foraging, and cover, as well as for travel between larger undisturbed habitat areas. For large water courses important for serving the recreational needs of the region, such as the Connecticut and Ottauquechee Rivers, larger buffers may also be required to provide an adequate visual and aural screen depending on the nature of adjacent land uses. Riverbank erosion underscores the need to site development away from these water courses.

Many people tend to think of shoreline protection as only important for large water bodies, such as the Connecticut River. However, river corridor protection along rivers and streams is important for the protection of roads and buildings in Vermont, as many are located in valleys near surface waters. Disturbance, alteration, or adjustment of a river channel or corridor can cause erosion, increase sedimentation, and decrease channel stability downstream, and even upstream, of where disturbance occurs.

Many homes in Hartland are located close to brooks. Lull's Brook flows through two of the town's densely developed village areas, Three Corners and Four Corners. As noted previously, much development in town has followed the logical path provided by the brooks and so many homes are located close to these streambanks. It is recognized that the interests of property owners in expanding or redeveloping these residences must be balanced with the need to prevent further water quality degradation.

Use of fertilizers on farms and lawns along rivers and brooks is a significant source of nutrient loading to surface waters. The use of best management practices, nutrient management plans, and naturally vegetated buffers by farms can reduce these impacts considerably. The state is in the process of changing the Accepted Agricultural Practices to Required Agricultural Practices, lowering the regulatory threshold size of farms, and increasing setback requirements. Nitrogen is a particular concern in the Connecticut River basin, and there will be a Total Maximum Daily Load process required by the US Environmental Protection Agency in order to reduce nitrogen entering the river.

Erosion control, sedimentation control, and stormwater management are tools that can be used to decrease surface water quality degradation associated with development and other activities in the steeper areas along brooks.

Development on steep slopes is a significant source of sedimentation of surface waters for several reasons. The erosion potential is greater because the soils tend to be shallower in these areas, and the velocity of surface water runoff is higher. The resulting sedimentation results in increased siltation, turbidity, and nutrient and chemical loading. Much of Hartland is made up of slopes over 15%, and these steep slopes present challenges to cost-effective and environmentally sound development.

Runoff from roads and other impermeable surfaces enters surface waters directly or via drainage structures and carries with it sediment and other pollutants. Road maintenance activities such as ditch and culvert cleaning, bridge and culvert repair, and winter sanding can be significant sources of stream sedimentation. Undersized drainage structures lead to channel scouring and can also result in road damage during floods. Over the next few years, all roads will be required to operate under the Municipal Roads General Permit that addresses erosion and stormwater impacts. This permitting program will begin in 2018 and be fully in place by 2021. This permit will require the improvement of undersized culvert structures, the formation of U-shaped ditches, the disconnection of ditches that are currently connected to surface water, and the stone lining of ditches with a 5% slope or greater.

Winter road maintenance raises another concern. De-icing involves varying combinations of salt and sand, depending on the temperature and characteristics of the road and storm. Much of this material is eventually carried by runoff and melting snow to nearby surface waters. Out of concern for water quality, many advocate reduced use of salt in favor of sand. However, both have their disadvantages. While the chloride ions in road salt have been found to be toxic to certain forms of aquatic life, much of the sand applied to the road surface eventually ends up in roadside brooks, ditches, and culverts that drain to brooks.

The Connecticut River has received much attention in recent years as an important regional, State, and national resource. The River has been the focus of the federal Conte National Wildlife Refuge and Scenic Byway Program, both providing opportunities for enhanced protection of certain resources in Vermont. Vermont communities have participated in New Hampshire's River Management Program through involvement in drafting the Connecticut River Corridor Management Plan. Most of these efforts have been led by the Connecticut River Joint Commissions, who have also sponsored public programs on a variety of River-related issues and published educational material on water quality protection activities that can be undertaken by landowners as well as communities. The Connecticut is one of ten rivers federally designated nationwide as an American Heritage River.

Water Resources Goal and Rivers and Ponds Policies and Recommendations

Overarching Water Resources Goal:

1. *Maintain and improve the quality of Hartland's surface and ground waters.*

Rivers and Ponds Policies:

1. *The Town of Hartland discourages development on steep slopes greater than 15%.*
2. *The Town of Hartland encourages landowners along the Connecticut River to protect and restore a vegetated buffer a minimum of 200 feet wide to protect riparian species and other river resources, and to allow for the movement of the River through bank erosion.*
3. *Road construction and maintenance in the Town of Hartland will incorporate practices to reduce the amount of polluted runoff that enters surface water from roads.*

Rivers and Ponds Recommendations:

1. *The Town should consider the adoption of shoreland regulations with setbacks between development activities, such as land clearing and construction, and Hartland's brooks and rivers. These regulations should enable expansion of existing structures within the setback with careful control of erosion and sedimentation.*
2. *The Conservation Commission should advocate for the cooperation of landowners with conservation organizations, such as Vermont Land Trust and the Vermont River Conservancy, to permanently protect shoreline buffer strips through conservation easements or other means.*
3. *The Town of Hartland shall prohibit development from happening in a way that will lead to erosion and sedimentation of surface waters including:*
    - *Prohibit development on slopes greater than 25%;*
    - *In accordance with state law, notify landowners that they require a stormwater general permit for new development equal to or greater than 1 acre or the expansion of existing development so that the resulting impervious surface is equal or greater than 1 acre.*
4. *Amend the Highway Ordinance and Culvert Policy by adding standards to limit the grade of and control runoff from driveways that can themselves be a source of erosion problems.*
5. *New culverts in the town of Hartland should be at least 18 inches high and will contain headers to protect integrity of structures. Road maintenance will also consist of stone lined ditches, grass lined ditches, disconnected ditches from surface water, and road crowning, where appropriate. Hartland's road standards will continue to follow statutes put forth by the State of Vermont, and will abide by current and future Better Backroads' Codes and Standards.*
6. *Hartland should continue to coordinate with and participate in regional programs aimed at protecting the resources of the Connecticut River watershed including the Conte National Wildlife Refuge, the Scenic Byway Program, and activities of the Connecticut River Joint Commissions.*
7. *The Town of Hartland shall continue to participate in Act 250 and other State permit application reviews to ensure that approvals are conditioned on proper water quality protection safeguards. This will include locating activities and structures with at least a 50 foot buffer from surface waters, with a larger setback distance in areas of steep slope or highly erodible soils; requirements for a detailed erosion and sedimentation control*

plan demonstrating proper controls during and after construction; a detailed stormwater management plan with appropriate stormwater treatment; and other recommended land use management practices.

Floodplains, River Corridors, and Flood Resilience

Background

Following the impact of Tropical Storm Irene in 2011, the Vermont Legislature added a requirement that all communities address flood resilience as part of their municipal plans. Interpreted broadly, "resilience" means that an entity—a person, neighborhood, town, state, region or society— when faced with a particular situation or event, has the ability to effectively return to its previous state or adapt to change(s) resulting from the situation or event without undue strain. As such, "resilience" is an overall preparedness for a future event. For the purposes of this chapter, flood resilience will mean the ability of Hartland to effectively understand, plan for, resist, manage and, in a timely manner, recover from flooding.

Types of Flooding

Generally speaking, there are two types of flooding that impact communities in the state of Vermont—inundation and flash flooding. Inundation flooding occurs when rainfall over an extended period of time and over an extended area of the river's basin leads to flooding along major rivers, inundating previously dry areas. This type of flooding occurs slowly, but flood waters can cover a large area. Inundation flooding is slow and allows for emergency management planning if necessary. However, unlike during a flash flood, it may take days or weeks for inundation flood waters to subside from low areas, which may severely damage property.

Flash flooding occurs when heavy precipitation falls on the land over a short period of time. Precipitation falls so quickly that the soil is unable to absorb it, leading to surface runoff. The quick-moving runoff collects in the lowest channel in an area—upland streams, in small tributaries, and in ditches—and the water level rises quickly and moves further downstream. Flash flooding typically does not cover a large area, but the water moves at a very high velocity and the flooding manifests quickly, making flash floods particularly dangerous. Due to the velocity of the water, a flash flood can move large boulders, trees, cars, or even houses.

The collecting of water in channels in steep areas also causes fluvial channel erosion, which can severely damage roads and public and private property. Fast moving water in the stream channel may undermine roads and structures and change the river channel itself, predisposing other roads and structures to future flooding damage. Flash floods can also mobilize large amounts of debris, plugging culverts and leading to even greater damage. In Vermont, most flood-related damage is caused by flash flooding and fluvial erosion (erosion of stream banks). Due to its topography, Hartland is vulnerable to flash flooding and fluvial erosion.

Causes of Flooding

Severe storms with particularly heavy precipitation have the ability to create flash flood conditions. However, over an extended period of time, severe storms may cause inundation

flooding due to the cumulative effects of continuous rain, saturated soils and a high water table/high aquifer levels.

Floodplains and river corridors fill an important need, as flood waters and erosive energy must go somewhere. Development in the floodplain can lead to property damage and risks to health and safety. Development in one area of the floodplain or river corridor can also cause increased risks to other areas by diverting flood flows or flood energy. Debris carried by the floodwater from one place to another also poses a danger. Flooding is worsened by land uses that create impervious surfaces that lead to faster runoff, and past stream modifications that have straightened or dredged channels, creating channel instability.

Historic Flood Events

One of the worst flood disasters to hit the Town of Hartland, as well as the overarching region and the State of Vermont, occurred on November 3, 1927. This event was caused by up to 10 inches of heavy rain from the remnants of a tropical storm that fell on frozen ground. A more recent flood event that devastated the region and the state was the result of Tropical Storm Irene, which occurred on August 28, 2011. Record flooding was reported across the state and was responsible for several deaths, as well as hundreds of millions of dollars of home, road, and infrastructure damage. Due to the strong winds, some in an excess of 60 mph, 50,000 Vermont residents were initially without power, and many did not have electricity restored to their homes and businesses for over a week.

Tropical Storm Irene caused damage to property and infrastructure in the Town of Hartland due to an estimated 3-7 inches of rain that fell during the storm. Nearly every dirt and gravel road in the Town was washed out, with Jenneville Road, Densmore Hill Road, Hartland Hill Road, and Reeves Road receiving the most severe damage. The Federal Emergency Management Agency's (FEMA) Public Assistance Database, which accounts for at least 70% of the damage that occurred, estimates Hartland's damages to be $174,004.08 from Tropical Storm Irene. Estimates from Windsor County amount to $32.5 million.

A more recent flooding event occurred between June 25 and July 11 2013, federally declared disaster DR-4140, and caused significant damage in the Town of Hartland. Multiple inches of rain fell within a matter of hours in early July, and 90% of Hartland's roadways were affected. Additionally, a large box culvert located on Densmore Hill Road collapsed during the event, which caused flooding and a road closure. Gilson Road was completely washed out during the storm, and Mill Street and Rice Road were also severely damaged. Altogether, nearly all Class 3 roads were impacted.

Flood Hazard and River Corridor Areas in Town

There are two sets of official maps that govern development in floodplains in Vermont. They are the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRMs) and VT Agency of Natural Resource's river corridor area maps. The FIRMs show the floodplain that FEMA has calculated would be covered by water in a 1% chance annual inundation event, also referred to as the "100 year flood," or base flood. This area of inundation is called the Special Flood Hazard Area (SFHA). FIRMs may also show expected base flood elevations

(BFEs) and floodways (smaller areas that carry more current). FIRMS are only prepared for larger streams and rivers. Hartland has FEMA FIRM maps that are used in Flood Hazard Bylaw administration; however, besides the Connecticut River, they are out-of-date and do not contain elevation data for all streams.

Recent studies have shown that a significant portion of flood damage in Vermont occurs outside of the FEMA mapped areas along smaller upland streams, as well as along road drainage systems that fail to convey the amount of water they are receiving. Since FEMA maps are only concerned with inundation, and these other areas are at risk from flash flooding and erosion, these areas are often not recognized as being flood-prone. It should be noted that small, mountainous streams may not be mapped by FEMA in NFIP FIRMs (Flood Insurance Rate Map), flooding along these streams is possible, and such flooding should be expected and planned for. Property owners in such areas outside of SFHAs are not required to have flood insurance. Flash flooding in these reaches can be extremely erosive, causing damage to road infrastructure, threatening topographic features including stream beds and the sides of hills and mountains, and creating landslide risk. The presence of undersized or blocked culverts can lead to further erosion and stream bank/mountainside undercutting. Change in these areas may be gradual or sudden. Furthermore, precipitation trend analyses suggest that intense, local storms are occurring more frequently.

In the Town of Hartland, 71 total structures reside in the 500 year floodplain, or the area that has a .2% chance of flooding every year. These structures are characterized by 9 commercial, industrial or public buildings, including the fire station, and 62 residential buildings. Of these structures, 12 have flood insurance policies valued at $1.9 million. If all of these structures were destroyed in the event of a flood, the resulting damage would be approximately $31 million. Disruption of the fire station within the floodplain could drastically hamper future response and relief efforts in the town, and cause major disruption to continuity of operations.

Vermont ANR's River Corridor maps show the areas that may be prone to erosion, which may be inside of FEMA-mapped areas, or extend outside of these areas. In these areas, the lateral movement of the river and the associated erosion is a greater threat than inundation by floodwaters. Elevation or floodproofing alone may not be protective in these areas as erosion can undermine structures.

The River Corridor area is not subject to specific regulatory conditions in the Hartland Zoning or Flood Hazard bylaws, but the Planning Commission may adopt new language that provides river corridor protection. In an effort to help protect structures and road infrastructure, it is important to restore floodplain, improve areas and/or increase the number of areas for retention of floodwaters to reduce the risk to structures and road infrastructure wherever possible.

Hartland contains 1,220 acres of floodplain, 87 acres of which are floodway, the deepest, fastest flowing area in a flood. The floodplain comprises 4% of the town.

Hartland Flood Hazard Regulations

The Town of Hartland has standalone Flood Hazard Area Regulations, which were adopted in 2007. The Town's Flood Hazard Area Regulations prohibit development in the town's floodway,

with the exception of bridges, culverts, public utilities, or stabilization projects. These exceptions require a hydrologic and hydraulic analysis by a certified engineer to make sure these structures will not result in the loss of flood storage, will not increase flood levels, will not increase risk to surrounding properties, or will not diminish the transport capacity of the floodway.
The Flood Hazard Area Bylaw requires a development permit for all fill, construction, or other development in the Special Flood Hazard Area, or the area that has a 1% chance of flooding every year. According to this permit, the lowest floor of all new structures will be one foot above base flood elevation; structures will be constructed with methods to minimize flood damage; and new structures will utilize materials resistant to flood damage.

In order to protect riparian and streambank areas from erosion and flood hazards, no development is permitted within 50 feet from the top of banks on streams. No fill, excavation, or ground disturbance is allowed within 35 feet of the top of the banks on streams. As of the date this Plan was adopted, Hartland's Flood Hazard Regulations have been designed to meet the minimum standards set by the Federal Emergency Management Agency (FEMA) and the National Flood Insurance Program (NFIP).

National Flood Insurance Program (NFIP)

Under the provisions of the National Flood Insurance Act (1968), the Federal Emergency Management Agency (FEMA) has conducted a series of evaluations and hydrologic engineering studies to determine the limits of flood hazard areas along streams, rivers, lakes, and ponds expected to be inundated during the 100-year base flood, meaning that the flood level has a 1% chance of being equaled or exceeded in any given year. The calculations do not take into account the impact of ice dams or debris, and may, therefore, actually underestimate the areas which are subject to flooding damage.

FEMA has prepared a Flood Hazard Boundary Map for the Town of Hartland, which includes flood hazard areas for the Connecticut River, the Ottauquechee River, Babcock Brook, Fulling Brook, Harlow Brook, McArthur Brook, Weed Brook, Densmore Brook, Lulls Brook and major streams. This map is on file at the Town Office and at the Two Rivers-Ottauquechee Regional Commission. It can also be found online through FEMA's website and the Vermont Agency of Natural Resources. Contact the Hartland Administrative Officer to determine if a proposed development is in the Flood Hazard Area. The lands surrounding the Army Corps of Engineers North Hartland Lake are controlled by the ACOE as part of the flood control dam project. These mapped floodplains cover only a small portion of the land area of Hartland and are meant to show lands that would be inundated during a 1% chance flood. Some of these mapped areas are "unnumbered A zones" that have neither flood elevations nor floodway boundaries. Where shown, floodways are areas expected to be covered in floods that have strong currents and are highly dangerous.

FEMA also administers the National Flood Insurance Program, which provides flood hazard insurance at subsidized rates for property owners in affected areas. In order to qualify for federal insurance, towns must adopt and retain a bylaw to control land development within these areas. Minimum standards must be included and approved by FEMA. Coverage is only available to landowners in town if a town elects to participate in the program. The Town of Hartland is recognized as a participating community in the National Flood Insurance Program.

Promoting Flood Resilience

Flood Hazard Regulation

The following changes to the Flood Hazard Bylaw would help protect the citizens of Hartland from further damages from a severe flooding event:

1. Prohibit all new development in the 100-year floodplain.

2. The prohibition on new development would not apply to small out-buildings or similar structures provided they are properly flood-proofed and meet the thresholds required by the National Flood Insurance Program for flood hazard regulation. The prohibition would not apply to renovations to existing structures unless the proposed renovations expand the footprint of the existing building or exceed the substantial improvement thresholds required by the National Flood Insurance Program for flood hazard regulation.

3. The best and most appropriate uses within the Flood Hazard Area along rivers and streams are those that are recreational and agricultural (using Required Agricultural Practices). Minimizing development within these areas will help protect both public and private investments as well as the natural and scenic quality of Hartland's waterways.

4. Prohibit new development within mapped river corridor areas.

Revisions to Hartland's flood hazard bylaw will require input from the community regarding the level of regulation it believes is necessary to protect citizens and their buildings from severe flood hazard events. Provided that all parts of the flood hazard bylaw continue to meet the minimum requirements of the NFIP, communities have a broad range of flexibility in regulating the flood hazard area.

Non-regulatory approaches

Easements

Hartland could pursue riparian easements as a way to protect floodplain from development and preserve flood storage.

Culvert Maintenance

Hartland maintains an up-to-date list of culverts and culvert condition, and completed a comprehensive culvert inventory in fall 2015. As part of this process, priority projects were identified and cost estimates were generated to prioritize culvert upgrades for damaged and undersized structures. New Vermont Agency of Transportation Codes and Standards require a minimum size of 18 inches for new culverts. The process of upgrading culverts is ongoing.

Flood Resilience Goals, Policies, and Recommendations

Goal:

1. *Maintain and improve the quality of Hartland's surface and ground waters.*

2. *Ensure no net loss of flood storage capacity in an effort to minimize potential negative impacts. These impacts include the loss of life and property, disruption of commerce, and demand for extraordinary public services and expenditures that result from flood damage.*

3. *To allow Hartland to be resilient in the event of a severe flood.*

4. *To protect municipal infrastructure and buildings from the potential of flood damage.*

Policies:

1. *Use sound planning practices to address flood risks so that Hartland's citizens, property, economy, and the quality of the town's rivers as natural and recreational resources are protected.*

2. *Hartland prohibits all new fill and construction of buildings in mapped floodways (Mapped areas, unless corrected by FEMA).*

3. *All wetlands which provide flood storage functions shall remain undeveloped. In the long term, restoration and enhancement of additional wetlands should be pursued in order to improve Hartland's flood resilience.*

4. *After flood events, recovery and reconstruction within the river area should be managed according to the Vermont River Program's best practices in order to avoid negative impacts downstream.*

5. *Do not build Hartland's emergency services, power substations, and municipal buildings in the Special Flood Hazard or River Corridor Areas.*

6. *Maintain Hartland's upland forests and watersheds predominately in forest use to ensure high quality valley streams and to ensure that flood flows reduced.*

7. *Hartland will use 50 foot vegetated riparian buffers and will maintain 100- foot riparian buffers on unstable reaches. Rock rip-rap and retaining walls should only be used to the minimum extent necessary and when bioengineering techniques may not be adequate to prevent significant loss of land or property.*

8. *Limit land uses within Hartland's River Corridor Areas to non-structural outdoor recreational and agricultural uses due to the dangerous erosive risk in these areas.*

Recommendations:

1. *Revise Hartland's Flood Hazard Area regulations to prohibit new development (excluding small ancillary structures in the 100-year floodplain, or area that has a 1% chance of annual flooding).*

2. *Modify Hartland's Flood Hazard Area regulations to prohibit commercial, industrial, and residential uses within ANR's mapped river corridor areas.*

3. *Hartland should work with VTrans and the Regional Planning Commission on advocating for and improving the flood capabilities of State or Town-owned transportation infrastructure.*

4. *Hartland should move or abandon roads that often experience serious flood damage.*

5. *Hartland should continue to maintain and update town bridge and culvert inventories. This information should be used to develop a schedule to replace undersized culverts.*

6. *Design culverts and bridges, at minimum, to meet VTrans Hydraulics Manual, ANR Stream Alteration Standards, VTrans Codes and Standards. Maintain culverts to ensure they are effective during severe weather events*

7. *Hartland should continue working to update hazard mitigation plans and emergency preparedness and recovery procedures.*

8. *The Selectboard should continue to send a representative to regularly attend and participate in the region's Local Emergency Planning Committee (LEPC #3).*

9. *Continue to update Hartland's Flood Hazard Area Regulations as needed to comply with FEMA's requirements for participation in the National Flood Insurance Program and to reflect new understanding of wise floodplain development.*

Wetlands

Wetlands include areas such as marshes, swamps and bogs where water at or near the surface of the ground is a controlling factor in the development of plant and animal communities. Wetland functions typically include water quality protection, flood control, shoreline stabilization, contributions to groundwater and stream flows, and wildlife and fisheries habitat. In general, wetlands are not a dominant feature of Hartland's landscape. For the most part, Hartland's mapped wetlands of substantial size tend to be associated with brooks such as Alder Meadow, Babcock, and McArthur. One of Hartland's ecologically significant wetlands includes Eshqua

Bog, which is a 41-acre conserved area located on Garvin Hill Road. Wetland values include storage of floodwaters, storage and adsorption of soluble nutrients that otherwise would contaminate downstream water bodies, discharge of water to water bodies during periods of low flow, groundwater recharge, filtration, habitat for many species that depend on wetlands for part or all of their life cycle, and recreational opportunities.

An Army Corps of Engineers Section 404 permit is required for many activities in wetlands. Additionally, through the Natural Resources Board, Vermont's Wetland Rules apply to most wetlands shown on the National Wetland Inventory maps. Uses allowed are those which do not involve any dredging, filling, grading, or other alteration of the water flow.

For Class 2 wetlands, which include all wetlands in Hartland, only a 50-foot buffer is regulated. The Wetland Rules provide a mechanism for petitioning to have wetlands changed from Class 2 to Class 1 and to have greater buffer widths protected in certain cases. As is the case with other surface waters, as discussed above, a 100-foot buffer is generally recommended.

A more detailed local wetlands inventory would be a good first step toward evaluating the resource and assessing protection needs. Wetlands less than a few acres typically do not show up on the NWI maps. Several data sources are available as a starting point for refining the National Wetland Inventory maps, including hydric soils and satellite data. Several guides have been published to assist conservation commissions in inventorying and evaluating wetlands.

Wetlands Policy and Recommendations

Overarching Water Resources Goal:

1. *Maintain and improve the quality of Hartland's surface and ground waters*

Wetlands Policy:

1. *Wetlands are inappropriate areas for construction of buildings, septic systems, or activities that involve alteration of the natural drainage patterns.*

Wetlands Recommendations:

1. *The Town should get grants to contract an environmental consulting company to conduct a local wetlands inventory to identify and evaluate wetlands and assess protection needs.*
2. *The Conservation Commission should work with land trusts and other conservation organizations to prioritize wetlands for conservation easements and other forms of permanent protection.*
3. *In cooperation with government agencies and non-profit organizations, Hartland Conservation Commission will foster landowner education regarding the functions and values of wetlands.*

Vernal Pools

Vernal pools occur in forested depressions that become temporarily inundated with water during spring and sometimes fall. These pools are often small in size, consisting of water depths of less

than 4 feet and total areas of less than half an acre. Vernal pools are rare and important natural communities because they provide breeding habitat for amphibians. Typical amphibian species found in vernal pools include wood frog (*Lithobates sylvaticus)*, spring peeper (*Pseudacris crucifer*), spotted salamander (*Ambystoma maculatum)*, Jefferson's salamander (*Ambystoma jeffersonianum),* and blue spotted salamander (*Ambystoma laterale).* Vernal pools do not support fish due to their ephemeral nature and they do not typically exhibit stream inlets or outlets. These pools do not typically contain vegetation and are heavily shaded by surrounding forests. Besides amphibians, vernal pools can also contain fairy shrimp, fingernail clams, water fleas, and copepods.

The Town of Hartland has a moderately large presence of Vernal Pool resources. A project by the Vermont Center for Ecostudies has led efforts to map vernal pools across the State of Vermont, and they have undergone considerable vernal pool identification and mapping in Hartland. As of 2016, 15 confirmed pools were identified in Hartland, and approximately 50 potential pools await field confirmation.

Vernal Pools Policy and Recommendations

Overarching Water Resources Goal:

1. *Maintain and improve the quality of Hartland's surface and ground waters*

Vernal Pools Policy:

1. *Vernal pools are inappropriate areas for construction of buildings, septic systems, or activities that involve alteration of the natural drainage patterns.*

Vernal Pools Recommendation:

1. *Any development near a confirmed vernal pool should meet any applicable state permits.*

Groundwater Resources

Groundwater is water that is found in the ground in the pores of subsurface deposits. The term "aquifer" describes water-saturated earth materials from which a water supply can be obtained.

Virtually all Hartland residents rely on a clean and plentiful supply of groundwater for drinking, cooking, washing and other purposes. Groundwater resources in Hartland are currently available on the Vermont Agency of Natural Resources' Natural Resources Atlas, which contains data regarding private wells, public water sources, and groundwater source protection areas in Hartland. 262 North Hartland residents are served by the North Hartland Water Cooperative well, which is classified as a community water supply. There are 5 other source protection areas for groundwater sources, including the Hartland Elementary School, Hartland Town Activity Center, Cobb Hill Cohousing, Inc., The Hartland Recreation Center, and the Three Corners Plaza. The rest of the community relies on individual wells.

Hartland residents, visitors and businesses, in addition to being dependent on groundwater as a source of potable water, are also dependent on the same groundwater for dilution of contaminants in wastewater. Therefore, great care must be taken to prevent hazardous

substances from entering the groundwater and to limit development density to a level that enables adequate dilution. The Irving Oil fuel spill in July 1997, and resulting gasoline and MBTE contamination in the Hartland Three Corners area, illustrates the dangers involved with groundwater contamination. The town of Hartland and its residents rely on the integrity of groundwater resources.

In the past, chemicals used by homeowners and small businesses often ended up in the hydrologic cycle due to the expense and impracticality of proper disposal. Household hazardous waste collections now provide a practical alternative to improper disposal. The Greater Upper Valley Solid Waste District, and the Town of Hartford (at the recycling facility used by Hartland residents), provide education for consumers of all ages about alternatives to hazardous materials to reduce the amount of hazardous material in the waste stream.

While the State regulates underground storage tanks of 1,100 gallons and greater and requires testing and periodic replacement, no such oversight exists for tanks smaller than this. This means that leaks in residential underground oil tanks generally go undetected until a large quantity of oil has entered the groundwater. Studies have shown that the average tank will develop leaks within 15 years. This is of particular concern in densely developed areas where one property owner's leak could affect the wells of many others. Although the cost may seem substantial to the homeowner, replacement of an existing older underground home heating oil storage tank is relatively inexpensive compared with the exorbitant cleanup costs and loss of property value associated with a leak. Funding through the State Petroleum Cleanup Fund is available to assist homeowners.

Since all water supply in Hartland comes from groundwater, and mostly from private wells, all of the above uses need to be carefully planned and monitored to ensure contamination does not occur. Best management practices regarding storage and handling of hazardous materials can minimize the risk of contamination. Business owner education is a key component of a groundwater protection program. For the business owner, following best management practices lowers environmental liability and minimizes the potential for clean-up costs.

Septic systems need careful regulation regarding slopes, soils and depth to bedrock to function properly and not contaminate groundwater. Only the state regulates septic systems in Hartland. Once installed, septic systems need to be maintained properly to continue effectively treating wastes. This includes having the tank inspected and pumped every few years.

Groundwater quality information can be found on the Vermont Department of Environmental Conservation’s Drinking Water and Groundwater Division program’s website. This program collects water quality monitoring information regarding bacterial data and chemical data multiple times per year.

Groundwater Policies and Recommendations

Overarching Water Resources Goal:

1. *Maintain and improve the quality of Hartland's surface and groundwaters.*

Groundwater Goal:

1. *Ensure that groundwater quality is maintained for use by current and future Hartland residents.*

Groundwater Policies:

1. *Uses which are not appropriate in important aquifer areas due to the risk of contamination include:*
   - *any principal use involving the production, sale, storage, or transportation of fuel oil, gasoline, or other hazardous substances,*
   - *car washes,*
   - *disposal, processing, or recycling of hazardous substances,*
   - *septage lagoons,*
   - *snow dumps,*
   - *solid waste facilities,*
   - *uncovered storage of road salt or other de-icing chemicals,*
   - *subsurface wastewater disposal systems other than domestic wastewater and groundwater remediation systems,*
   - *transportation terminals,*
   - *underground storage of fuel or other hazardous substances, and*
   - *vehicle service and repair shops.*
2. *Other uses that may or may not pose an undue risk to water quality, but that warrant special consideration include:*
   - *cleaning services,*
   - *excavations,*
   - *food processing facilities,*
   - *general service and repair shops,*
   - *laboratories and professional offices,*
   - *manufacturing facilities,*
   - *metal working shops, and*
   - *any use rendering impervious more than 20% of the lot area, and any other use which involves hazardous substances in quantities greater than those associated with normal household use.*
3. *Development proposals should be designed to minimize the amount of impermeable surfaces and provide for on-site stormwater treatment to enable groundwater recharge.*

Groundwater Recommendations:

1. *Hartland should continue to participate in regional hazardous waste collections to provide a practical cost effective means of disposal and support educational activities aimed at reducing the amount of hazardous material in the waste stream.*
2. *Work with TRORC to consider protecting high priority potential future public water supply aquifers through source protection areas, and to consider Class II groundwater areas in Hartland.*

CHAPTER 4: HOUSING

Introduction

Housing is both a reflection and a determining factor of the quality of life of Hartland residents. The supply, condition, and cost of housing all have a great effect on our lives. This housing element will look at these three aspects of housing in the context of the regional situation.

Housing Supply and Ownership

The building boom of the 1970's and 1980's had a substantial impact on the Town of Hartland. The 1990 adjusted U. S. Census counted 1,287 dwelling units in Hartland, almost twice as many as counted in 1970 (658). This pace was much faster than the county's or State'ss rates of growth, but it slowed considerably in the 1990's. The 2000 Census reported 1,382 total dwelling units in Hartland. This represents only a 7% increase during the 1990's, compared with the 45% and 35% growth in housing experienced during the 70's and 80's, respectively. In 2010, there were 1,584 total units in Hartland, which represents a 14.6% increase from 2000.

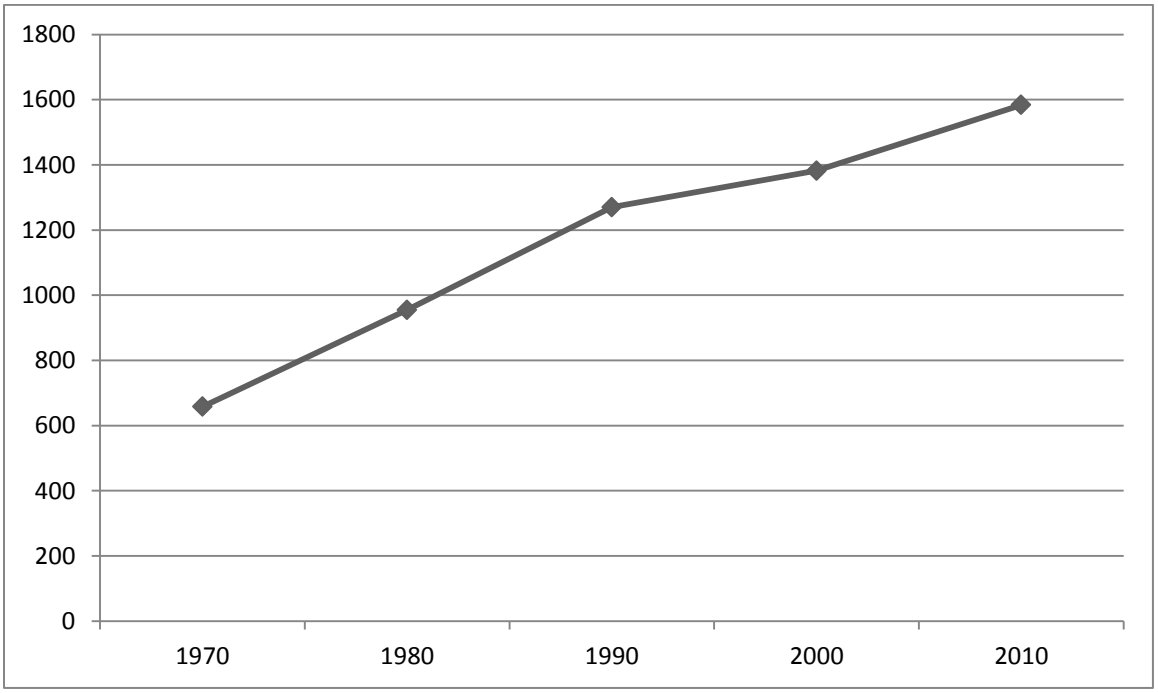

Figure 5: Housing Trends in Hartland

Most of the housing in Town is utilized by full-time residents, with only 5.7% categorized by the 2000 Census as seasonal, which is much lower than the county and State averages of 21.7% and 15.6%. In 2010, there were 42 units (2.7%) available, 25 of which were for rent and 17 for sale. The significant shortage of available housing in Hartland echoes the housing need throughout Windsor County, where only 1,281 units (3.8%) are available.

This housing shortage in Hartland, along with many other towns in the Upper Connecticut River Valley, may not be apparent to longtime residents who own their homes, as a housing shortage is

most obvious to those looking for housing. Hartland's residents who own their homes have lived in their homes longer than the county or State averages.

Housing Type and Condition

Like the rest of the region and State, Hartland's housing supply is primarily made up of single-family housing units. It has slightly larger percentages of single family units and mobile home than the rest of Windsor County and Vermont, but a much smaller percentage of multi-family units. There were 267 renter-occupied housing units in Hartland (18.8%), and this figure is typical of Windsor County and Vermont as a whole.

HOUSING TYPES IN HARTLAND, WINDSOR COUNTY, AND VERMONT

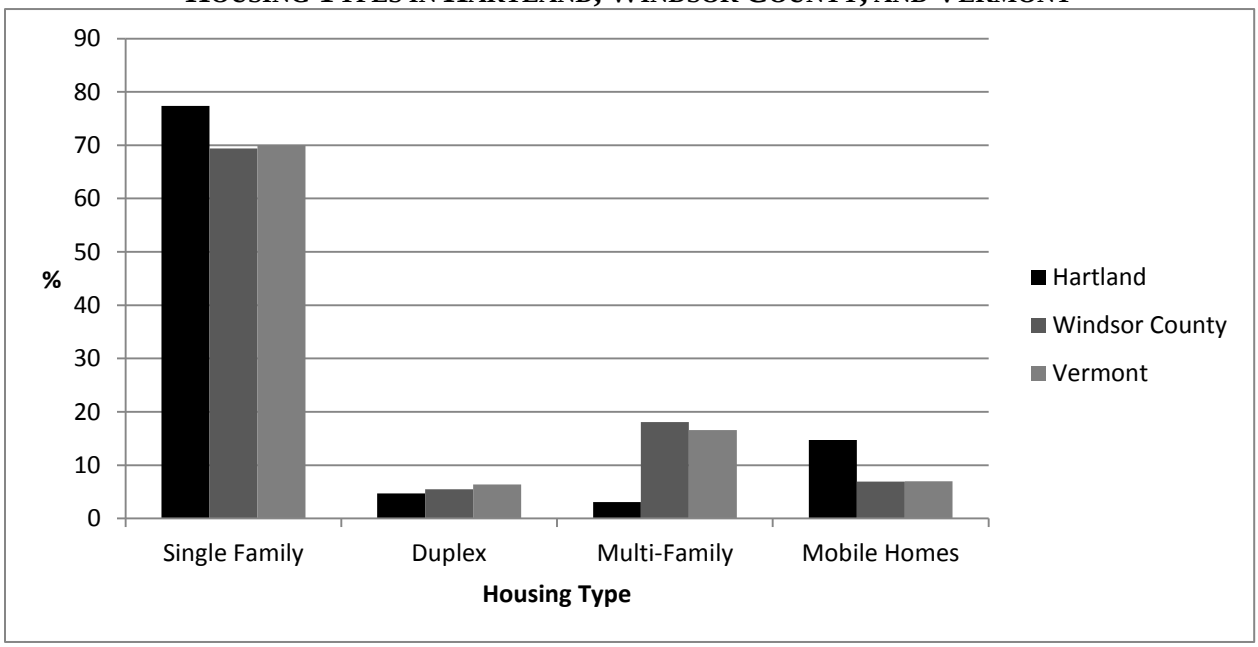

Figure 6: Housing Types in Hartland (Source: 2010 U.S. Census)

Housing Cost and Affordability

A comparison of 1980, 1990, 2000, and 2010 Census results shows that rental housing costs for Hartland residents have been increasing rapidly, and that family incomes also increased. This has also been true for Vermont as a whole.

MEDIAN RENT AND INCOME FOR HARTLAND

	1979	1989	1999	2015
Median Rent	180	419	621	790
Median Family Income	18,806	34,877	55,534	74,458

Table 1: Median Rent and Income in Hartland (Source: U.S. Census, 1980, 1990, 2000, 2010)

The median house price for a primary home in Hartland in 1989 was $114,250, and this had increased to $134,750 a decade later. This figure continued to rise to $191,500 in 2005, and exploded to $255,000 in 2014. The 2014 median price for a vacation home was $372,500,

showing that new or renovated housing pressures the market with high prices. These high prices for secondary homes drive less building of primary homes and cause a loss of primary residences when they convert to vacation homes. What is even more amazing is the mean primary residence price in 2014 was $260,521 and mean for vacation homes was $568,433, both indicating there are some large prices in the upper range to skew the mean upward. Hartland's prices are slightly higher than the State and county averages for primary residences and much higher for second homes.

Lower income households forced to compete in the private housing market end up spending a disproportionate share of their incomes on housing costs, leaving inadequate funds for other basic necessities.

Two ways the needs of low income households are met are with rental assistance and development of local land use regulations that are sensitive to the needs of lower income households. Although there are no subsidized rental housing complexes in Hartland, Section 8 vouchers and certificates are available for Windsor County residents. Assisted rental housing is available in the surrounding communities of Hartford, Windsor, and Woodstock. Units are available to assist the elderly, handicapped, and the needy families. However, the waiting lists for assisted housing tend to be quite long.

Housing Goal, Policies, and Recommendations

Housing Goal:

1. *Ensure the availability of safe and affordable housing to meet local and regional needs.*

Housing Policy:

1. *Land use planning in Hartland should incorporate the town's housing stocks and the needs of those who reside there.*
2. *Land use planning in Hartland should incorporate affordable housing, including accessory units.*
3. *Hartland encourages regional economic development to increase income levels of current residents.*
4. *Hartland should plan for a wide range of housing alternatives for all income levels, abilities, and ages.*
5. *Hartland encourages cluster rather than tract development by granting density bonuses to protect open space and improve the efficiency of residential development design.*
6. *Hartland promotes efficiency in energy use and the provision of services by encouraging additional residential development to locate close to existing villages.*

Housing Recommendations:

1. *Promote efficiency measures in residential housing and encourage residents to learn more information about programs and potential cost savings through Efficiency Vermont.*

CHAPTER 5: TRANSPORTATION

Introduction

Land use and transportation issues are interrelated. Land use, both within and outside Hartland's borders, drives the need for improvements to the transportation system. At the same time, local land use goals must be facilitated by providing the necessary transportation facilities to accommodate growth where growth is desired. In addition, a given land use can have very different impacts on the transportation system depending on its siting and design. Land use and transportation are both inseparable from a discussion of the Town's economic well-being. Poorly planned land use patterns increase transportation costs and the tax rate, whereas well-planned development can add to the tax base of the town, providing additional funds for the transportation system. This section will focus on Hartland's highway system, as well as opportunities and needs related to alternative methods of transportation. Policies and recommendations specific to transportation issues are outlined at the end of the chapter.

Public Highways

There are a total of 100.4 miles of highways and roads in Hartland (see table below). Of this total, 24.7 miles are State maintained. These include Interstate 91 running north-south along the easterly edge of town, US Route 5 running parallel to I-91, and VT Route 12 running from the Three Corners Village to its intersection with US Route 4 in the northwest corner of town. Much development in town has occurred around these major routes. As roads providing access to much of the Town without impacting the local budget, they provide a benefit to the town and are logical areas to encourage growth.

The traffic volume on these highways is largely influenced by regional factors outside the influence of the town. For example, the route from I-91 Exit 9 to US 4, via US 5 and VT Route 12 route is utilized by large numbers of visitors to the Woodstock and Killington areas arriving from the south on I-91. A growing number of trucks also use VT Route 12 as a connector between I-91 and US Route 4. There are several narrow and seemingly unstable bridges that have influenced some truck drivers to utilize Hartland-Quechee Road instead of Route 12 as a shorter route to US Route 4. The posted weight limit on the bridge near the intersection of Route 12 and Bowers Road is 20 tons for trucks with two axles, 23 tons for trucks with 3 axles, 24 tons for trucks with 4 axles, 35 tons for trucks with 5 axels, and 37 tons for trucks with 6 axels. The Vermont Agency of Transportation listed the condition of this bridge as satisfactory in 2015. The narrow bridge slightly east of Four Corners was marked as being in fair condition in 2015. Route 12 and Route 5 are both in “poor” and “very poor” condition throughout much of Hartland. US Route 4 is the major east-west connector in this part of Vermont, as it is the primary link between the interstate highway system and the Rutland area.

All State routes are subject to an 80,000 pound weight limit, with certain exceptions. The State highway weight limit for all trucks used to transport timber, milk or stone products is 100,000 pounds. Municipalities are authorized to establish their own weight limits for all local roads. All locally established weight limits must be reported to the State, so that they can direct truck traffic accordingly.

Hartland has established a weight limit of 24,000 pounds on Hartland-Quechee Road, but enforcement of the weight limit represents a problem due to the lack of portable scales and high enforcement costs. Additionally, the Town has no legal authority to enforce weight limits on VT Route 12. These constraints restrict the town's ability to prevent overweight trucks from using Route 12 or Hartland-Quechee Road as a means of bypassing the I-91 weight station north of Exit 9 when traveling between I-91 and I-89.

According to VT Department of Motor Vehicle (DMV) officials, the State can provide several types of assistance to municipalities in the enforcement of weight limits on local roads. First, the DMV provides two levels of training for local enforcement officers in weight enforcement. The first level focuses on the basic provisions of 23 V.S.A. 1391 governing enforcement of weight limits and is part of the basic officer training program. The second level provides more in-depth training, but requires a commitment from the community to apply the training. The cost of the training is borne by the State. Secondly, the State owns several portable scales, which can be made available, on a rotational schedule, to local communities that participate in the second level of training. Finally, municipalities that enforce their own weight limits can receive the fines collected from weight violators (minus a $6.00 handling charge) for use in covering enforcement costs.

Public Highway Mileages

Interstate Highway	8.5
US Highways (4 & 5)	8.4
VT Route 12	7.7
Total State-Maintained	**24.7**
Class 2 Town Highways	16.26
Class 3 Town Highways	59.6
Total Town-Maintained	**75.7**
Class 4 Town Highways (unmaintained)	2.96

Table 2: Public Highway Mileages

Approximately three-quarters of the public highway miles in Hartland are town-maintained. Highway classifications determine the amount of state aid available to assist with repair and maintenance. The classes are determined jointly by the Vermont Agency of Transportation (VTrans) and the Selectboard. Criteria include traffic volumes, road conditions, and function.

Class 2 highways are the major connectors linking villages with each other and with state highways, and receive a higher rate of State aid than Class 3 highways. The Class 2 roads in Hartland comprise most of the Town's paved roads: Brownsville Road running from VT Route 12 at Four Corners to West Windsor; County Road branching southeast off the Brownsville Road to Windsor; the fully paved Quechee-Hartland Road connecting Three Corners with Quechee; and the partially paved Clay Hill Road connecting North Hartland with Quechee via the Quechee-Hartland Road. Like the state-maintained roads, the traffic on these connecting roads is influenced by regional as well as local factors, such as the type, size, and location of various land uses. The Quechee-Hartland Road provides a convenient short cut for visitors to Quechee arriving on I-91. Clay Hill Road provides access to the North Hartland Dam recreation area, as

well as an easy route for Quechee residents to reach the Hartford recycling center. Increasing traffic volumes and speeding on these roads have been a concern for residents.

Class 3 highways are other town roads that are maintained in a manner enabling them to be driven under normal conditions in all seasons by a standard car. As shown on the Transportation Facilities Map in the Appendix, most of Hartland's Class 3 highways are unpaved. Growing communities such as Hartland face a challenge to protect the attractive rural nature of back roads while meeting the high expectations of a growing population, relative to road construction and maintenance.

The Clay Hill Road has reached the point where it is no longer a "back road" even though it is only partially paved. This is both because of local growth and growth in other communities. Quechee-Hartland Road has experienced high traffic levels in recent years. In 2006, 1,400 vehicle-trips per day were counted on the Quechee-Hartland Road and 400 on Clay Hill Road, and traffic levels have increased since these studies were conducted. In promoting concentrated growth in adjacent village areas and providing for continued moderate density residential development along these roads, it is recognized that local growth will contribute to increased traffic volumes. At a certain level of traffic, maintenance costs are significantly reduced by paving. According to the Vermont Local Roads Program, pavement of gravel roads should be considered when average daily traffic exceeds 400 to 600 trips per day. However, many communities use much higher traffic volume standards, depending upon a number of factors, such as average street grades, the percentage of heavy vehicles using the road, frequency of grading and repair, and other considerations. In general, there is no definitive standard to determine when a gravel road should be paved. General public attitudes in Hartland favor retention of gravel roads to the extent feasible. Unpaved roads help keep traffic speeds low and reflect a rural lifestyle that many residents value.

Hartland has less than 3 miles of Class 4 highway. The Town may maintain Class 4 highways but is not required to, with the exception of culverts. No State aid is available for work on Class 4 highways. It is the current policy of Hartland to perform no routine summer or winter maintenance on Class 4 roads, though bridges and culverts are checked periodically. As private lands are being subdivided further, and the increasing interest in outdoor recreation, these roads and trails are an important public resource. Such town owned corridors will help insure that there will continue to be a place to enjoy access for snowmobiling, cross country skiing, walking, hunting, horseback riding, and other outdoor recreation.

Highway maintenance costs represented an average of 44% of local expenditures (excluding school costs) in 2013-2014. This included winter maintenance, gravel resurfacing, repaving, reconstruction and work on bridges and culverts. Variations in the highway budget associated with major projects can have a significant impact on the tax rate. Hartland has an ongoing capital reserve fund for bridge maintenance, culvert maintenance and replacement, improvement projects, and a Road Surface Management System (which will be discussed later in this section) to prioritize road surface improvement needs.

Traffic volumes and vehicle weight are the two most important contributing factors to highway maintenance costs. Local officials have raised concerns regarding perceived increases in heavy

truck traffic on US Route 5, VT Route 12 and other local roads. These heavy trucks contribute significantly to wear and tear on road surfaces.

Public safety should be the primary consideration when planning improvements to the Town's highways. Highway safety is a function of many factors. On back roads, narrow roadways and obstructed vision are often contributing factors to accidents. In developed areas, traffic volumes and speed are more likely to be involved. Local officials have observed that travel speeds have been increasing across the town in recent years, especially along unpaved roads. As concentrated development is encouraged in the village areas, highway improvements should incorporate traffic calming measures through design, layout, and landscaping. Increasing traffic on main roads will necessitate diligent enforcement of speed limits.

The Three Corners intersection contains the intersections of Vermont Highway 12 from the south and west, US Route 5 from the south and east, and Quechee Road from the north. A new intersection design was approved for redevelopment in the summer of 2016, and will add significant green space, parking, and sidewalk to the Three Corners area. The new Intersection Redevelopment increases the safety of the intersection because it straightens the approach to Quechee Road and maximizes visibility for drivers and pedestrians.

Scenic Roads

US Route 5 is part of the Connecticut River Scenic Byway. This designation was based on a study of scenic, cultural, natural, and recreational resources along the public highway corridors paralleling the Connecticut River in Vermont, New Hampshire and part of Massachusetts. The scenic byway status provides an opportunity for communities to obtain funding for a wide range of projects which would enhance the public enjoyment of these resources.

Despite its valuable role as scenic byway, Route 5 has fallen into a state of disrepair throughout Hartland. Many sections of the road are listed by the Vermont Agency of Transportation as being in “poor” and “very poor”, and the last time work was done on this portion of Route 5 was 1979. Scenic byways are popular routes for bikers both in Hartland and throughout Vermont, as they are aesthetically pleasing and provide wonderful scenery that attracts recreational users. However, the poor condition of Route 5 currently detracts from its appeal as a scenic route for bikers and drivers alike.

Vermont law provides for local scenic road ordinances to preserve the scenic quality of the rural landscape. Under 19 V.S.A. 2502, local municipalities have the authority to designate scenic roads. A request for local scenic road designation may be brought to the Selectboard by the Planning Commission, or the Selectboard may initiate scenic road designation by its own initiative. The Selectboard must conduct a formal public hearing prior to designation. Once designated, local scenic roads must be maintained in accordance with the standards established by the State Transportation Board. However, the Selectboard may request a variance from specific standards to address local needs and conditions. The Selectboard also must notify VTRANS of any locally designated scenic roads.

Though local roads do not have this official scenic designation, Hartland has a policy regarding the maintenance and improvement of town highways which recognizes the importance of

roadside trees and stone walls and can still be used to keep scenic attributes. This policy should be reviewed to identify opportunities to strengthen the role of public input in the planning process and to evaluate the need for a scenic road ordinance addressing specific roads. The first step in this process would be to inventory the significant features along potential scenic roads which contribute to their scenic nature. These include forest and agricultural patterns, significant viewsheds, terrain, and special natural and man-made features including stone walls. Examples of roads which should be considered include Clay Hill Road, Jenneville Road, Advent Hill Road, Town Farm Road, Weed Road, Garvin Hill Road, and sections of US Route 5 southeast, southwest and northwest of the I-91 interchange. A scenic road ordinance does not regulate adjacent land use. Scenic easements are one possible method to explore for ensuring the future enjoyment of these important viewsheds by the public.

Private Roads

The safety of occupants and emergency personnel depends on proper road design and maintenance. The Town currently enforces standards for new public roads, but there is no legal mechanism in place to apply the standards to privately-owned and maintained roads which may be dedicated to the Town in the future. Subdivision regulations can be used to apply town road standards to all new private roads and rights-of-way. Furthermore, the current road standards should be reviewed for adequacy based on recent application.

Driveways and Curb Cuts

Proper siting and design of the access points of driveways is required to ensure the safety of users, drivers, bicyclists, and pedestrians. Adequate sight distances are essential. Drainage from a driveway is also an important issue as undersized and improperly maintained driveway culverts can damage adjacent roadways and contribute to pollution and sedimentation of nearby streams and rivers.

Access to private property from highways and local roads is an important issue to consider when assessing the potential impacts of future development. Access impedes mobility and can decrease safety. Single access driveways to multiple lots should be encouraged on new development. This highway management principle often conflicts with prevailing market forces which encourages intensive commercial development along major thoroughfares. Communities can help minimize the impacts of strip development and sprawl on highways by concentrating future development activity in existing village centers and/or specific "nodes" along local roads, where adequate infrastructure exists or can be provided to support intensive development and natural constraints to future development are minimal. Communities also can apply specific access management techniques designed to reduce the number of curb cuts or driveways needed to serve roadside development. These techniques include:

1. Requiring driveways to serve adjoining lots;
2. Prohibiting curb cut access from the main thoroughfare for corner lot properties;
3. Requiring off-street access and traffic circulation to adjoining parking lots in commercial areas;
4. Imposing restrictions on the width and placement of curb cuts on major highways;

5. Requiring specific setbacks from road intersections for all new curb cuts; and
6. Requiring subdivisions adjoining major thoroughfares to provide internal street access only for all lots fronting on the thoroughfare. The resulting lots would have double frontage (along the front and rear yards.)

Parking

As development continues to concentrate in the village areas, parking will become an increasingly important consideration. The existing level of business development at Three Corners has resulted in an unsafe situation with people parking within the intersection area. The new Three Corners Intersection redevelopment, which was approved for redevelopment in the summer of 2016, will result in fifteen new parking spots in Three Corners, mainly along Quechee Road and Route 5.

Pedestrians and Bicyclists

A primary benefit of mixed-use villages where development is concentrated is the reduction in automobile use. By locating stores and services, public facilities, and high density residential development in close proximity, many residents are able to walk for trips that would otherwise require driving. The Three Corners Intersection redevelopment has increased the sidewalk presence in this village area. New sidewalks have been created on the southwestern side of Route 12/Route 5 from the plaza to the Hartland Public Library, on and along a new green island in the southeastern corner of the intersection, and along the northeastern corner of the intersection. . The roadway between the village and school has poor visibility and no bike lane. There are no sidewalks or crosswalks in North Hartland or Four Corners. There is currently high pedestrian use along US Route 5 in North Hartland and in Four Corners. Bicycles and small children are frequently in the traveled way, creating an unsafe situation for both pedestrians and drivers. Much can also be done to better accommodate bicyclists outside of the village areas. Bike lanes are currently needed along state highways to safely accommodate existing use. Many bicyclists use US Route 5; however, shoulders are narrow and in disrepair, forcing bicyclists to use the traveled way.

Public Transportation

The only current public transportation provided in Hartland is through Connecticut River Transit, which has a scheduled stop at the Exit 9 Park and Ride lot. Stagecoach Transportation Services' Ticket to Ride Program provides on demand services at discounted rates for special populations, such as senior citizens and persons with disabilities.

Air

Hartland has no airport. Its local airport needs are served by the Lebanon, New Hampshire Airport. Improvements to this airport have been increasing its capacity for both passenger and freight service.

Rail

Hartland has active passenger and rail lines along the Connecticut River. There is no passenger rail stop in Hartland, but stations for service on AMTRAK's *Vermonter,* which travels north to

St. Albans and south to Washington, D. C. are located in White River Junction and Windsor. Freight rail service is available in Hartland along the same main line. Any business or industry locating along the line may request service. There is one railroad siding available for use in the Ferry Road industrial area, near the Hartland-Hartford town boundary. While no businesses in town currently utilize freight rail service, Twin State Sand and Gravel currently uses it as a means of shipping granite and gravel to markets outside Vermont. Rail service can be an economical means of shipping freight. Each rail car can ship the equivalent of approximately 5 tractor trailers by weight.

Transportation Goal, Policies, and Recommendations

Transportation Goal:

1. *Provide and maintain a safe, efficient, and cost effective transportation system which meets the needs of the public in a manner consistent with the other goals, policies and recommendations of this Town Plan.*

Transportation Policies

1. *Development in Hartland on the State and Federal routes must be planned for compatibility with the role of these routes in the State's transportation system. At the same time, the State's plans should take the Town's concerns into account.*
2. *Public input should be considered prior to decisions to substantially change the maintenance level or surface treatment of a town road.*
3. *When determining which roads to pave and when, the town should evaluate traffic volume and maintenance costs against other factors, such as the up-front cost of paving and base improvements that may be necessary to support a paved surface and the potential quality-of-life impacts to residents.*
4. *Expenditures for bridge maintenance and improvement projects should be based on a detailed survey of bridge conditions followed by a long range plan for rehabilitation and replacement. State aid is available to help offset the cost of this survey.*
5. *Integrate land use and transportation planning by encouraging concentrated growth in areas served by an adequate highway system, utilizing land use regulations and appropriate highway access management techniques to control the impacts of development on the transportation system; and making transportation improvements in areas where growth is desired a priority.*
6. *Vehicle access to adjoining properties should be minimized, and other access management techniques are encouraged during new development along major highways to reduce driver confusion, traffic congestion, and to minimize conflicts between through and local (turning) traffic with provisions on further subdivision in new access permits.*
7. *Work cooperatively with other communities in the region through the TRORC and its Transportation Advisory Committee to ensure that the region's transportation system is developed in a well-coordinated manner that recognizes and balances the needs and desires of each community.*

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8. *Widening of roadways to accommodate safe use by bicyclists should be combined with traffic calming measures and enforcement of speed limits to ensure that unsafe speeds do not result.*

9. *Bike racks should be incorporated into plans for key destinations. Major employers should be encouraged to provide covered bike racks through the site plan review process.*

10. *Ensure that plans for development address the need for adequate off-street parking.*

11. *Ensure Class 4 roads, trails, and other public rights-of-way remain as public resources.*

12. *Existing pedestrian access and connections shall not be impaired by future development.*

13. *Plans for future development of village areas should incorporate an adequate system of sidewalks, crosswalks, and pedestrian paths.*

14. *Ensure that private subdivision roads are safely designed, are properly constructed, and are well-maintained.*

Transportation Recommendations:

1. *Work with VTrans and TRORC to implement an ongoing traffic count program on state and major town highways to monitor the volume and type of traffic.*
2. *Work with VTrans and TRORC to ensure that improvements to the state highway system are sensitive to the desires of Hartland.*
3. *Explore the possibility and desirability of utilizing weight limits and other design tools as a means for controlling truck traffic on local roads. Consider prohibiting through truck traffic on local collector (Class 2) roads to keep existing truck traffic on VT Route 12 and US Route 5. Changes to signage and continued efforts toward better access management along US Route 4 in Hartland should also be considered.*
4. *Review and update the Town policy regarding upgrading Class 4 roads and private roads to Class 3 town-maintained roads to ensure that:*
    - *adequate road construction standards are followed;*
    - *the landowners are required to pay for bringing the road up to Town standards; and*
    - *input from the Planning Commission is incorporated in the Selectboard's review and decision process to ensure the changes would be consistent with the Town plan.*
5. *Review and update the Town's driveway regulations and road standards to ensure that safety and drainage issues are adequately addressed. If the Town adopts subdivision regulations, incorporate appropriate requirements to ensure that new private roads and rights-of-way will be constructed to town road standards.*
6. *Provide clearly marked crosswalks in village areas with adequate advance warning for drivers to ensure pedestrian safety, including the possibility of pedestrian-activated crossing lights.*

7. *Encourage VTrans to include bike lanes, coupled with appropriate striping, signage and traffic calming measures, when improvements are made to State highways.*
8. *Encourage Advance Transit, Stagecoach Transportation Services, and other bus systems to monitor the demand for bus service in Hartland and increase service when warranted.*
9. *Encourage carpooling through ensuring that ride-sharing information is readily available to residents and promoting use of the Park & Ride lot at Exit 9.*
10. *The town should continue to update town bridge and culvert inventories with assistance from TRORC. Last culvert inventory was completed in summer 2015.*

CHAPTER 6: ENERGY

BACKGROUND

Given evidence that human use of natural resources has exceeded the carrying capacity of the Earth since the late 1980s, combined with the likelihood that we have or will soon reach peak fossil fuel availability, it is essential that human beings take steps to conserve energy, sharply reduce greenhouse gas emissions, and transition away from reliance on fossil fuels wherever possible. This will be a defining challenge of the 21st century—an opportunity to transform systems, technologies, and behaviors in the context of sustainable economic development. Changing energy use is a two-pronged strategy that aims to reduce overall consumption and to direct what energy we do consume away from fossil fuel sources.

VERMONT PERSPECTIVE AND ENERGY DEMANDS

According to the 2016 Vermont Comprehensive Energy Plan (CEP), energy demand grew by 1.8% from 1990 to 1999, but is 5% lower than it was in 2000. The combination of state energy efficiency programs and the 2007–2009 recession probably helped to reduce energy demand across most end-use sectors in Vermont. Vermont also decreased its greenhouse gas emissions, which were approximately 14% lower than they were in 2004.

The 2016 Vermont CEP outlines four specific goals for Vermont's energy future: reduce total energy consumption per capita 15% by 2025; meet 25% of Vermont's energy need from renewable sources by 2025, 40% by 2035, and 90% by 2050; increase the energy used to heat buildings to 30% renewable, and increase renewable electric power to 67%; and increase renewable energy in the transportation sector to 10%.

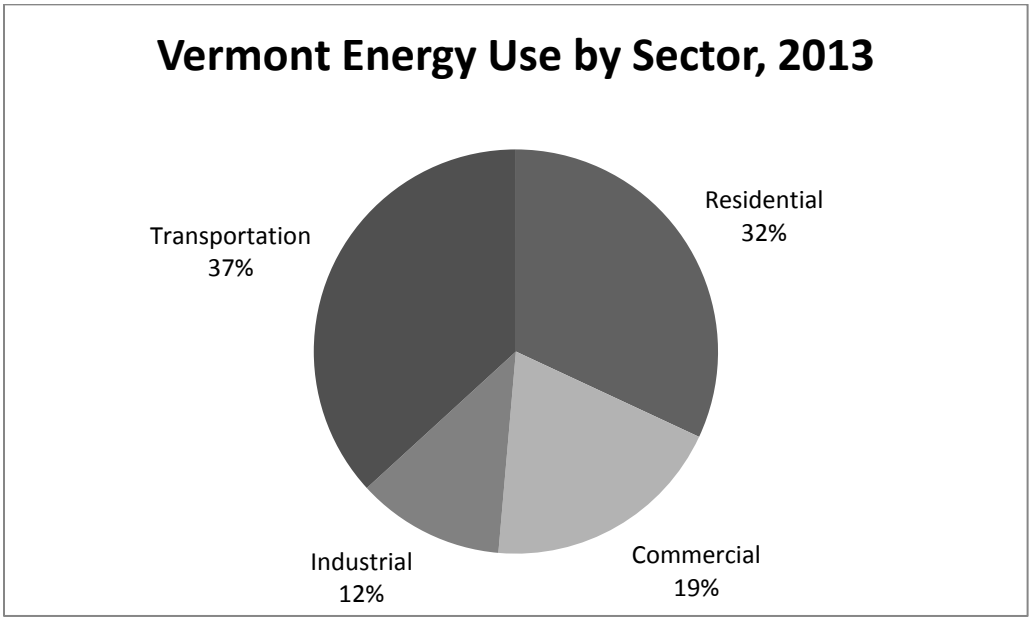

Figure 7: Vermont Energy Use by Sector (Source: US Energy Information Administration, 2013)

In terms of per capita energy consumption for residential and transportation purposes, the northeast is about the same as the rest of the U.S, with residential and transportation sectors consuming the most energy. In Vermont, almost 80% of residential energy is dedicated to space heating and domestic hot water.

37% of Vermont's energy is devoted to transportation, and over 50% of that energy is used to fuel private cars for residents (as opposed to being used for public transit, road maintenance, or another public purpose). This fact reinforces the need for clear policies that take into account the transportation implications of land use decisions in this community.

Type of Consumption	2005	2006	2007	2008	2009	2010
Commercial and Industrial Consumption	4,626	4,729	4,157	3,670	2,642	2,768
Residential Consumption	11,438	11,443	11,500	11,449	11,197	11,375
Total (MWh)	16,065	16,172	15,657	15,119	13,839	14,143

Table 3: Electricity Consumption in Hartland from 2005-2010. (MWh) (Source: Renewable energy atlas 2015)

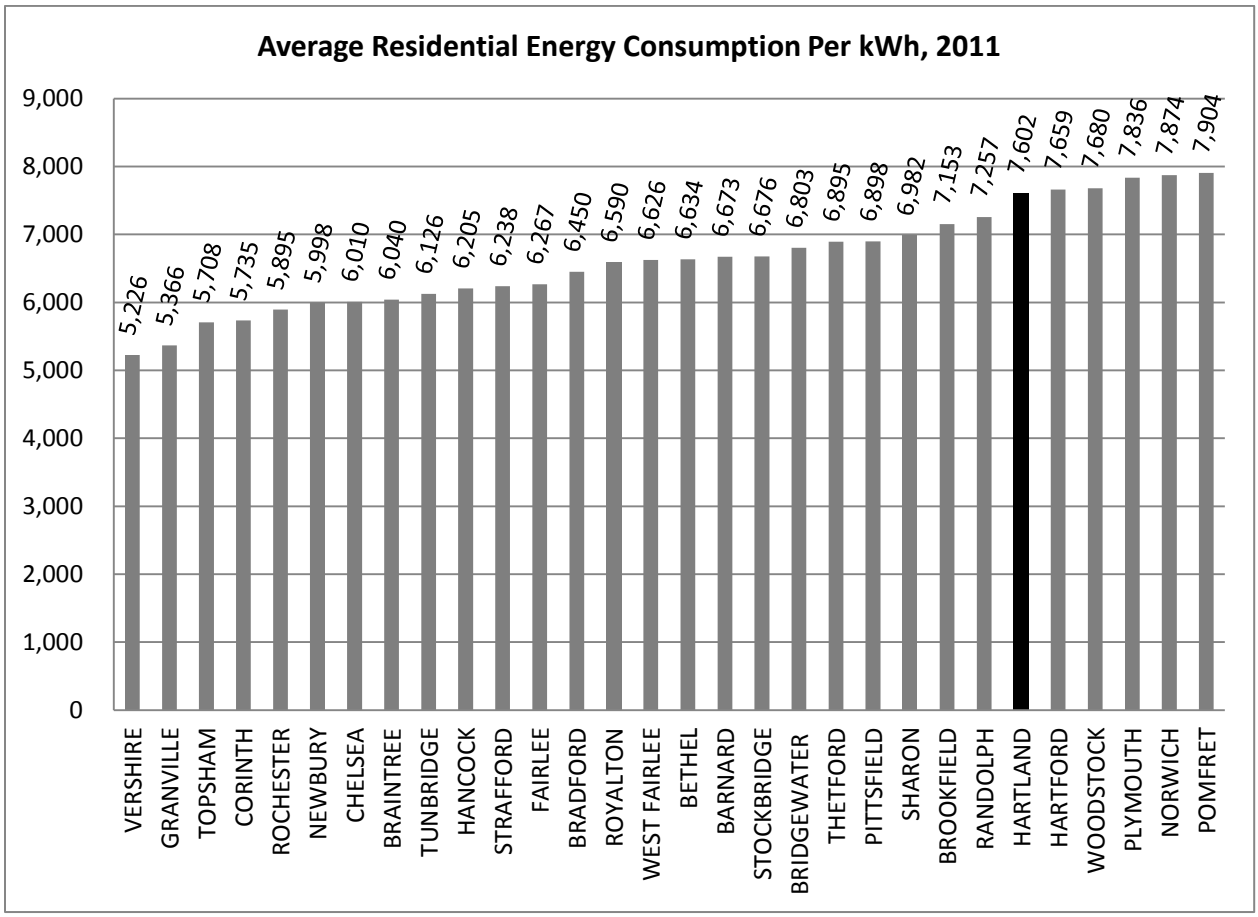

Figure 8: Average Residential Energy Use of Towns in the TRORC Region **(Efficiency Vermont, 2010)**

According to data collected by Efficiency Vermont in 2010, the town of Hartland is the 6th highest out of 30 towns in terms of average annual energy use levels in the TRORC region. In 2010, this data (limited only to residential energy use) determined that Hartland used 7,602 kWh of energy, which is more than most of the towns in the region.

CURRENT ENERGY SOURCES

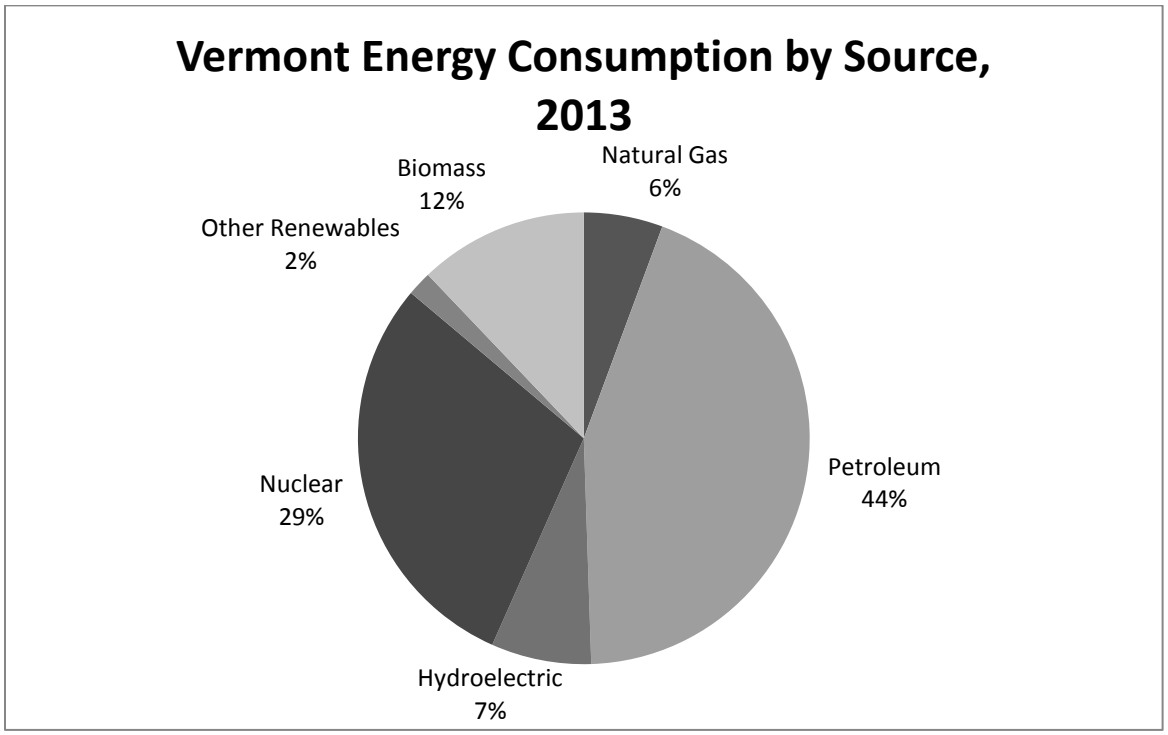

Figure 9: Vermont Energy Consumption by Source (Source: U.S. Energy Information Administration, 2013)

Fossil Fuels

Hartland, like most other towns in Vermont, depends primarily on fossil fuels for heating and transportation. As shown in the chart above, fossil fuels account for 50% of all energy consumed in Vermont. Much of Vermont's fossil fuel usage is used in transportation, but a substantial portion fossil fuel is consumed in heating.

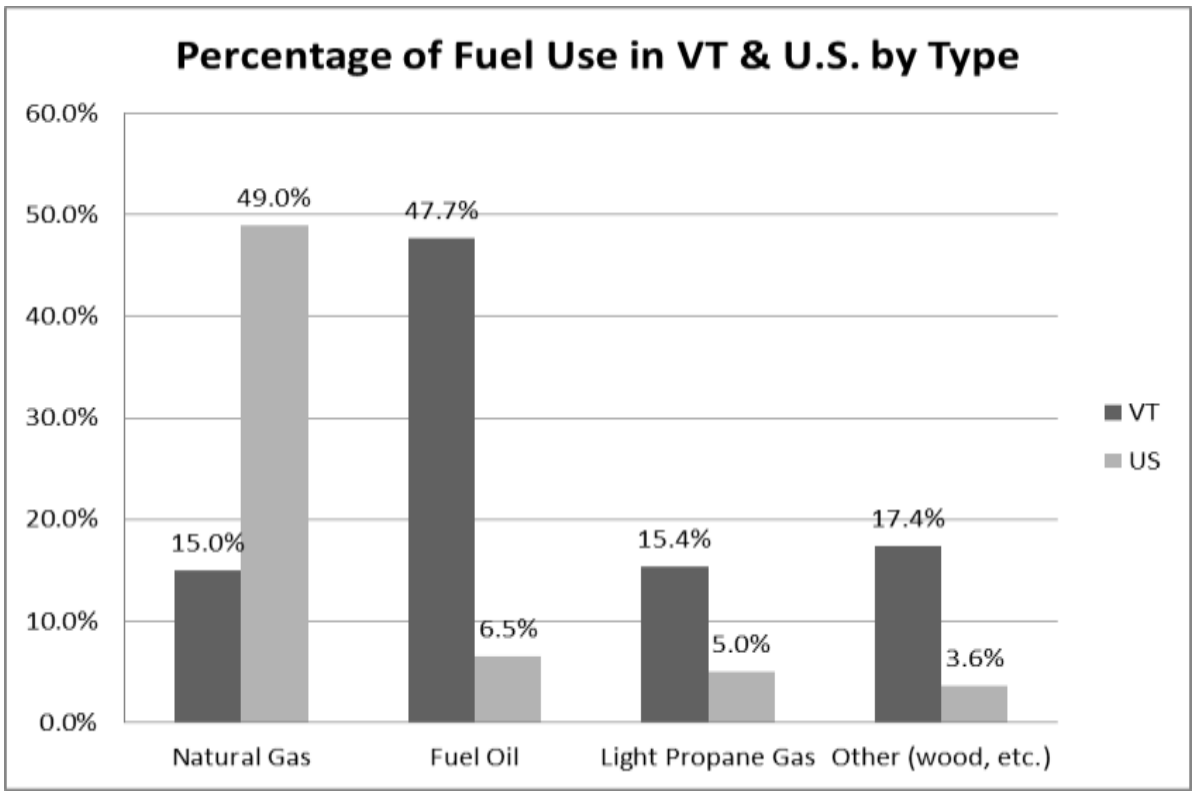

Figure 10: Percentage of Fuel Use in VT by Type (Source: Vermont Energy Profile (Source: U.S. Energy Information Administration, 2011)

Of greater concern is Vermont's high usage of oil as a fuel for heating. Nearly 3/5 of all Vermont households (154,026 of Vermont's 256,711 total households) use fuel oil, which means a substantial portion of Vermont is subject to the price, availability, and instability of a reliance on oil. Of the total 885 million dollars spent on residential energy in the state of Vermont, just over 50% (445.8 million) were spent on fuel oil, kerosene, or light propane gas. Vermont's economic system is so closely tied to the availability of fossil fuels that even modest price increases can lead to a slowdown in economic growth, and monetary instability. This can have unanticipated adverse impacts at the municipal and residential level in all communities, including Hartland. For example, increasing fuel prices make it more expensive for a town government to provide traditional public services and maintain existing facilities. Additionally, rising prices can also make it difficult for residents to heat their homes and put enough food on the table (the price and availability of food is usually influenced by fuel prices). In order to meet the CEP's goal of increasing renewable heating sources in buildings, biomass heating consumption must increase.

Nuclear Energy

Vermont Yankee Nuclear Power Station had been generating electricity since 1971, but closed in 2014. The power from Vermont Yankee accounted for about three-fourths of the electricity generated within Vermont in 2011, a higher share than any other State. The loss of this power producer puts the state in the position to find other sources of local production or buy additional energy on the open market.

Renewable Energy

Vermont can successfully claim that a substantial amount of the power used statewide comes from renewable sources when compared to other states. Although the majority of Vermont's renewable energy is generated through Hydro-Quebec (see below), some hydroelectric power is generated within Vermont. Additional sources of renewable energy include several utility owned commercial-scale wind, solar farms, and on-farm methane digester projects

RENEWABLE ENERGY RESOURCES

The 2016 Vermont Comprehensive Energy Plan has set the goal for Vermont to utilize 90% renewables by 2050. This is a lofty goal, but one that will benefit all Vermonters if achieved. For the municipality, individual, or small group of homeowners, the key to sustainable energy production will be renewable sources of energy. The term "renewable energy" refers to the production of electricity and fuels from energy sources that are naturally and continually replenished, such as wind, solar power, geothermal (using the earth's heat to create power), hydropower, and various forms of biomass (trees, crops, manure, etc.).

Although initial set-up costs for renewable energy generation systems can be high, these systems can save users money over the long term, they reduce the consumption of carbon-based fuels, they help to protect our environment, and they reduce our reliance on centralized energy. In Vermont, some of these energy sources are more readily available than others, and some are more cost effective for the individual energy producer.

Solar Energy

Solar energy provides the opportunity for providing clean, reliable, and safe energy, even in Vermont's climate. Most areas in Vermont have the potential for some solar energy production, at least at the residential scale.

Passive Heating and Lighting – Good building and site design, which incorporate the size, direction, roof overhang, and insulation of buildings and windows, are essential to taking advantage of the sun's energy.

Water Heating – Solar water heating is the most common form of residential-scale solar use in Vermont. As of 2016, there were 18 solar thermal sites in Hartland with the capacity for 262 BTU. Solar systems are not regulated at the state level and are subject to local regulations. State statute forbids the creation of land use regulations that prohibit renewable energy generation.

Electricity Generation – Decreasing costs of equipment have made solar electric generation systems more prevalent and viable. Solar systems are no longer utilized exclusively by "off-grid" buildings. The increased utility capacity for net-metering allows buildings to be connected to the grid while utilizing renewable energy. Systems that are net-metered are overseen by the Public Service Board and are not required to get a local

permit. As of 2016 there were 43 roof-mounted photovoltaic arrays and 8 ground mounted photovoltaic systems in Hartland.

There are no commercial-scale solar electricity generation facilities in Hartland. Unlike wind turbines, solar panels do not need to be located on high ground and are therefore less visually prominent. In addition, these facilities can be located in areas that are less rural in nature, requiring fewer access roads and reducing adverse impacts on wild lands.

If not properly sited, large solar facilities can impact soil and water resources, as well as wildlife habitat and corridors. Considerations must also be given to public safety. Because photovoltaic collectors are reflective, they have the potential to create harsh and blinding lights that could be a hazard to nearby buildings or road traffic. Commercial solar facilities should be developed so as to avoid negative impacts on the rural character of the area in which they are proposed to be located. Developers should make all possible efforts to minimize damage to important natural areas as identified in the Natural, Historic, and Scenic Resources section of this Plan. Additionally, such facilities should be located as close to existing roads as possible to avoid creating an increased need for town services, such as road maintenance.

Wind Energy

Power generated from wind is done through a wind turbine, which is installed on top of a tall tower, where it collects and converts wind into electricity. Towers for home use are generally 80-100 feet in height and are far less obtrusive than larger, commercial "wind farms" that have become a subject of great debate throughout Vermont. There are no existing electricity generating wind sites in Hartland.

Potential Wind Development Areas (Acres)							
	Class 1 (10-11 mph)	Class 2 (12-13 mph)	Class 3 (13-14 mph)	Class 4 (15-16 mph)	Class 5 (16-17 mph)	Class 6 (17-18 mph)	Class 7 (19-25 mph)
Residential (30-meter)	5785	0	0	9	0	0	0
Small Commercial (50-meter)	0	784	23	0	0	0	0
Large Commercial (70-meter)	0	0	0	0	0	0	0

Table 4: Potential Wind Development Areas in Hartland (Source: Vermont Energy Atlas)

Similar to solar, wind energy is an intermittent resource, and its generation fluctuates in response to environmental conditions. The amount of energy produced by a specific wind tower can depend greatly on location, height of the tower and proximity to other obstructions. Nevertheless, most modern wind turbines (when properly sited) are able to generate electricity 95% of the time.

There are multiple levels of potential wind energy generation, ranging from Class 1 (10-11 mph) to Class 7 (19-25 mph); however there are no wind sites in Hartland greater than Class 4 (15-16

mph). There is only the potential for small-scale commercial wind generation in a very limited number of places in Hartland. Most of the small-scale residential wind potential is in the western portion of town, near the Woodstock-Hartland town boundary.

Biomass & Biogas Energy Generation
The term 'biomass' refers to biologically-based feedstocks, which includes algae, food or vegetable wastes, grass, wood, and methane. Biomass can be converted into an energy source to fuel vehicles (e.g. biodiesel), heat homes, or even generate electricity. Community-scale biomass has the potential to offer cost-effective heating in small, clustered areas, and some towns have implemented combined heat and power systems that run on biomass to heat multiple municipal buildings. There are no biomass energy generation facilities in Hartland. However, there are many people and households in Hartland that rely on biomass, in the form of wood, for heating

According to the 2016 Vermont Comprehensive Energy Plan, Vermont households burned about 347,500 cords of wood in the 2014-2015 winter season, which is an increase of about 33,000 cords from the 2007-2008 season. Vermonters who used wood for primary heating consumed about 4.8 cords during the 2014-2015 season, while those using wood as a supplementary source used 2.1 cords. In the 2014-2015 season, Vermont households burned about 126,000 tons of wood pellets. 37% of Vermont households burned wood for at least some form of heating in 2014-2015. In 2013 the total in-state wood based heating consumption was 2.3 million tons of wood. Much of Hartland is wooded, and therefore offers some potential of sustainably harvested woody biomass, but harvesting of these materials must be properly managed to ensure that the community's natural resources are not negatively impacted.

Biofuels
In addition to using biomass for heating, the use of biofuels, particularly biodiesel, is becoming an increasingly popular option for municipalities attempting to cut costs and reduce the environmental impacts associated with vehicle emissions.

According to the Vermont BioFuels Association, biodiesel is a clean burning alternative fuel, produced from domestic, renewable resources such as soybeans, sunflowers, canola, waste cooking oil, or animal fats. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend which can be used in colder weather. It can be used in compression-ignition (diesel) engines or oil-fired boilers or furnaces with little or no modifications.

Hartland has roughly 1,662 acres of land that would be suitable to growing the types of crops (sunflower, canola and soybean) that can be used to generate bio fuels. Growing biomass to use in biofuels may be a viable way to encourage farming in Hartland as well; however, balance should be sought between growing for energy demands and for human and animal consumption.

Agriculture
The agricultural sector has the potential to become a net generator of energy by growing crops that can be used for biofuel, by contributing cow manure to the process of methane digestion (also known as 'Cow Power'), or by using fields for the location of large-scale wind power (cows can graze up to the base of wind turbines).

Cow Power is especially popular in Vermont; however, it requires a significant upfront financial investment and is generally only effective when utilized by a large scale farm. One of the key advantages of methane digestion is that it reduces the amount of methane released into the environment. However, large-scale cow farms can also have adverse impacts on the environment, which should be carefully considered when weighing the benefits and drawbacks of setting up a methane digestion system in this community. Hartland does not have any cow-power generators.

Hydropower

Hydropower is an important component of Vermont's current renewable energy portfolio, and occurs at different scales. There are two main forms of hydropower: run-of-river, which uses the natural flow of water to generate power, and facilities that store water behind an impoundment. Run-of-river systems rely on seasonal rainfall and runoff to produce power, resulting in periods of low production. Impounding water behind a dam allows for control of the water flow, resulting in consistent electric production.

There are three existing hydropower sites in Hartland. The North Hartland Dam on the Ottauquechee River has a 4 MW capacity, is operated by North Hartland, LLC, and is the largest dam in the Town. The second largest dam, the Ottauquechee Woolen Mill/Ottauquechee Hydro is downstream of the North Hartland Dam on the Ottauquechee River. It has a capacity of 2.18 MW and is operated by Enel North America, Inc. The Martinsville Dam on Lulls Brook, which is owned by Jay Boeri, Jr., has a 250 kW capacity, making it much smaller than the two other dams in Hartland.

Hydroelectric development necessitates balancing priorities. While the benefits of generating electricity from local renewable resources are evident, they are not without associated costs. The power output from a given stream must be moderated by environmental considerations. A minimum stream flow that is adequate to support aquatic life needs to be maintained, and impoundments need to be designed with water quality, land use, and recreation considerations in mind.

Hydropower generating facilities are regulated by the Federal Energy Regulatory Commission and stringent federal water quality standards. As a result, the regulatory process for hydro facilities is extensive and time consuming. Further, streams are public trust resources and the potential impacts of hydro projects warrant significant consideration.

PERMITTING CONSIDERATIONS

Energy generation in Vermont is subject to a number of different permitting requirements, most of which are limited to state level permitting. On the municipal level, state statute protects residential renewable energy generation systems from regulations that will completely prohibit their development.

Section 248
Distributed power generation facilities, such as hydropower dams, fossil fuel plants as well as wind power or solar systems owned by utilities, are subject to review and approval by the Vermont Public Service Board (30 VSA §248). Under this law, prior to the construction of a generation facility, the Board must issue a Certificate of Public Good. A Section 248 review, similar to Act 250, addresses environmental, economic, and social impacts associated with a particular project. In making its determination, the Board must give due consideration to the recommendations of municipal and regional planning commissions and their respective plans. Accordingly, it is appropriate that this Plan address these land uses and provides guidance to town officials, regulators, and utilities.

For all commercial energy generation facilities, the following policies shall be considered:

1. **Preferred Locations**:
    - New generation and transmission facilities shall be sited in locations that reinforce Hartland's traditional patterns of growth, of compact village centers surrounded by a rural countryside, including farm and forest land;
    - New or existing structures, including a commercial or residential building or a parking lot, whose primary purpose is not the generation of electricity;
    - A tract that has previously been developed;
    - Brownfield sites;
    - Disturbed portions of a gravel pit or quarry; and
    - The three industrial areas in Hartland:
        i. The undeveloped permitted landfill, owned by GUVSWD, near the Hartland-Hartford border,
        ii. The industrial area in the village of North Hartland, and
        iii. The industrial area along Depot Road.

2. **Prohibited Locations**: Because of their distinctive natural, historic or scenic value, energy facility development shall be excluded from the following areas:
    - Floodways shown on FEMA Flood Insurance Rate Maps (except as required for hydro facilities)
    - River Corridor Areas as mapped by the Vermont Agency of Natural Resources (except as required for hydro facilities)
    - Wetlands as indicated on Vermont State Wetlands Inventory maps or identified through site analysis.
    - Rare, threatened or endangered species habitat or communities.
    - Conserved Areas

3. **Significant Areas**: All new generation, transmission, and distribution facilities shall be sited and designed to avoid or, if no other reasonable alternative exists, to otherwise

minimize and mitigate adverse impacts to the following:

- Historic districts, landmarks, sites and structures listed, or eligible for listing, on state or national registers.
- Public parks and recreation areas, including state and municipal parks, forests and trail networks.
- Municipally designated scenic roads and viewsheds.
- Special flood hazard areas identified by National Flood Insurance Program maps (except as required for hydro facilities)
- Public and private drinking water supplies, including mapped source protection areas.
- Primary agricultural soils mapped by the U.S. Natural Resources Conservation Service.
- Necessary wildlife habitat identified by the state or through analysis, including core habitat areas, migration and travel corridors.

4. **Natural Resource Protection**: New generation and transmission facilities must be sited to avoid the fragmentation of, and undue adverse impacts to the town's working landscape, including large tracts of undeveloped forestland and core forest habitat areas, open farm land, and primary agricultural soils mapped by the U.S. Natural Resource Conservation Service.

5. **Protection of Wildlife**: Designers must gather information about natural and wildlife habitats that exist in the project area and take measures to avoid any undue adverse impact on the resource. Consideration shall be given to the effects of the project on: natural communities, wildlife residing in the area and their migratory routes; the impacts of human activities at or near habitat areas; and any loss of vegetative cover or food sources for critical habitats.

6. **Site Selection**: Site selection should not be limited to generation facilities alone; other elements of the facility need to be considered as well. These include access roads, site clearing, onsite power lines, substations, lighting, and off-site power lines. Development of these elements shall be done in such a way as to minimize any negative impacts. Unnecessary site clearing and highly visible roadways can have greater visual impacts than the energy generation facility itself. In planning for facilities, designers should take steps to mitigate their impact on natural, scenic and historic resources and improve the harmony with their surroundings.

TELECOMMUNICATION TOWERS

Wireless facilities, including cellular phones and similar technologies, and the placement of these telecommunication towers at regular intervals is crucial to maintaining the continuity of service to an ever-increasing number of subscribers.

There has been concern about the proliferation of cell phone towers throughout Vermont. Tower height and the number of towers for wireless services has been a matter of public controversy in recent years. In a poll conducted as part of the Vermont Telecommunications Plan, 45.6% of Vermont residents indicated a preference toward a larger number of short towers, compared to 38.9% who favored fewer larger towers and 16.7% who wanted neither option. Erection of transmission towers can greatly affect the rural characteristic of Hartland. Towers or antennas are not only unnatural during daylight, but they also often must have lights at night which violates the Town's rural atmosphere. While the Town recognizes the industry's need to utilize the most efficient locations for such facilities, the Town also expects that the aesthetic integrity of the landscape will be maintained through the use of camouflage, co-location of facilities, and vegetative buffering.

RESIDENTIAL ENERGY EFFICIENCY

There are a number of ways that the Town of Hartland can meet its local energy demand, first by lowering that demand, and then by working to meet the remaining need with local, untapped energy resources.

Decreasing Energy Use by Changing Behavior

Raising awareness to replace wasteful energy behaviors with simple energy saving ones can reduce the strain on existing energy resources, and help residents and businesses save money, making the town a more affordable place to live with a higher quality of life. Examples of simple energy saving activities include turning off lights when leaving a room, using a programmable thermostat, using a cold water laundry wash, and reducing multiple car trip usage.

Decreasing Energy Use by Implementing Energy Efficiency

For those necessary or desired services that require energy, we can apply the principles of energy efficiency to ensure that we use less energy to provide the same level and quality of service. Examples include:

- Have an energy audit done to identify the greatest ways to save energy.
- Implement the air-sealing and insulations recommendations of the energy audit.
- Don't heat unused areas of your home.
- Using high efficiency windows,
- Installing energy efficient appliances like refrigerators, freezers, front loading washing machines, gas heated clothes driers and heating systems without blowers,
- Using high efficiency lighting,
- Using gas and/or solar hot water heaters,
- Siting buildings to make use of existing wind blocks and natural cooling patterns derived from the landscape's topography.

- Siting buildings with maximum southern exposure to capture passive solar energy.

New residential development in the State of Vermont is required to comply with Vermont Residential Building Energy Standards (RBES). Commercial development is subject to similar code regulations. Some examples of the types of development the RBES applies to include:

- Detached one- and two-family dwellings;
- Multi-family and other residential buildings three stories or fewer in height;
- Additions, alterations, renovations and repairs; and
- Factory-built modular homes (not including mobile homes).

In order to comply with the RBES, a home, as built, must meet all of the Basic Requirements and the Performance Requirements for one of several possible compliance methods. If the home meets the technical requirements of the RBES, a Vermont Residential Building Energy Standards Certificate must be completed, filed with the Town Clerk and posted in the home. If a home required by law to meet the RBES does not comply, a homeowner may seek damages in court against the builder.

MUNICIPAL ROLE IN ENERGY EFFICIENCY

Although communities are unlikely to have an impact on energy consumption at the global level, they do have an impact at the local level given their demand for and use of energy. The relationship between a municipality and its energy use creates opportunities to have an impact on local energy use reduction.

Energy Committee

Hartland has an energy committee (EC), which acts as an advisory board to the Selectboard and the Planning Commission (PC) on all energy related matters. Hartland's EC is a volunteer group that was appointed by the Selectboard for the purpose of establishing and implementing the Town's energy goals. Hartland's Energy Committee's work includes conducting energy audits on municipal buildings, tracking energy use for municipal buildings, and working with the PC.

Auditing Municipally Owned Buildings

Many towns in Vermont own buildings that are old and inefficient in many respects. For instance, older buildings often have insufficient insulation, wasteful heating and cooling systems, and out-of-date lighting. These kinds of infrastructure problems result in higher energy use with the resulting cost passed onto taxpayers. The energy usage of Damon Hall, Hartland Elementary School, Mill Road School, the Recreation Center, Four Corners Activity Center, the Town Garage, the two fire stations, and the library were last analyzed and compared in 2009.

Municipal officials should consider conducting audits on additional town buildings in order to determine what improvements are necessary, and which projects would have the highest cost-benefit ratio in terms of energy and financial savings.

Property Assessed Clean Energy (PACE)
Vermont enacted legislation in May 2009 (Act 45) that authorizes local governments to create Clean Energy Assessment districts. Once created, municipalities can offer financing to property owners for renewable energy and energy-efficiency projects. Eligible projects include the installation of solar water and space heating, photovoltaic panels (PV), small wind, and micro-hydroelectric systems. Property-Assessed Clean Energy (PACE) financing effectively allows property owners to borrow money to pay for energy improvements. The amount borrowed is typically repaid via a special assessment on the property over a period of up to 20 years. If the property owner wishes to sell the parcel before fully repaying the obligation, then the obligation is transferred to the new property owner at the time of sale. Hartland is part of the PACE program.

Capital Budget Planning
Given the potential expense of energy efficiency improvements, it is essential to wisely budget town funding to cover these costs. State statute enables communities to create a Capital Budget and Program for the purposes of planning and investing in long-range capital planning. Although most communities have some form of capital account where they save money, many do not have a true Capital Budget and Program. A capital budget outlines the capital projects that are to be undertaken in the coming fiscal years over a five-year period. It includes estimated costs and a proposed method of financing those costs. Also outlined in the Program is an indication of priority of need and the order in which these investments will be made. Any Capital Budget and Program must be consistent with the Town Plan and shall include an analysis of what effect capital investments might have on the operating costs of the community.

When planning for routine major facility investments, such as roof replacements, foundation repairs, etc., it is important to consider making energy efficiency improvements simultaneously. The cost to replace or renovate a community facility will only be slightly higher if energy efficiency improvements are done at the same time, rather than on their own.

At present, the town of Hartland does not have an adopted Capital Budget and Program to help guide investments in community infrastructure and equipment. The Planning Commission may make recommendations to the Selectboard with regard to what capital investments should be considered annually.

Policy Making for Change
In addition to reducing the energy use related to facilities, Hartland can implement policies that lower energy use by town staff or encourage greater energy efficiency. Examples include:

- Energy Efficient Purchasing Policy – A policy of this nature would require energy efficiency to be considered when purchasing or planning for other town investments. For example, purchasing Energy Star rated equipment is a well-documented way to increase energy efficiency. Devices carrying the Energy Star logo, such as computer products and peripherals, kitchen appliances, buildings and other products, generally use 20%–30% less energy than required by federal standards.
- Staff Policies - Towns can also implement policies that are designed to reduce wasteful energy practices. Through policy making, local government can set a clear example for

townspeople and encourage sustainable behavior that will ultimately result in both energy and financial savings.

ENERGY AND TRANSPORTATION POLICY

It is important that communities recognize the clear connection between land use patterns, transportation and energy use. Most communities encourage the development of residences in rural areas, and these are in fact coveted locations to develop because of the aesthetics that make Vermont special. However, this rural development requires most of our population to drive to reach schools, work and services.

Hartland currently has a highly used Park and Ride located at Exit 9 of Interstate-91. Park and Ride facilities in highly trafficked and easily accessible locations facilitate carpooling and public transportation usage among residents. This reduction in vehicle trips decreases energy usage from transportation.

Because transportation is such a substantial portion of local energy use, it is in the interest of the community to encourage any new developments that are proposed in Hartland to locate adjacent to existing roads. In particular, dense residential developments should be located within or adjacent to existing village centers or within designated growth areas. Commercial development that requires trucking and freight handling should only locate on roads which can effectively handle the size of vehicle needed.

ENERGY GOALS, POLICIES AND RECOMMENDATIONS

Energy Goals

1. *To ensure the long-term availability of safe, reliable and affordable energy supplies, to increase energy efficiency, and to promote the development of renewable energy resources and facilities in the Town of Hartland to meet the energy needs of the community and region.*

2. *To reduce energy costs, the community's reliance on fossil fuels and foreign oil supplies, and greenhouse gas emissions that contribute to climate change.*

3. *To encourage a continued pattern of settlement and land use that is energy efficient.*

4. *To promote the construction of energy efficient residential, commercial, and municipal buildings and increase awareness and use of energy conservation practices through educational outreach to the public.*

5. *To increase public transportation opportunities throughout the community, including park-and-ride access, bus service, biking paths, and sidewalks.*

Energy Policies

1. *Hartland municipal officials should participate in the Public Service Board's review of new and expanded generation and transmission facilities in Hartland to ensure that local energy, resource conservation, and development objectives are identified and considered in future utility development.*

2. *Any commercial energy generation facility proposed in Hartland must be developed so as to avoid undue adverse effects on the rural character of the surrounding area.*

3. *Developers should make all possible efforts to minimize damage to important natural areas as identified in the Natural, Historical, and Scenic Resource chapter of this Town Plan.*

4. *New facilities should be located as close to existing roads as possible to avoid any increase in the services provided by the town.*

5. *Hartland supports the development and use of renewable energy resources – including but not limited to wind, solar, biomass, micro-hydro and cogeneration – at a scale that is sustainable, that enhances energy system capacity and security, that promotes cleaner, more affordable energy technologies, that increases the energy options available locally, and that avoids undue adverse impacts of energy development on the local community and environment.*

6. *The rehabilitation or the development of new buildings and equipment should use proven design principles and practices with the lowest lifecycle costs (cost of owning, operating, maintaining, and disposing of a building or a building system over a period of time). Design plans shall reflect sound energy conservation principles, such as solar and slope orientation, the maximization of passive solar heating when possible, the use of protective wind barriers, and cluster development (citing buildings close to each other to maintain open space on the remaining parcel).*

7. *Power generation, transmission, and distribution facilities or service areas should be encouraged only when they complement the recommended land use patterns set forth in this plan.*

8. *New significant public investments (including schools, public recreational areas, municipal facilities, and major commercial or residential developments) must be located within or in close proximity to the village and shall utilize existing roads whenever possible.*

9. *Promote energy-efficient travel by residents by encouraging carpooling, increased use of public transportation, telecommuting, home businesses, and safe bike routes.*

10. *Discourage the construction of visually intrusive transmission towers, antennas, and other structures, including personal wireless service facilities. Alternative sites in the region that already have towers shall be utilized if at all possible. If alternative sites are*

commercially unfeasible, then construction of such structures shall be done in the Town in a manner that minimizes their visual impact through the use of camouflage (e.g., inside a church steeple or disguised as a pine tree of appropriate height), co-location with existing transmission or telecommunication structures, and/or vegetative buffering.

Energy Recommendations

1. *Town officials and volunteers should work to increase public awareness and use of energy conservation practices, energy-efficient products, and efficiency and weatherization programs through educational efforts aimed at local residents and businesses.*

2. *Hartland should consider municipal or community-based renewable energy generation, to include municipal or district biomass heating systems, and the installation of individual or group net metered generation facilities on town buildings and property to serve town facilities. Sources of funding for municipal power generation could include third-party financing, municipal funds, bonds, grants, and available government incentive programs.*

3. *Hartland should implement energy efficiency measures recommended by the Energy Audits and the Energy Committee for existing and future facilities as opportunities arise, and should incorporate priority efficiency improvements (e.g., facility retrofits, renovations, and equipment upgrades) in the town's capital budget and program.*

4. *Hartland, with help from the Energy Committee, should develop municipal procurement and purchasing that emphasize products that are energy efficient (e.g., Energy Star® rated.*

5. *Hartland should develop facility maintenance and operation policies that maximize energy efficiency while maintaining comfort levels for employees and visitors.*

6. *The Town should consider the benefits and/or drawbacks of using regionally available alternative-fuels, such as biodiesel, in municipal vehicles.*

CHAPTER 7: UTILITIES AND FACILITIES

Introduction

Hartland's town government provides (or contracts for) services and facilities funded by property taxes. The Town's Selectboard and Town Manager determine budget recommendations to fund these. Separately, the Hartland School District provides educational services and facilities and develops its budget. Registered voters consider these recommendations and vote on them annually at Town Meeting. The major challenge facing town officials is balancing the costs of services so that they do not increase disproportionately faster than the tax base.

Town Government and Offices

Hartland is governed by a five-member Selectboard who are elected at Town Meeting for two or three year terms. Paid administrative staff includes a Town Manager, Clerk, Assistant Clerk, Treasurer, Assistant Treasurer, one Assessor and two Listers. There are two appointed Town commissions - the Hartland Planning Commission and the Hartland Conservation Commission.

Town offices are located in Damon Hall, an historic building constructed in 1915 and located in the center of Hartland Three Corners. The Town's records are protected there in a fireproof vault. Meeting space is available for town commissions. The building contains a fully equipped kitchen and dining hall on the basement level and an auditorium on the first floor (with balcony). Town offices and the auditorium are handicapped accessible. The Hartland Nature Club and Hartland Community Arts are also housed in the building. Current needs of Damon Hall include vault and storage space for historic records and additional office space.

Fire Protection

Hartland has a Volunteer Fire Department that consists of two stations - one in the village of North Hartland at the intersection of Clay Hill Road and Route 5, and one in Hartland Three Corners, northwest of the village on Route 12. Fire personnel include a chief, an assistant chief, a captain, two lieutenants, a fire warden, and approximately 28 volunteer firefighters. The Town's primary mutual aid towns are Hartford, Woodstock, Windsor and West Windsor. The two stations maintain the following equipment:

Type of equipment	Year of manufacture
Hartland Forestry 4X4: GMC 3500 4X4	1999
International Tanker 1	2012
International Tanker 2	1992
E1 Pumper: Engine 1	2015
E1 Pumper: Engine 2	2004
Ford Expedition XL: Paramedic Response	2014

Table 5: Hartland Mutual Aid Fire Equipment

The Hartland Volunteer Fire Department personnel realize that the best fire protection is prevention. Citizens are required to obtain permits for outdoor burning, and can only burn untreated, natural materials. The burning of trash is not permitted. The Department also maintains a listing of existing ponds and other sources of water that can supplement tanker capacities, as needed.

Rescue Services

The Hartland Rescue Squad is located within the Hartland Volunteer Fire Department's station at Hartland Three Corners. The Squad maintains a fully equipped Chevrolet Suburban. The Rescue Squad is sufficient for the Town's needs at this time. The towns of Woodstock, Windsor and Hartford provide ambulance service.

Emergency Dispatch and Enhanced 911

The Town of Hartford Emergency Dispatch handles both fire and ambulance emergencies in Hartland.

Police Protection

Hartland residents have police protection through several sources, including the Vermont State police in the Royalton Station. This outpost covers 23 towns in Windsor, Orange, and Addison counties. Each shift at this Royalton Station is comprised of three full-time troopers; however, due to the large number of towns that this barracks patrols, response time can often be delayed. With this in mind, Hartland maintains a yearly contract with the Vermont State Police to patrol its roads for 76 hours per month. The Selectboard annually reviews this contract and makes modifications as deemed necessary. The Town also has an elected Town Constable who works 9 hours per week, is available on an "on-call" basis to handle certain violations, and assists other law enforcement officials in emergencies

Solid Waste

Hartland is a member of and has representation on the Greater Upper Valley Solid Waste Management District (GUVSWMD). The District consists of ten towns and its purpose is to assist member towns in disposal, re-use, recycling and reduction of solid waste. At the present time there is no landfill in the Town; however, the GUVSWMD has received permits to open a new landfill, if necessary, just inside the Town boundary in North Hartland and a bond vote led to the construction of an access road.

Currently, residents either contract for solid waste pick-up through private contractors or carry their solid waste and recyclables to the facility in Hartford. The most popular private solid waste service is the Fast Trash Program through ABLE Waste Management, Inc. This company works with Hartland and several towns in the region to provide curbside trash pickup and single stream recycling services.

Act 148: Vermont's Universal Recycling Law

Act 148 passed the Vermont legislature in 2012, and Vermont is currently in the process of phasing in the ban of organic matter, including decayed leaves, yard debris, and food scraps, from solid waste disposal and landfills. The law will significantly reduce the sheer volume of unnecessary waste from landfills that Vermont produces as a whole. If recyclable materials, organic wastes, and food wastes can be removed from landfills, then Vermont can effectively reduce 50% of its waste.

Specific portions of the law lead to a phased in adherence of organic matter waste collection and banned disposal. In July 2016 leaf, yard, and wood debris were banned from landfills and haulers were required to offer leaf and yard debris collection. In July 2017, transfer stations and drop off facilities must accept food scraps, and haulers must offer curbside food scrap collection. In July 2020, food scraps will be banned from landfills.

Major components of this law that the Town of Hartland must recognize and abide by include public space recycling, in which any trash container in a public space must be accompanied by a recycling receptacle. The Town of Hartland is also required to pass an ordinance requiring the institution of unit-based pricing for trash collection that combines the price of recycling and trash collection into one fee for residential customers. Although not a specific municipal responsibility, the law also mandates parallel collection, which requires haulers to offer recycling and food scrap collection services prior to the landfill ban. Hartland should take note if haulers are not fulfilling their obligation to their responsibilities under this law.

Recreation

The residents of Hartland value open space, and an important component of this is adequate access, maintenance, and protection of recreational opportunities. As the future will bring an increased population having more leisure time, it is essential that Hartland make proper provision for these land uses. Outdoor recreation comes in many different forms and can be experienced in all different seasons.

Recreation Program and Recreation Center

A paid Director manages Hartland's recreation program, and works closely with an Assistant Recreation Director. These positions are supervised by the Town Manager. The Director organizes the Hartland Elementary School's (HES) athletic program, and works closely with the volunteer Recreation Committee and HES teachers and coaches.

Recreational activities are primarily based at the Hartland Recreational Center located on Route 12 in Hartland Three Corners. The center's structural facilities include the original village school (built in 1915) that has been converted to an indoor activity center (housing the Director's office, kitchen, meeting rooms, a nursery school, and other rooms) and a bandstand. Outdoor

recreational facilities include lighted tennis and basketball courts, unlighted soccer and other playing fields, children's play areas with gym sets and a nature trail.

Other Recreational Areas

- Hartland Town Forest is a town-owned 27-acre parcel located on the Cady Brook Trail off Jenneville Road. The Forest, which was given to the town by the Jenne family, contains picnic tables and walking trails.
- The town-owned North Hartland Recreation Area provides a village playground area that accommodates activities such as tennis, basketball, and swimming.
- Sumner Falls Recreational Area, located off Route 5, includes picnic areas and is popular with canoe and kayak enthusiasts. This area along the Connecticut River is owned and maintained by the Town of Hartland after it was given to the Town by TransCanada.
- The Department of Fish and Wildlife owns approximately 200 acres on the western side of the Town, near Densmore Hill Road. This wildlife management area provides ideal habitat for ruffed grouse.
- Hammond Cove, a 27-acre parcel at the confluence of Lulls Brook and the Connecticut River off Route 5, is owned by the Department of Fish and Wildlife and has been developed into a shooting range that is maintained by the Hartland Gun Club.
- The North Hartland flood control dam and lake, which is owned by the US Army Corps of Engineer, is located off the Clay Hill Road. Consisting of more than 1,700 acres, it is the largest recreation area in town. This area consists of picnic areas, swimming and boating facilities, and trails. It is accessible for a minimal fee.
- Alder Meadow Brook flows eastward through a 5.75 acre Connecticut River Watershed Council Natural Area on Route 12. It was deeded by Mr. and Mrs. Frederick Prahl to be preserved as public open space. Because it is a natural area, it has the potential for many types of conservation education.
- Eshqua Bog, off Garvin Hill Road, is a significant rare plant species habitat that features lady slippers (*Cypripedium reginae).* This 40-acre parcel is jointly owned by the Nature Conservancy and the New England Wildflower Society. There is a small parking area and a boardwalk trail that allow visitors to visit this wetland, and see the rare orchids that live there, without damaging the habitat.

Trails

Throughout the Town, the Hartland Winter Trails association maintains an extensive groomed cross-country ski trail system. Altogether the association marks and maintains more than 20 kilometers, or 12.5 miles, of trails that range in difficulty. The trails are predominantly on private land, but are free and open to the public.

Another important winter recreation organization is The Hartland Hill Hoppers, a snowmobile organization affiliated with the Vermont Association of Snow Travelers (VAST). The Hartland Hill Hoppers maintain 45 miles of snowmobile trails in Hartland, which incorporate 125 different landowners. In order to participate in the Hartland Hill Hoppers, residents must join the club by filling out a Trails Maintenance Assessment (TMA). The organization is very active and plans many events throughout the winter season.

Library

Library services are funded each year by an appropriation approved by the voters at Town Meeting. An elected board of Library Trustees is tasked with the duty of helping to direct the funds and the policies of the library. The Friends of the Hartland Library is a 501c3 organization that sponsors fund-raising activities throughout the year. The Library is open 37 hours a week (Tuesday, Wednesday, Thursday, Friday and Saturday) and contains 29,819 items available for checkout. Seven public access computers are available as well as 24/7 Wifi service. A full array of magazines, DVDs and audiobooks are also available as well as interlibrary loan services, downloadable eBooks and audiobooks, educational databases, and videoconferencing equipment. Library staff include a Director (full-time) and part time staff – Assistant Director, Children's Librarian, Technical Services Librarian, Library Assistant, Publicity and Outreach Coordinator and Tech Tutor.

The library, constructed in 2000, is a 5,600 square foot facility located in Hartland Three Corners behind the Hartland Recreational Center. The library is fully handicapped accessible, and includes computers for public use, a meeting room, and 1.5 stories of shelving for books, periodicals and other instructional and educational materials.

Schools

The Hartland School District is a member of the Windsor Southeast Supervisory Union (WSSU) #52 which also serves Weathersfield, West Windsor, and Windsor. The Hartland Elementary School (HES), located on Martinsville Road off Route 5 in Hartland Three Corners, was constructed in 1971 with additional rooms and facilities added in 1986 and 1991. The school building has a stated capacity of 500 and serves grades K through 8. Enrollment has fluctuated in the past two decades from a low of 303 in 1986 to a high of 482 in 1994. The 2015-2016 enrollment was 311 students (see Figure 7 below). The school includes 27 classrooms, a library, a music and band room, a kitchen, a large multi-purpose room (includes a stage and facilities for basketball and other indoor athletic activities), and offices. The approximately seventeen acre site also contains an athletic field, playgrounds, parking, and landscaping.

The Hartland School Board is an elected volunteer management and advisory group that works closely with the principal to set school policy and provide budget management and oversight.

At current population levels, HES adequately meets the instructional needs of Hartland students.

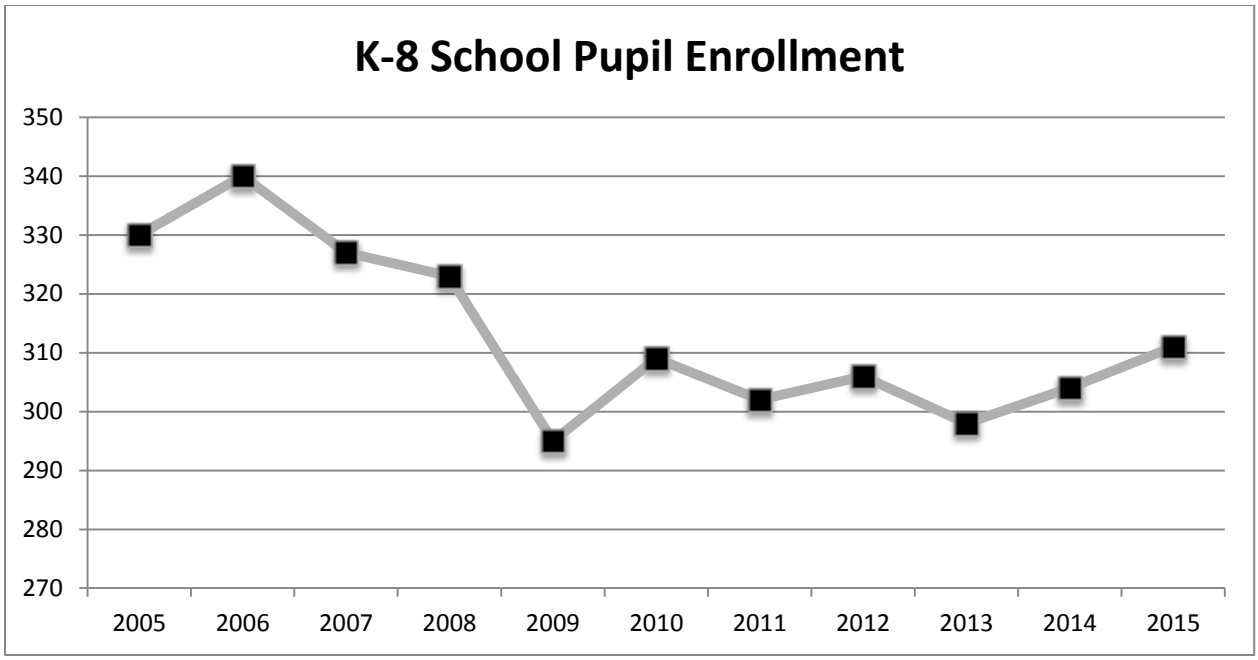

Figure 7: K-8 School Enrollment in Hartland

Hartland students in grades 9-12 may attend any public high school in Vermont or in a contiguous state (Thetford, Sharon, Hartford, Windsor, Hanover, and Woodstock) with full tuition provided from tax revenue by the Town of Hartland. Students may also attend any private school (e.g., Kimball Union Academy), and Hartland pays the tuition according to the statewide average, with the child's family paying the remaining tuition balance.

As seen in Table 6 on the next page, the number of Hartland secondary students has fluctuated from year to year with an increase from a low of 121 in 1991 to 213 in 2001. Since Hartland cannot control the fees charged by the accepting high schools, which vary as much as 45%, paying for student tuition has been a cause of concern by residents and the School Board. State authorities maintain that the threshold number of students for a viable high school cannot be met in Hartland. An alternative to Hartland's current method of providing high school tuition to any of the surrounding high schools, is tying Hartland secondary students to a specific high school.

SECONDARY (TUITION) STUDENTS

High School	2016-2017	2015-2016	2014-2015	2013-2014
Hartford	37	33	64	64
Hartford Tech	8	11	0	0
Windsor	18	28	19	19
Woodstock	13	20	20	20
Thetford	17	14	5	5
Hanover	36	21	18	18
Sharon	15	21	22	22
Other	7	13	9	9

Total	151	161	157	157

Table 6 Secondary School Placement of Hartland Students

Public Utilities and Postal Services

Electrical service is available to the entire Town. There are four privately-owned electric generating stations in Town. Two are located in the village of North Hartland, including the North Hartland Flood Control Dam operated by Essex Hydro and the Ottauquechee Woolen Mill Dam operated by ENEL North America, the Martinsville Hydro Corporation operated by Jay Boeri, Jr. just south of Hartland Three Corners, and a net metered solar project off Route 5 in Hartland Three Corners. The electricity generated at these facilities is put into the general electrical grid.

Telephone service is available to the entire Town, but cellular service is still inconsistent in much of the town. Fiber optic internet service is available throughout town through Comcast and the Vermont Telephone Company (VTel).

The only public water supply in Town is in the village of North Hartland which has a user-owned water system (not a town system). Public water systems for the village areas would allow more dense development and better fire protection.

There are two operational U.S. Post Office facilities (full service) in Hartland - one in the village of North Hartland, and one in Hartland Three Corners. One additional Post Office previously existed in Hartland Four Corners, but it has been closed indefinitely, and its services have been consolidated with the Post Office in Hartland Three Corners.

Currently no town-owned wastewater treatment or disposal system exists in the Town. However, as the population increases town officials may need to consider such options. Creation of limited wastewater treatment in the villages and commercial areas would help enable these areas maintain their vitality and allow more dense development.

Cemeteries and Graveyards

There are currently 13 cemeteries in the Town. A cemetery is a nondenominational burial area, and a graveyard is typically associated with a church. The Town's cemeteries are described below:

Name	Location	Status
HT Dunbar Yard (aka Gallup)	Route 5 near N. Hartland	Inactive
RV Gill Cemetery	Hartland Hill & Old Birch Rds.	Inactive
Jenne Cemetery	Jenneville & Jenne Rds.	Active
Walker Cemetery	Walker Cemetery & County Rds.	Inactive
Weed Cemetery	Weed Rd.	Inactive
Gallup Cemetery	Weed Rd. near Cream Pot Rd.	Inactive
Trask Cemetery	North end of Mill St., N. Hartland	Inactive
Paddleford Cemetery (aka Cutts)	Clay Hill Rd.	Inactive
Quaker/Willard Cemetery	Mace Hill Rd.	Inactive

Densmore Cemetery	Densmore Hill Rd.	Inactive
Center of Town Cemetery	Center of Town Rd.	Inactive
Plains Cemetery	Route 5 north of Hartland 3 Corners	Inactive
Hartland Village Cemetery	Station Rd., Hartland 3 Corners	Active

Table 7: Cementaries and Graveyards in Hartland

In the future there may be a need to expand active cemeteries should abutting landowners give permission. If such permission cannot be obtained, Town officials will need to investigate suitable property for additional cemetery space.

Town Road Department

The Town Road Department is located adjacent to the Hartland Volunteer Fire Department on Route 12 in Hartland Three Corners. The facility includes a large truck garage, a contained salt shed with concrete floor and storage areas. The Department is well-equipped to serve the existing needs of the town during all seasons. There is also a large sand storage and collection area next to the 4 Corners Children's Center (old Four Corners school building) on the Brownsville Road.

Type of Equipment	**Year of Manufacture**
7600 International Dump Truck	2009
114SD Fright Dump	2013
7400 International Dump Truck	2009
4700 Western Star Dump Truck	2016
F550 Ford 1-ton Pickup Truck	2010
2500 GMC Pickup Truck	2010
1500 GMC Pickup Truck	2014
310SE John Deere Backhoe	1999
924G Caterpillar Loader	2004
IH 685 CASE Tractor	1987
Caterpillar 120g Grader	2012
E350 Ford Van	2007
E150 Ford Van	2009
Holder Tractor	2009
Chloride Trailer	1998
B&G Trailer	2016

Table 8: Hartland Road Equipment

Other Town Owned Land

The Town owns a 27 acre parcel, the former Summarsell property, which is adjacent to the parking lot at the I-91 interchange. The development rights to this land are held by the State and

the Upper Valley Land Trust. This property may be used for open space, recreation and agriculture.

The Town of Hartland owns one other small parcel of property located at the corner of Route 12 and the Brownsville Road in Hartland Four Corners. This was the site of the former Four Corners Library Building. There is currently no plan for use of this property. The Town also owns and maintains the Sumner Falls Recreational Area off Route 5.

The Town maintains all the buildings it owns and details the maintenance specifications in all leases (approved yearly) for rental of space in these buildings.

Childcare

Childcare is an important service, especially given that Hartland's population largely commutes to work outside of town. Though generally not publicly provided, the town can still support childcare services by offering leases of public buildings and helping to coordinate the provision of services. Hartland Four Corners Children's Center and Hartland Coop Nursery provide the larger services in town. The Hartland Cooperative Nursery is located at 19 Route 12 in Hartland Three Corners and is directed by Harriet Dumas. This childcare provider is licensed as an early childhood program that provides for preschool aged children. Its service is part-time, and is available during the school year on Tuesdays, Wednesdays, Thursdays, and Fridays. It has a capacity of 32 children. The Four Corners Children's Center is located at 29 Brownsville Road in Hartland Four Corners and is directed by Valerie Raney. This provider offers full time service from Monday through Friday, has a capacity of 40 children, and is willing to serve infants, toddlers, preschool, and school aged children. The Children's Center is located in a town owned building.

Utilities and Facilities Goals, Policies, and Recommendations

Utilities and Facilities Goals:

1. *Provide Town services and facilities that meet established needs of current residents and address future trends in Hartland in a cost-effective manner.*
2. *Retain open space in order to provide a variety of recreational opportunities for the community, maintain the community's rural atmosphere, and conserve natural resources by proper land management.*

Utilities and Facilities Policies

1. *Plan for future services and facilities on a reasonable yet conservative growth estimate that reflects the desire of the community to retain its rural character.*
2. *Provide and plan for adequate offices, equipment and technology for Town officers, staff, and administrators.*
3. *Carefully consider the ability of Town to provide adequate levels of public services when reviewing proposed development.*
4. *The Town should maintain and enhance facilities for a variety of academic, athletic, social, cultural, and community activities.*

5. *Public lands now used as open space and for recreation shall be retained by the town and maintained for public use. Private trails, such as cross country skiing and VAST trails, are valuable recreational assets to the town and should be preserved.*
6. *Open space and recreation areas should be a single managed system with the various areas eventually connected by trails.*
7. *The Town Road Department and Town officials should be made aware of all new development plans so that they have the opportunity to evaluate any possible impacts on highway maintenance.*
8. *Residents of the Town shall recycle when possible in order to reduce roadside littering and extend the life of existing and planned landfills.*
9. *The Selectboard, Recreation Committee, and Planning Commission should consider recreational needs in the village areas when considering the sale of town lands.*

Utilities and Facilities Recommendations:

1. *The Selectboard should provide for additional emergency service equipment to meet the needs of the population.*
2. *In collaboration with the GUVSWMD, the Town should improve its current system of solid waste reduction and disposal to reduce outdoor burning (the use of "burn barrels"), reduce roadside litter, encourage recycling, and reduce the number of unregistered and non-inspected junk vehicles.*
3. *Landowners should consult with fire prevention officials when constructing new ponds or upgrading existing ponds to explore the feasibility of installing dry hydrants for fire prevention and service. Such water sources should be accessible to fire trucks in all parts of the Town.*
4. *The Selectboard should investigate the need for expanded or new cemetery space and make plans for acquiring land, as appropriate.*
5. *Continue to utilize the best available demographic data to keep abreast of projected changes in the size and composition of the school-age population. (Planning Commission, School Board, WSSU#52)*
6. *Develop and implement plans for balanced growth to ensure that tax revenues keep up with school costs. (Planning Commission, Selectboard)*
7. *Work to ensure that childcare continues to be provided in easily accessible locations in Hartland.*
8. *Hartland should monitor its contracts for police services.*

CHAPTER 8: REGIONAL CONTEXT

Relationship to Municipal Plans

The Municipal Plan focuses primarily on development and policy within the community's boundaries. However, it is important to recognize that how a community grows and changes can be directly impacted by development that takes place outside the community.

In order to analyze the potential for outside impacts on Hartland, the Planning Commission has reviewed the Municipal Plans and, if available, the land use regulations of surrounding towns for consistency with this plan. These communities include:

Hartford

The Town of Hartford adopted a revised Town Plan on May 27, 2014. Like Hartland, Hartford has designated most of the land along the town line to remain low density and rural in nature. Much of this shared border is comprised of the federally-owned North Hartland Lake flood control land. The proposed but postponed regional landfill in Hartland adjoins an area in Hartford that is currently used as a sand and gravel site. Like Hartland, Hartford has utilized portions of the US Route 4 corridor for commercial development.

Hartford's future development activities in the US Route 5 south corridor will have a significant impact on land use in Hartland. In 2008, Hartford modified its zoning to reduce the size of the Industrial/Commercial Zoning District along Route 5. These changes were made in order to reflect the 2001 Route 5 South Study and to protect the rural character of the Route 5 Scenic Byway. Both communities will need to carefully regulate commercial development to ensure that unwanted patterns do not develop.

The US Army Corps of Engineers North Hartland Lake flood control property extends from the North Hartland Dam in a rural residential area of Hartland to the heavily-visited Quechee Gorge, the Visitor Center, and the State Park area in Hartford. Plans for the future use of this property must continue to incorporate the differing characters of these areas.

Woodstock

The Town and Village of Woodstock adopted a revised Town Plan on May 20, 2014. Woodstock plans to continue low density residential use immediately adjacent to the town line on US Route 4. Along the rest of the border, Hartland and Woodstock plan for the continuation of a rural development pattern. Approval of development plans in this area must be contingent on traffic safety. Land uses should be consistent with the character of the area and not promote sprawl.

West Windsor

West Windsor's Town Plan was adopted on May 27, 2014. Both Hartland and West Windsor plan to continue the rural nature of the land area near the shared border. West Windsor's Town Plan identifies this area as rural residential in its future land use map.

Windsor

Windsor's Town Plan was adopted on September 30, 2014. To the west of I-91, both Hartland and Windsor propose to maintain rural land uses. Windsor's plan also designates rural land uses along I-91 to maintain this scenic approach to the area. To the east of I-91 along US Route 5, Windsor, like Hartland, has designated areas for rural lands uses, and residential and business development. Similar to Hartland, Windsor's Town Plan proposes that the Connecticut River shoreline east of the railroad track remain primarily open. Windsor's Town Plan reflects the community's shared concerns regarding the potential for strip development along US Route 5 and recommends that strict access-management measures be considered.

Both Windsor and Hartland must carefully plan development on US Route 5 near the I-91 interchange to ensure that economic benefits are not gained at the cost of traffic safety and loss of the scenic rural character of this area.

Relationship to the Regional Plan

Hartland is a member of the Two Rivers-Ottauquechee Regional Commission (TRORC). It is one of thirty (30) municipalities that comprise the region. The TRORC Region covers northern Windsor County, most of Orange County, and the Towns of Pittsfield, Hancock, and Granville. The Commission was chartered in 1970 by the acts of its constituent towns. All towns are members of the Commission, and town representatives govern its affairs. One of the Regional Commission's primary purposes is to provide technical services to town officials and to undertake a regional planning program. As is the case in many areas of the State, the extent of local planning throughout the region is varied. Some municipalities are more active than others. Thus, the level of services to each of the towns changes over time.

The Regional Commission adopted its Regional Plan in September 2015. It will remain in effect for a period of five years. It is an official policy statement on growth and development of the Region. The Regional Plan contains policies to guide future public and private development in the Region. Policies for land use settlement are identified. These areas are: Town Centers, Village Settlement Areas, Hamlet Areas, Rural Areas, and Conservation and Resource Areas. Delineation of each land use area is mapped or charted.

Prior to revisions to this Town Plan, the Two Rivers-Ottauquechee Regional Commission provided Hartland with an "enhanced consultation" to identify areas of conflict between areas of Hartland's Town Plan and the Regional Plan. Additions were added to Hartland's Town Plan to prevent strip development along the Route 4/Route 12 interchange.

Regional Context Goals and Policies

Goal:

1. *To work with neighboring towns and the region to encourage good land use and environmental policy that benefits the citizens of Hartland.*

Regional Context Policies:

1. *Hartland should continue to participate in the development of plans that address regional issues through the Regional Planning Commission.*
2. *The Town encourages continued communication and cooperation between Hartland and neighboring towns.*

CHAPTER 9: ECONOMIC DEVELOPMENT

Hartland's economic activity depends upon private business enterprises. There are a wide range of businesses located in Hartland, especially in the villages of Hartland Three Corners, Hartland Four Corners, and North Hartland.

Future economic development should be determined by the growth of the community. Business should not be promoted at the expense of the environment or the quality of life that Hartland residents enjoy. It should promote job opportunities in a balanced relationship with the requirements of the community and protection of the landscape and environment.

A balance between business and environment can be achieved by concentrating more intense uses such as commercial growth in the village centers and industrial uses in limited areas. The villages are surrounded by rural land. Settlement in these outlying areas historically has been associated mainly with farming. As this use required large amounts of land, over the years, Hartland's population has been dispersed throughout the Town. Home occupations are family-run, small-scale home industries or service enterprises that can be valuable assets to the community's economy and permitted in a person's residence or adjacent accessory structure.

Village Designation Benefits

Because of its participation in the Vermont Village Designation Program, Hartland's Village has the following benefits available:

- 10% Historic Tax Credits - Available as an add-on to approved Federal Historic Tax Credit projects. Eligible costs include interior and exterior improvements, code compliance, plumbing and electrical upgrades.
- 25% Facade Improvement Tax Credits - Eligible facade work up to $25,000.
- 50% Code Improvement Tax Credits - Available for up to $50,000 each for elevators and sprinkler systems and $12,000 for lifts. Eligible code work includes ADA modifications, electrical or plumbing up to $25,000.
- 50% Technology Tax Credits – Available for up to $30,000 for installation or improvements made to data and network installations, and HVAC reasonably related to data or network improvements.
- Priority Consideration for HUD, CDBG and Municipal Planning Grants
- Priority consideration for Municipal Planning Grants and funding from Vermont's Community Development Program.
- Priority Consideration by State Building and General Services (BGS)
- Priority site consideration by the State Building and General Services (BGS) when leasing or constructing buildings.

Participation in the Vermont Village Designation Program provides benefits to businesses located within the designated boundary. This program offers tax credits for the revitalization of buildings within designated areas, which is beneficial to existing commercial landowners within

the designated area and the designated village receives priority consideration for some state grants (see text box for a list of the benefits).

The residents of Hartland recognize the economic importance of their Village Center; therefore, in order to continue access to these benefits for the commercial landowners and the village, it is the intention of the Town to continue to participate in the Village Designation program.

Being a designated village supports the traditional Vermont development pattern of a compact village center surrounded by rural countryside, as well as the Town Plan's goals of continuing to support historical economic and land use patterns of Hartland itself.

Economic Statistics

Figure 11 below indicates the major types of employment that Hartland residents occupy. The largest area of employment comprises jobs associated with educational services, health care, and social assistance, which employ 31% of those who are in the labor force. The second largest area of employment is professional, scientific, management, administrative, and waste management services, which employs 16% of Hartland residents in the labor force.

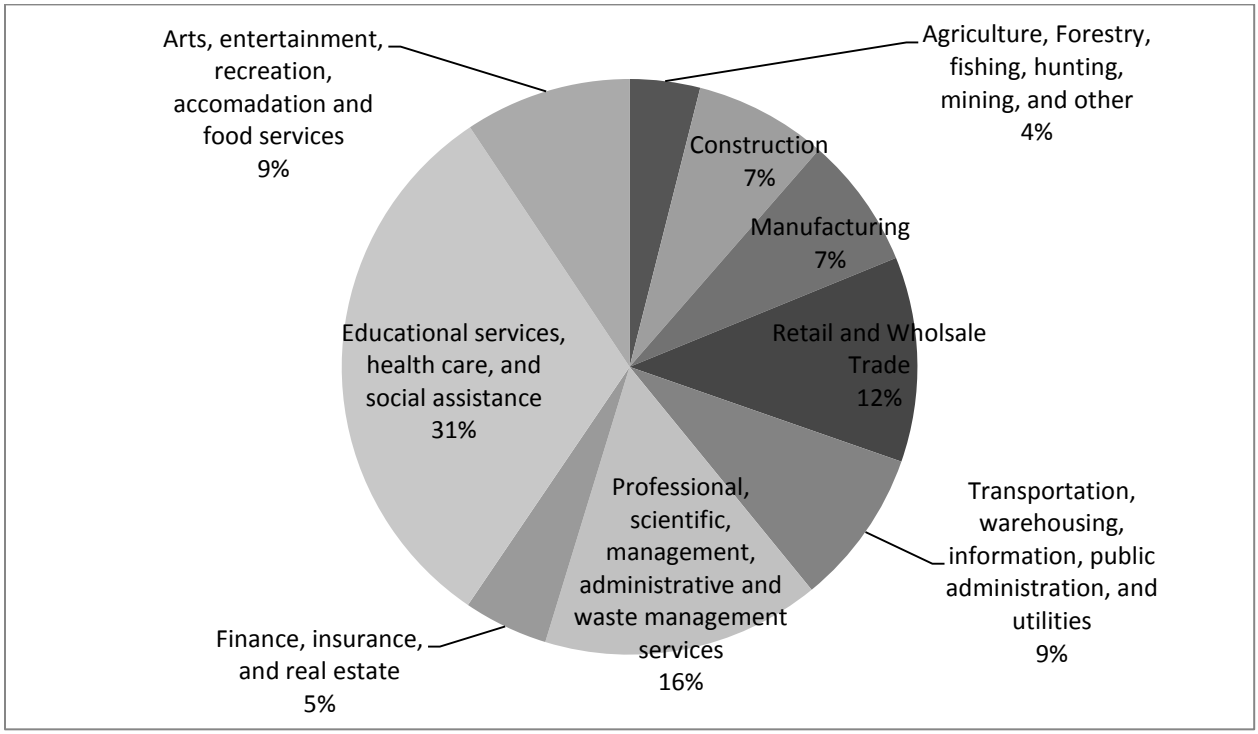

Figure 11: Occupations of Hartland Residents

Businesses and Enterprises

The following small business types are exhibited in Hartland, and their existence plays an important role to the community members who live in the Town. These businesses are nonretail, typically small in size, and, depending on the classification of the business, predominantly residential in nature.

Home occupation: a business use that is conducted within less than 50% of the floor area of a dwelling and/or accessory building, which is clearly secondary to the dwelling's use as a living quarters, and which is customary in residential areas and does not have an undue adverse effect on the character of the neighborhood. This type of business can only have two other on-site employees; it must have at least two public parking spaces; and it cannot have permanent outdoor storage.
Examples; home office, antique shop, repair shop, hairdresser, catering service, and studio.

Home business: a commercial activity that has no more than five total onsite employees; it can have no more than five additional employees that can routinely visit onsite; and it may have outdoor storage of materials.
Examples: contractor services, auto repair, and lumber or firewood operations

Small enterprise: a small non-retail commercial business located in a single building with no permanent residential occupants. Outdoor storage is prohibited, it can have no more than five onsite employees, and the activities of this business shall not detract from the residential nature of the area.
Examples: small professional office, law office, computer programmer

Economic Development Goal, Policy, and Recommendations

Economic Development Goal:

1. *Hartland supports economic development within Hartland's designated village centers and industrial areas.*

Economic Development Policy:

1. *This Plan supports the establishment of businesses throughout Town that fit the definition of a home occupation.*

Economic Development Recommendations:

1. *Home occupations, home businesses, and small enterprises, as defined above, are allowed in all districts except the river district unless they detract from the current character of the area in which they operate. These businesses should be reviewed periodically to determine if they have grown into commercial enterprises requiring additional approvals.*
2. *Encourage appropriate economic development activities, and continue participation in the Green Mountain Economic Development Corporation.*
3. *Hartland should renew its village designations in Hartland Four Corners, Hartland Three Corners, and North Hartland when they expire in 2017.*

CHAPTER 10: IMPLEMENTATION

Putting the Plan into Action

The character of Hartland, its people, and landscape has been created over the years through the individual and collective decisions of its citizens and public officials. The efficiency, attractiveness, and well-being of the community are determined, in part, by the ability of the Town to plan for its needs and to find a mechanism to put planning goals into action.

Previous elements of this Plan have been centered on existing conditions, probable trends and policy development which, when combined, represent a vision for the kind of town Hartland desires for the future. One thing is certain – the community will change. The opportunity is that citizens and town officials together can direct this change consistent with their desires, using a variety of mechanisms.

The following sections describe the tools and techniques that could be used to implement the Hartland Town Plan.

Adoption of the Plan

Adoption of the Hartland Town Plan by the Selectboard, in accordance with the procedures outlined in the Vermont Planning and Development Act [24 V.S.A., Chapter 117], is the first step in putting this Plan into action. Through its adoption, the town accepts that the principles and policies set forth in this Plan are in the public interest and are a guide for the future growth and development decisions affecting Hartland.

Ongoing Planning

Planning for change is a continual process for Hartland and will require the involvement of the Planning Commission and the public to ensure that the goals and policies of the Plan are integrated into the decisions affecting land use, taxation, and public investments in Hartland.

The quality of a Town Plan is reflected in the amount of public involvement in its creation. Regular community meetings, held by the Planning Commission, that discuss important issues relevant to the Town plan will ensure that the document truly reflects the vision of the residents of Hartland.

The Hartland Town Plan is a dynamic document reflecting the community's visions and values. By statute [24 V.S.A., Section 4387] the plan must be revisited at least every eight years to be kept relevant. The Planning Commission is responsible for the maintenance and amendment of the plan. Within the next eight years following the Planning Commission will need to again evaluate the plan in light of new conditions and needs.

At any time following adoption of the plan, the Selectboard may request the Regional Commission to approve the Plan or amendments to a plan. Before approving a plan, the Regional Commission shall find that the plan meets four basic tests [24 V.S.A., Section 4350(b)].

- is consistent with the goals established in section 4302
- is compatible with the Regional Plan
- is compatible with approved plans of other municipalities in the region
- contains all the elements included in subdivisions 4382(a) (1-10)

Approval of the plan provides an improved legal standing for Hartland to influence and integrate its planning policies with State planning affecting land use.

Implementation Tools

Vermont law enables Hartland to implement the adopted Hartland Town Plan through a variety of ways. Regulation of land use and development through rules adopted by the voters is one possible method. Because these regulations are susceptible to legal challenge and must clearly benefit the public, discretion must be used. Well recognized and utilized means include, but are not limited to, zoning bylaws and subdivision regulations. Examples of potential implementation tools include:

Zoning Bylaws - Zoning bylaws are a commonly used method for guiding development at the local level. Zoning may regulate,

- uses of land,
- the placement of buildings on lots,
- the relationship of buildings to open space, and
- the provision of parking, signs, landscaping and open space.

Zoning generally involves partitioning the town into districts or zones that have a different set of uses, densities, and other standards for development. Zoning districts must be reasonably consistent with the Town Plan. As an alternative to conventional methods, Hartland may opt to implement a set of measurable performance standards for specific uses as opposed to dividing the Town into districts. This technique, referred to as "performance zoning," is designed to be more flexible and to recognize the specific conditions of each site proposed for development. Hartland does not having zoning bylaws.

Subdivision Regulations - Hartland does not have subdivision regulations. Such regulations govern the division of parcels of land and the creation of roads and other public improvements. Furthermore, subdivision regulations ensure that land development reflects land capability and that critical open spaces and resources are protected from poor design or layout.

Flood Hazard Area Zoning Ordinance - Under Vermont law [24 V.S.A., Section 4412], the Town of Hartland may regulate the use of land in a defined flood hazard area adjacent to streams and ponds. These bylaws can be established to ensure that design and construction activities within the limits of the Special Flood Hazard Area are designed so as to minimize potential for flood damage and to maintain use of agricultural land in flood-prone areas. Property owners are eligible for federal flood insurance on buildings and structures at relatively low federally

subsidized premium rates. Hartland residents may apply for these insurance rates and policies due to Hartland's effective Flood Hazard Regulations.

Highway Policies - Hartland has in effect a Town Road and Bridge Standards setting forth minimum standards and conditions for the construction of roadways, ditches and slopes, culverts and bridges and guardrails. The Town follows state statutes regarding the reclassification of Town Highways as well as the discontinuance, laying out and acceptance of its highways.

Lastly, Hartland does have, through its Selectboard's Highway Access Policy, the ability to regulate private access to municipal roads through the issuance of "curb cut" permits to landowners. "Curb cuts" are places where a private driveway or road connects to a town highway. In granting a cut onto town roads, the Selectboard can give consideration to safety issues such as adequacy of sight distance and proximity to intersections as well as conformance with this Plan.

Capital Budget – A capital budget and program is a financing approach that benefits the town greatly in the selection, prioritization and costing of capital projects. Under the capital budget, a project is selected (e.g. bridge refurbishment), a funding source determined (e.g. general taxes or general obligation bonds) and a priority year given for each activity (e.g. construction in 2020). Collectively these capital projects make clear where public facilities will be placed to accommodate projected growth. When used in conjunction with the Town Plan and local bylaws, it can be a powerful mechanism for limiting the rate of growth in accordance with the fiscal capacity of taxpayers and other funding sources.

In addition, it is noted that under Vermont's Act 250 law, in granting a Land Use Permit for a major development or subdivision, the District Environmental Commission must first find that the project is in conformance with the town's capital budget. [See 10 V.S.A., Section 6086(a)(10).] Accordingly, this mechanism gives the town an indirect method of implementing its policies and priorities as set forth in the Plan.

While Hartland has an informal system of capital programming, it is recommended that a Capital Budget Committee be established to work with the Selectboard in the development of a list of capital needs and expenditures, and to formally present a Capital Budget and Program for adoption.

Vermont Community Development Program - Since the mid-1970s, the Vermont Community Development Program (VCDP) has made grant funds available to towns for community projects. Historically, the major focus of the program has been on housing rehabilitation and affordable housing projects benefiting low and moderate-income families.

Hartland should investigate the Vermont Community Development Program and its potential to assist the community in addressing its housing needs. The Regional Commission and the Vermont Agency of Commerce and Community Development are resources available to assist. (PH: 802-828-3217).

Act 250 - Since 1970, Vermont has had in place a statewide review system for major developments and subdivisions of land. Exactly what constitutes a "development" or "subdivision" is subject to a rather large and involved set of definitions. However, generally, commercial and industrial projects on more than one acre of land; construction of 10 or more units of housing; subdivision of land into 6 or more lots; construction of a telecommunication tower over 20 feet in height; and development over 2,500 feet in elevation qualifies.

Prior to these activities being commenced, a permit must first be granted by the District Environmental Commission. In determining whether to grant a permit, the Commission shall evaluate the project in relation to ten specific review criteria.

These criteria relate to the environmental, economic, and social impacts of the proposed project on the community and region. Parties to Act 250 proceedings include Hartland, through the Planning Commission and Selectboard, the State, and the Regional Commission. One criterion that needs to be addressed is whether the project is in conformance with the Hartland Town Plan. If a project were determined not to be in conformance with the plan, the District Environmental Commission would have a basis to deny a permit. As such, Act 250 reviews can take into consideration protection of those types of resources considered important to the well-being of the community. Accordingly, it is in the interest of the Town to evaluate Act 250 projects affecting Hartland and to offer testimony, as appropriate.

Coordination of Private Actions - Citizens and private enterprise have a vested interest in the wellbeing of Hartland. The actions of the private sector, such as the construction of homes and businesses, land conservation, and the use of land for recreation and agriculture, should relate positively to the goals and policies as set forth in this Plan.

It is in the interest of Hartland, through the Planning Commission and Selectboard, to develop a cooperative relationship with private investment activities that may have a significant impact on the community values and policies set forth in the Plan. By working together in a cooperative venture early in the process of planning for a project, an adversarial relationship can be avoided.

Conservation Activities - Conservation programs are an effective means of securing protection of valuable farm and forestland or significant natural resources. Techniques available involve voluntary direct work between non-profit conservation organizations and affected landowners such as donation of conservation easements, bargain sales of land, and limited development schemes.

The land trust movement has grown immensely during the past twenty years, particularly in Vermont. Land trusts offer viable means of bringing together the needs of property owners with the community interests. The Upper Valley Land Trust and the Nature Conservancy are particularly well-recognized organizations. Several organizations are also involved in water quality protection. It is the intent of this Plan to implement its policies through coordination and the involvement of these organizations and others dedicated to public purposes.

Other methods of encouraging land conservation include Transfer of Development Rights (TDR). The Planning Commission can allow development rights to be transferred from one

property in a sending district to another property(ies) in a receiving district(s). TDR's are commonly used in areas where there is a substantial amount of development potential in more densely populated areas.

Responsibility for Implementation

In order to ensure that the policies of this Plan are implemented, it is essential to identify what municipal panel, organization, or citizen is most suited to act on them. Throughout this plan the Planning Commission has identified recommendations for action that indicated who should be responsible for them. Generally the responsibility for implementation of the Plan falls either to the Planning Commission or the Selectboard. However, advisory committees as well as other community organizations could have responsibilities for implementation.

To ensure that the Plan is implemented, an Implementation Matrix has been developed. The Implementation Matrix collects a majority of the recommendations for action in this Plan and assigns a party or parties responsible for implementation. In addition, a rough timeframe for implementation is established, which is detailed here:

- **Short-term**: The responsible party should implement the recommendation for action within 1-3 years of the adoption of the Plan.
- **Mid-Term**: The responsible party should implement the recommendation for action with 4-8 years of the adoption of the Plan. These action items often require specific funding sources, multiple steps that must be taken to reach implementation, and/or substantial public process.
- **Long-Term**: These recommendations for action are important for the community of Hartland, but may take extensive effort and substantial shifts in policy at multiple levels of Government. Implementation of these action items may take longer than the eight year lifespan of this Plan.

Ongoing: A substantial number of recommendations for actions contained in this Plan represent the day-to-day work of community members and governing bodies of the Town. By designating these action items as ongoing, the Planning Commission acknowledges that these items are being acted on and supports their continued completion.

Action Item	Responsibility	Timeline
Land Use		

Continue to utilize the assistance of the Regional Planning Commission for land use planning and development.	Planning Commission	Ongoing
Hartland shall renew its village designations in 2017 when they expire.	Planning Commission, TRORC	Short-Term
Any proposal for development in the Route 4/12 Intersection Area that would result in a significant increase in traffic volume or significant change in the character of traffic shall be accompanied by a traffic analysis. This analysis must show that the proposed mitigation of the impacts of additional traffic would prevent any decrease in safety.	Selectboard, TRORC	Ongoing
In accordance with Vermont's so-called "Downtown Initiative," Town officials should encourage businesses compatible with village centers to locate at the I-91 interchange area.	Selectboard	Ongoing
Any new private road constructed off VT Route 12 or the Hartland-Quechee Road should be of limited length and not connect to other town highways so as to avoid fragmentation of forest blocks, agricultural lands, or critical wildlife habitat, or create through traffic.	Selectboard	Ongoing
This plan supports the Town ordinance prohibiting the mining and milling of fissionable materials. Other commercial and private mining and extraction projects shall be reviewed carefully for concerns of safety, traffic, noise and other environmental and social concerns, including aesthetics.	Selectboard	Ongoing
Upon completion of excavation or mining such activities, the ground surface shall be left in a safe and vegetated condition as close to its natural surroundings as possible.	Selectboard	Ongoing
Natural, Historic, and Scenic Resources		
The Historical Society should promote activities which educate residents about the Town's history: Support events such as Old Home Day which tie the Town's past to its present. Sponsor walks or presentations that tour some of the historical sites in Town.	Historical Society	Short-Term
The Town should assist residents in protecting their historical homes, barns, and structures for future generations by educating residents about grant programs, as well as educating residents about the process of having their home/barn entered in the historic register.	Historical Society	Ongoing

The Town should consider adopting ordinances and/or practices, such as establishing an advisory design review process that may serve to protect Hartland's historical, cultural, and scenic resources.	Selectboard	Mid-term
The Town should work with area groups and the state to sponsor workshops on soil conservation, land management, and forestry practices.	Conservation Commission	Mid-term
The Town should promote the well-being of its agriculture and forest-related enterprises.	Selectboard	Ongoing
The Town should create a public information area at the Town Offices which contains maps, pamphlets, and other documents related to natural resource preservation.	Town Manager	Mid-term
Area land trusts should assist interested landowners in conserving their property, including providing information and technical assistance to landowners interested in protecting their land through fee simple acquisition conservation easements, deed restrictions, and mutual covenants.	Local Groups and Local Land Trusts	Mid-term
The Town should support state, federal, and private acquisition of land, through donation or conservation easements, which will protect the Town's agricultural and forestry resources.	Selectboard	Ongoing
The Town, regional chambers of commerce, and the regional development corporation should assist agriculture and forest-related businesses through participation in state, regional, and local programs. Support these enterprises by encouraging local retailers to feature products made in Hartland.	Selectboard, Chamber of Commerce, Regional Development Corporation	Ongoing
Coordinate land use and conservation efforts with adjacent communities.	Planning Commission, Conservation Commission	Ongoing
Consider assisting residents in protecting open space so as to preserve the agricultural and forestry traditions which have served to shape Hartland's history by educating residents about the benefits of open space, providing residents with information about the Vermont Use Value Appraisal Program, and working cooperatively with landowners and local land trusts and conservation groups to acquire high-quality resources.	Conservation Commission	Mid-term
The Conservation Commission should educate landowners about the importance of protecting, maintaining, and enhancing wildlife habitat; and provide support and encouragement for their efforts, as well as information about a variety of regional, state and federal programs and incentives involving wildlife and habitat preservation.	Conservation Commission	Mid-term

The Conservation Commission should work with others to provide workshops and presentations on wildlife with an emphasis on preserving the Town's natural and fragile areas and wildlife habitats and corridors.	Conservation Commission	Long-term
The Conservation Commission should create a public information area at the Town Offices which supplies maps, pamphlets, and other documents related to endangered and threatened species and wildlife habitat preservation.	Conservation Commission	Mid-term
The Conservation Commission should educate landowners, foresters, and developers about the importance of using buffer zones for wildlife habitat protection.	Conservation Commission	Mid-term
The Town should consider redirecting the proceeds from the State's Land Use Change Tax into the Town's Conservation Fund instead of the Town's General Fund.	Selectboard	Long-term
The applicant for subdivisions subject to Act 250 shall evaluate the impacts of their development on any identified core habitat areas.	Planning Commission	Ongoing
The Conservation Commission, in cooperation with other organizations, should identify existing core habitat areas and travel corridors within the Town, identify desired wildlife protection areas, and sponsor efforts to educate the public about the importance of protecting wildlife habitats and the importance of the interconnecting these habitats.	Conservation Commission, Planning Commission	Mid-term
The Town should coordinate land use and conservation efforts with adjacent towns and cities.	Planning Commission, Selectboard	Ongoing
The Town should consider a noise ordinance to ensure the Town's aesthetic environment, including quiet, is preserved. Land uses should not be so noisy as to interfere with neighbors' lives.	Selectboard	Long-term
The Town should work cooperatively with landowners, local land trusts, and conservation groups to acquire high-quality scenic resources.	Conservation Commission, Selectboard	Long-term
Water Resources		
The Town should consider the adoption of shoreland regulations with setbacks between development activities, such as land clearing and construction, and Hartland's brooks and rivers. These regulations should enable expansion of existing structures within the setback with careful control of erosion and sedimentation.	Selectboard	Mid-term

The Conservation Commission should advocate for the cooperation of landowners with conservation organizations, such as Vermont Land Trust and the Vermont River Conservancy, to permanently protect shoreline buffer strips through conservation easements or other means.	Conservation Commission	Ongoing
The Town of Hartland shall prohibit development from happening in a way that will lead to erosion and sedimentation of surface waters including: Prohibit development on slopes greater than 25% In accordance with state law, notify landowners that they require a stormwater general permit for new development equal to or greater than 1 acre or the expansion of existing development so that the resulting impervious surface is equal or greater than 1 acre.	Selectboard	Ongoing
Amend the Highway Ordinance and Culvert Policy by adding standards to limit the grade of and control runoff from driveways that can themselves be a source of erosion problems.	Selectboard	Long-term
New culverts in the town of Hartland should be at least 18 inches high and will contain headers to protect integrity of structures. Road maintenance will also consist of stone lined ditches, grass lined ditches, disconnected ditches from surface water, and road crowning, where appropriate. Hartland's road standards will continue to follow statutes put forth by the State of Vermont, and will abide by current and future Better Backroads' Codes and Standards.	Highway Department	Ongoing
Hartland should continue to coordinate with and participate in regional programs aimed at protecting the resources of the Connecticut River watershed including the Conte National Wildlife Refuge, the Scenic Byway Program, and activities of the Connecticut River Joint Commissions.	Selectboard, Planning Commission, Conservation Commission	Ongoing
The Town of Hartland shall continue to participate in Act 250 and other State permit application reviews to ensure that approvals are conditioned on proper water quality protection safeguards. This will include locating activities and structures with at least a 50-foot buffer from surface waters, with a larger setback distance in areas of steep slope or highly erodible soils; requirements for a detailed erosion and sedimentation control plan demonstrating proper controls during and after construction; a detailed stormwater management plan with appropriate stormwater	Planning Commission	Ongoing

treatment; and other recommended land use management practices.		
Revise Hartland's Flood Hazard Area regulations to prohibit new development in the 100-year floodplain, or area that has a 1% chance of annual flooding (excluding small ancillary structures).	Planning Commission	Long-term
Revise Hartland's Flood Hazard Area regulations to prohibit commercial, industrial, and residential uses within ANR's mapped River Corridor areas.	Planning Commission	Long-term
Hartland should work with VTrans and the Regional Planning Commission on advocating for and improving the flood capabilities of state or town-owned transportation infrastructure.	Selectboard, Highway Department	Ongoing
Hartland should move or abandon roads that often experience serious flood damage.	Selectboard, Highway Department	Long-term
Hartland should continue to maintain and update town bridge and culvert inventories. This information should be used to develop a schedule to replace undersized culverts.	Highway Department, TRORC	Mid-term
Hartland should design culverts and bridges, at minimum, to meet VTrans Hydraulics Manual, ANR Stream Alteration Standards, VTrans Codes and Standards. Maintain culverts to ensure they are effective during severe weather events	Highway Department	Ongoing
Hartland should continue working to update hazard mitigation plans and emergency preparedness and recovery procedures.	Selectboard, TRORC	Mid-term
The Selectboard should continue to send a representative to regularly attend and participate in the region's Local Emergency Planning Committee (LEPC #3).	Selectboard	Ongoing
Continue to update Hartland's Flood Hazard Area Regulations as needed to comply with FEMA's requirements for participation in the National Flood Insurance Program and to reflect new understanding of wise floodplain development.	Planning Commission	Long-term
The Town should get grants to contract an environmental consulting company to conduct a local wetlands inventory to identify and evaluate wetlands and assess protection needs.	Selectboard	Long-term

The Conservation Commission should work with land trusts and other conservation organizations to prioritize wetlands for conservation easements and other forms of permanent protection.	Conservation Commission, Local Land Trusts	Ongoing
In cooperation with government agencies and non-profit organizations, Hartland Conservation Commission will foster landowner education regarding the functions and values of wetlands.	Conservation Commission	Mid-term
Hartland should continue to participate in regional hazardous waste collections to provide a practical cost effective means of disposal and support educational activities aimed at reducing the amount of hazardous material in the waste stream.	Selectboard	Ongoing
Work with TRORC to consider protecting high priority potential future public water supply aquifers through source protection areas, and to consider class II groundwater areas in Hartland.	Selectboard, TRORC	Long-term
Any development near a confirmed vernal pool should meet any applicable state permits.	Planning Commission	Ongoing
Housing		
Promote efficiency measures in residential housing and encourage residents to learn more information about programs and potential cost savings through Efficiency Vermont.	Planning Commission	Ongoing
Transportation		
Work with VTrans and TRORC to implement an ongoing traffic count program on state and major town highways to monitor the volume and type of traffic.	Town Manager, TRORC	Ongoing
Work with VTrans and TRORC to ensure that improvements to the state highway system are sensitive to the desires of Hartland.	Town Manager, TRORC	Ongoing
Explore the possibility and desirability of utilizing weight limits and other design tools as a means for controlling truck traffic on local roads. Consider prohibiting through truck traffic on local collector (Class 2) roads to keep existing truck traffic on VT Route 12 and US Route 5. Changes to signage and continued efforts toward better access management along US Route 4 in Hartland should also be considered.	Town Manager	Long-term

Review and update the Town policy regarding upgrading Class 4 roads and private roads to Class 3 town-maintained roads to ensure that: adequate road construction standards are followed; the landowners are required to pay for bringing the road up to Town standards; and input from the Planning Commission is incorporated in the Selectboard's review and decision process to ensure the changes would be consistent with the Town plan.	Selectboard	Long-term
Review and update the Town's driveway regulations and road standards to ensure that safety and drainage issues are adequately addressed. If the Town adopts subdivision regulations, incorporate appropriate requirements to ensure that new private roads and rights-of-way will be constructed to town road standards.	Selectboard, Planning Commission	Long-term
Provide clearly marked crosswalks in village areas with adequate advance warning for drivers to ensure pedestrian safety, including the possibility of pedestrian-activated crossing lights.	Town Manager, Selectboard	Long-term
Encourage VTrans to include bike lanes, coupled with appropriate striping, signage and traffic calming measures, when improvements are made to State highways.	Town Manager, TRORC	Long-term
Encourage Advance Transit, Stagecoach Transportation Services, and other bus systems to monitor the demand for bus service in Hartland and increase service when warranted.	Town Manager, TRORC	Long-term
Encourage carpooling through ensuring that ride-sharing information is readily available to residents and promoting use of the Park & Ride lot at Exit 9.	Local Groups	Ongoing
The town should continue to update town bridge and culvert inventories according to Vtrans Road and Bridge Standards with assistance from TRORC. Last culvert inventory was completed in summer 2015.	Road Department, TRORC	Mid-term
Energy		
Town officials and volunteers should work to increase public awareness and use of energy conservation practices, energy-efficient products, and efficiency and weatherization programs through educational efforts aimed at local residents and businesses.	Town Manager	Ongoing
Hartland should consider municipal or community-based renewable energy generation, to include municipal or district biomass heating systems, and the installation of individual or group net metered generation facilities on town buildings and property to serve town facilities. Sources of funding for municipal power generation could	Town Manager	Long-term

include third-party financing, municipal funds, bonds, grants, and available government incentive programs.		
Hartland should implement energy efficiency measures recommended by the Energy Audits and the Energy Committee for existing and future facilities as opportunities arise, and should incorporate priority efficiency improvements (e.g., facility retrofits, renovations, and equipment upgrades) in the town's capital budget and program.	Town Manager, Selectboard	Long-term
Hartland, with help from the Energy Committee, should develop municipal procurement and purchasing that emphasize products that are energy efficient (e.g., Energy Star® rated).	Town Manager, Energy Committee	Mid-term
Hartland should develop facility maintenance and operation policies that maximize energy efficiency while maintaining comfort levels for employees and visitors.	Town Manager, Road Department	Mid-term
The Town should consider the benefits and/or drawbacks of using regionally available alternative-fuels, such as biodiesel, in municipal vehicles.	Selectboard	Long-term
Utilities and Facilities		
The Selectboard should provide for additional emergency service equipment to meet the needs of the population.	Selectboard	Mid-term
In collaboration with the GUVSWMD, the Town should improve its current system of solid waste reduction and disposal to reduce outdoor burning (the use of "burn barrels"), reduce roadside litter, encourage recycling, and reduce the number of unregistered and non-inspected junk vehicles.	Selectboard	Short-Term
Landowners should consult with fire prevention officials when constructing new ponds or upgrading existing ponds to explore the feasibility of installing dry hydrants for fire prevention and service. Such water sources should be accessible to fire trucks in all parts of the Town.	Fire Department	Ongoing
The Selectboard should investigate the need for expanded or new cemetery space and make plans for acquiring land, as appropriate.	Selectboard	Mid-term
Continue to utilize the best available demographic data to keep abreast of projected changes in the size and composition of the school-age population.	Planning Commission, School Board	Mid-term
Develop and implement plans for balanced growth to ensure that tax revenues keep up with school costs.	Planning Commission, Selectboard	Mid-term

Work to ensure that childcare continues to be provided in easily accessible locations in Hartland.	Planning Commission	Ongoing
Hartland should monitor its contracts for police services.	Selectboard	Short-Term
Economic Development		
Home occupations, home businesses, and small enterprises, as previously defined, are allowed in all districts except the river district unless they detract from the current character of the area in which they operate. These businesses should be reviewed periodically to determine if they have grown into commercial enterprises requiring additional approvals.	Planning Commission	Ongoing
Encourage appropriate economic development activities, and continue participation in the Green Mountain Economic Development Corporation.	Local Residents	Ongoing
Hartland should renew its village designations in Hartland Four Corners, Hartland Three Corners, and North Hartland when they expire in 2017.	Planning Commission, TRORC	Ongoing

CHAPTER 11: DEFINITIONS

The following definitions shall apply throughout this Town Plan unless the context otherwise requires:

Accessory Dwelling Unit - A one-bedroom dwelling attached to or near an owner-occupied dwelling.

Affordable Housing - Housing is considered to be affordable when monthly shelter costs do not exceed approximately one-third of a person's monthly income. As used in the housing section recommendations, the phrase means within Vermont Housing Finance Agency income limits for rental or owner housing.

Bylaw - Zoning regulations, subdivision regulations, the official map or capital budget and program adopted under the authority of Chapter 117 of Title 24 of Vermont Statutes Annotated.

Flood-Prone Area - An area established as the 'Flood-Prone Area' under the Town Plan and referring to the area within the boundaries of the 100-year-flood.

Home occupation: a business use that is conducted within less than 50% of the floor area of a dwelling and/or accessory building, which is clearly secondary to the dwelling's use as a living quarters, and which is customary in residential areas and does not have an undue adverse effect on the character of the neighborhood. This type of business can only have two other on-site employees; it must have at least two public parking spaces; and it cannot have permanent outdoor storage.

Examples; home office, antique shop, repair shop, hairdresser, catering service, and studio.

Home business: a commercial activity that has no more than five total onsite employees; it can have no more than five additional employees that can routinely visit onsite; and it may have outdoor storage of materials.

Examples: contractor services, auto repair, and lumber or firewood operations

Land Development - The division of a parcel into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or other structure, or of any mining, excavation or land-fill, and any change in the use of any building or other structure or land or extension of use of land.

Legislative Body – The members of the Selectboard of the Town of Hartland.

Municipality - The Town of Hartland.

Person - An individual, a corporation, a partnership, an association and any other incorporated or unincorporated organization or group.

Plan - The Hartland Town Plan.

Planning Commission - The Hartland Planning Commission appointed by the Selectboard of Hartland in accordance with Chapter 117 of Title 24 of Vermont Statutes Annotated.

Public Highway – a state or town road passable year round.

Rural Town - A town having at the date of the most recent US Census, a population of fewer than 2500 persons as evidenced by that Census.

Shall/Must – mandatory, required

Should/Consider/Encourage – supported but not required

Single/Family Dwelling Unit - A house or residential unit constructed to be used by a single household, which may have an accessory dwelling unit on the same lot.

Small enterprise: a small non-retail commercial business located in a single building with no permanent residential occupants. Outdoor storage is prohibited, it can have no more than five onsite employees, and the activities of this business shall not detract from the residential nature of the area.
Examples: small professional office, law office, computer programmer

Strip Development - Linear commercial development along a town or state highway leading from an urban or village center or connecting two centers. Strip development has many characteristics, not all of which need to occur for strip development to be present. The characteristics of strip development include, but are not limited to, the following:

- use of individual curb cuts for each project along the highway;
- lack of connections between the projects, except for the highway connection;
- one-story buildings containing a single type of use;
- little to no pedestrian circulation between projects on the strip;
- accessibility of individual projects primarily to automobiles;
- separation of projects by parking lots;
- individual project design, signage, lighting, parking, and landscaping; lack of coordination between projects concerning these items, causing cluttered appearance;
- narrow depth and broad street frontage of project parcels to take advantage of exposure on the arterial highway.

Structure - An assembly of materials for occupancy or use, including but not limited to, a building, mobile home or trailer, or billboard; for residential, business, industry or other public or private purposes or accessory thereto. For the purpose of these Regulations, the term does not include fences, stonewalls, dog houses, tents, non-commercial antennas or other minor structures.

Trail - A public right of way that is not a highway and that: (a) previously was a designated town highway having the same width as the designated town highway and has not been legally discontinued so that it becomes private property; or (b) a new public right of way laid out as a trail by the Selectboard for the purpose of providing access to abutting properties. Trails shall not be considered highways and the town shall not be responsible for any maintenance, including culverts and bridges.