

# **WINDHAM TOWN PLAN**

**WINDHAM, VERMONT**

**January 2015**

Prepared by:

**The Windham Planning Commission**

with assistance from

The Windham Regional Commission

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## **CHAPTER I INTRODUCTION AND OVERVIEW**

### **A. OBJECTIVE OF THE WINDHAM TOWN PLAN**

The Windham Town Plan provides for an understanding of where the Town came from, its current attributes and assets, and a clear direction that the property owners and residents of the Town desire to continue. It also provides planning approaches, Policies and in some instances standards to ensure that decisions made at the regional and state levels give proper consideration to and are compatible with our expressed wishes and intentions.

### **B. STATEMENT OF POLICY & PURPOSE**

There are many factors which contribute to the current status of our community. The rural character is exemplified in many attributes of the Town, such as the vast amount of wooded and undeveloped areas, streams, ponds, abundant wildlife, absence of bright lights, low volume of traffic, and very low ambient noise levels. Windham contains unique natural topographic features that have allowed historic settlement patterns to occur near its hills and ridges while respecting their special features and attributes. The housing has traditionally been single family structures, normally on one or more acres of land. The one-acre sites were concentrated in the village areas and in the development surrounding the vacation homes at Timber Ridge. The buildings themselves have tended to be two stories or less, and be clustered in these areas. This results in the maximum amount of undeveloped land.

The Windham Town Plan reflects the Planning Commission's understanding of the trends and pressures affecting our Town and the prevailing standards of the property owners and voters of the Town. It is a blueprint to future growth and development of land. We commit to maintain Windham's natural resources and physical features and to preserve a community that is healthy and safe. Growth, which is good for the Town must not imperil or detract from the social, environmental, cultural, economic, health and aesthetic values of our rural community. The ability of taxpayers to support the Town on a sound financial basis must be taken into consideration. Guidelines and Policies set forth here within should be incorporated in our Zoning Bylaws. Refer to the Zoning Regulations for specifics; e.g., for Uses Prohibited see Zoning Regulations Section 204.

In order to attain these objectives, it is the policy of the people of the Town of Windham to:

1. Assure that the health, safety, education and housing needs of the community will be adequately fulfilled.
2. Encourage development that will ensure our social and economic well being and preserve and protect our natural resources, ridgelines, and headwaters.
3. Prohibit incompatible, uncoordinated, or uncontrolled development, which would result in adverse environmental impact, or undue increased in population which could cause

unreasonable demands on the Town's ability to provide public services, or result in unsafe and unhealthy living conditions for the people of Windham.

4. Identify and conserve both natural and man-made resources that have significant value to the citizens of Windham, such as mineral deposits, prime agricultural lands, water supplies, forests, significant fragile natural resource areas, significant views, vernal pools, forest districts and public facilities and infrastructure.
5. Appreciate the headwaters contained within the Town, the value of headwaters to both the Town and the surrounding communities and the need to protect headwaters for present and future generations.
6. The Town should remain alert for indications of unsuitable growth and anticipate actions that will be necessary to address the impacts.

### **C. STATE REQUIREMENTS**

As required in the State Planning and Development Act (Title 24 V.S.A., Chapter 117), this Plan is based on several studies, including an analysis of current trends and probable social and economic consequences. Consideration was also given to population and employment characteristics, housing needs and types, patterns and rates of growth, efficient use of energy and development of renewable energy resources, classes of use of land, community finances, history, land suitability, and the location of future growth. The Plan contains all eleven required elements, addresses each of the goals stated in 24 VSA Section 4302, and is compatible with the Windham Regional Plan and with the approved plans of other towns in the region.

This Plan became effective upon adoption by the Selectboard after required public hearings held first by the Planning Commission and then by the Selectboard. As required by law, copies have been sent to bordering towns, the Windham Regional Commission, and the state Agency of Development and Community Affairs for review and comment and to any community or interested group or organization requesting a copy prior to the first hearing.

Under Vermont law, a town plan expires five years from the date of adoption. Thus the Town of Windham must review its Plan, revise where necessary, and readopt or replace it every five years.

### **D. ROLE OF THE TOWN PLAN**

The Town Plan is a blueprint to both elected and appointed town officials, citizen boards, state and regional agencies, regulatory boards and commissions, developers, and residents in fulfilling the intended future condition of the Town. The Town Plan is not meant to discriminate for or against any segment of the Town's population, present or future, but rather to protect all citizens and allow for orderly growth. Under the State Planning and Development Act, a Town Plan also provides the policy foundation for implementing bylaws such as zoning. No bylaw or amendments thereto may be enacted unless the town has a duly adopted plan. Town Plans also serve as a source of information for which to pursue more detailed studies.

The Town Plan is unique in Vermont in that it also serves a role in state regulatory proceedings. For example, Act 250 requires development projects to conform to the Town Plan. Other state proceedings for utility and road projects must also consider the impact on the Town Plan.

Therefore, although the plan's recommendations may be for the long term, they shall also be used in a decision-making process at any time.

#### **E. INTERPRETATION OF THE TOWN PLAN**

Throughout the text of this Plan many of the policies and community action statements include imperative verbs. "Should" or "may" means that a requirement is encouraged but not mandated, whereas "shall" or "must" means that the Town intends that a requirement is accomplished. "Prohibited" means the subject is forbidden.

#### **F. ORGANIZATION OF THE TOWN PLAN**

The Town Plan is divided into chapters which contain descriptive material and policies concerning natural resources, energy, land use, community utilities/facilities and services, transportation, historic/recreational and scenic resources, housing and economic development.

Each chapter includes Policy Statements and in some instances standards which help define the direction the Town will take and Actions which provide the Town with steps which will make implementation of policies and standards possible.

## **CHAPTER II COMMUNITY PROFILE**

### **A. HISTORIC OVERVIEW**

The Windham School Club of 1967 prepared a document entitled “The History of Windham, Vermont,” by James H. Upham with a forward by Raymond A. Beardslee. “Excerpts from Historical Manuscripts written by Asahel Upham in 1902 and 1905.” The following is a further abstract of these histories.

This manuscript history of Windham, Vermont, unsigned and undated, has long been preserved among the records of the Town. It was found between the front cover and the flyleaf of Volume I of the land records when Harry Hall became Town Clerk in 1946.

The Town of Londonderry, which embraced Windham, was chartered by the State of New York on February 13, 1700. It contained 84,590 acres. The first settlers came in 1774, three of the first five settlers located in the Windham territory. They made a small clearance and prepared for their family to return the following year. They returned to Londonderry to spend the winter. The records note that the first log cabin was built and a saw mill located at so-called “Derry Pond.” Lumber for two houses was cut, but a fire destroyed the mill and lumber. Records of the settlements to 1793 are nearly all lost.

In 1795, a petition was presented to the Vermont Legislature to divide the Town of Londonderry to make a new town out of the eastern part. On October 22, 1795, an act passed in the legislature incorporating this new town of 16,870 acres which was called Windham.

In 1800, Windham had a population numbering 363. By 1810 the population had grown to 782, rising to 931 people in 1820. In 1830 the population was 847 and it continued to decrease to 757 in 1840 and 763 in 1850. During this period, the Town was dependent on its local merchants, saw mills, blacksmith shop, farming, grist mills, talc and marble mining, and sheep farming. The towns people begun building a Meeting House in 1802 and finished it in 1825. Today, this historic structure continues to satisfy the needs of the Town. Without easy travel modes, the Town was a typical rural area in which neighbors depended on each other. Several schools and churches were established.

The people of Windham encouraged education. Records show that the first formal school meeting was in 1796 in a log barn. In 1801, a decision was made to build a school. At 22 feet squared, the first school cost \$172.50. The record says “It cannot be said that Windham has raised no literary men.” Let the record show “that 13 ministers went forth from the Town, and 2 physicians. Women, likewise have furnished many teachers, missionary workers, writers who have graced the columns of literary periodicals.” Other school buildings followed.

A description of a “desirable town community” included these words:

“A town consisting of a due mixture of hills, valleys, and streams of water, well fenced and cultivated, the roads and bridges in good repair, decent inns for the refreshments of travelers and for public entertainment. Manufacturers of a suitable proportion of handicraft workman and two or three traders. A physician and a lawyer. A clergyman of good understanding, candid disposition and exemplary morals, not a metaphysical nor a polemic but a serious, practical

preacher. A school master who should understand his business and teach his pupils to govern themselves. A decent Musical Society, no intriguing politician, horse jockey, gambler, or sot. Such a situation may be considered as the most favorable to local happiness of any which the world can afford.”

It concludes further with:

“Nearly all have comfortable dwelling with the property enough to procure necessities and even some luxuries. We are shielded from many of the distracting elements and destroyer influences which are working the ruins of older towns. We are surrounded by fortifications (hills and valleys) which have been raised by the hand of the Almighty which will forever exclude the idea that our Town will become the theatre of railroad scenes or that she will be noted for Manufacturers. Her glory depends upon the general intelligence of her town’s people.”

## **B. GEOPGRAPHIC OVERVIEW**

The Town of Windham is comprised of three areas: North Windham, South Windham, and West Windham. The Town is located in a north/south orientation, between Route 11 to the Northwest and Route 30 to the South. A road running north/south through Town provides the major access to and from the community. Route 121 runs east/west from Route 11 to Grafton along the northern part of the Town. Route 121 is blacktopped on the western portion and a gravel road to the east. The intersection of Route 121 and Windham Hill Road is locally known as Lawrence Four Corners.

The major entry and exit routes are steep inclines, rising to the Town centers. The Town is at a relatively high elevation (all of Windham is above 1,500 feet) but even so, the surrounding areas to the east and west of the Town centers are still at higher elevations, with settlement concentrated in the “valley” running north and south. The result of this geography is that the main concentration of homes is located along this corridor with the outlying areas concentrated into large woodland areas on high rising land, often with ledge rock subsurface.

The elevation of the land gives rise to several headwaters which flow downstream to join the larger tributaries. Several large in-stream ponds have been developed and were used for waterpower. There are also wetland areas, many resulting from beaver activity, which are still present today. The western part of Town rises sharply up Glebe Mountain.

While much of Windham had at one time been cleared to an open landscape, much of the land has returned to a forested state. There are deposits of talc and marble, which at one time were mined but these operations have since been discontinued. An area in the valley of West Windham has long been used for farming and is currently being converted from milk production to orchards. Other suitable farm areas have been discontinued. A large potato farm was converted to a 9-hole golf course with a clubhouse during the 1960s and has since been expanded to 18 holes.

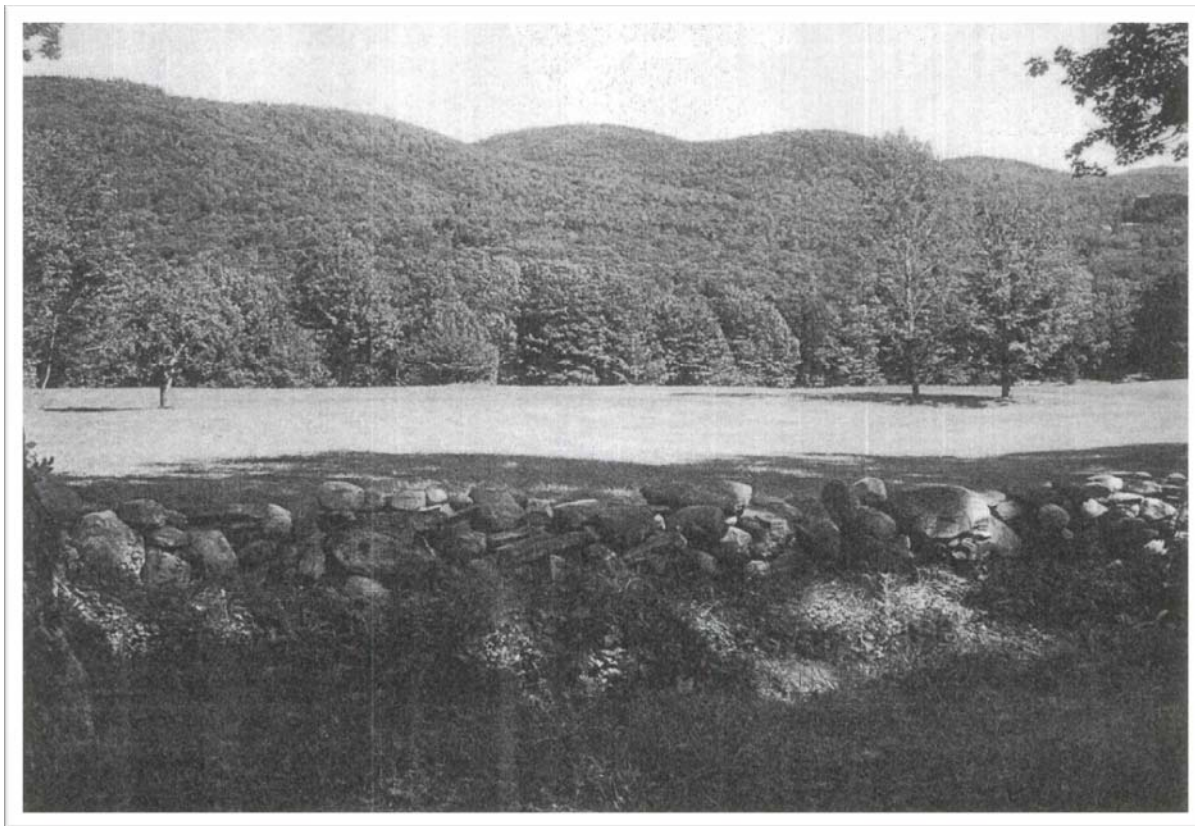
The topography of the Town does not lend itself to heavy through-traffic, nor does it attract large commercial or industrial development. A small private ski facility did operate in Windham during the 1960s and 1970s, however it has since been closed and most equipment associated with its operation has been removed.

### C. HISTORIC REGISTRY

Windham Village received National Register of Historic Places designation in 1984. (ref. U.S. Dept of Interior – National Registry of Historic Places). The Nomination Form narrative includes the following fragments drawn from throughout the document; the full text of which can be seen at [www.windhamvt.info/historicdesignations](http://www.windhamvt.info/historicdesignations):

“In general context Windham preserves much of its early character, unaffected by modern development. . . . Overall, Windham is a rare and pristine place that has evolved to the present without losing its image of the past.”

“Well-preserved, wood frame, vernacular Greek Revival structures dating from the mid nineteenth century predominate and are positioned in a linear pattern amidst an environment of wooded and open hillsides and breathtaking views.”



Light House (#3); View looking east; Photograph 3

“It is distinguished by a large number of fieldstone terraces and fences and a number of impressive maple trees stand along the little traveled roadside.”

“Windham is fairly remote and isolated from the main developments of the lowlands surrounding it. The Town is thickly forested with both hard and soft woods spreading out over what were once open fields. A number of meadows remain open, however, particularly to the east of the district and do much to preserve the village’s early agricultural character.”

“Windham village is a rare and pristine example of an isolated, rural, nineteenth century hilltop village. (The Town of Windham has one of the highest altitudes of any locale in the state.) While similar Vermont villages have either been abandoned during the late nineteenth and early twentieth century’s and are now a collection of wooded cellar holes, or have suffered the detrimental consequences of the burgeoning tourist industry in Southern Vermont. Windham remains unaffected. Its small collection of vernacular Greek revival wood frame residences, later complimentary early 20<sup>th</sup> century residences, barns and a church and siting amidst a pastoral and wooded natural environment, honestly epitomize an historic northern New England agrarian village.”

Lucy Wood writing in Abbey Hemenway’s Vermont Historical Gazetteer in 1877 sums up Windham’s preceding pastoral years when she states: “There are few (in Windham) who are wealthy, and not many who are poor. They have enough to be comfortable and something to spare for the support of public institutions. There are few mechanics, but we live mostly by farming.” This description is truly reflected in the village buildings with their simple trim, and unpretentious appearance –“a rare symbol for the state and the nation of a golden, pre-industrial era.” “The town has been relatively free from 20<sup>th</sup> century intrusions.”

#### **D. POPULATION**

The 2010 US Census reported Windham with a population of 419 residents. The Town ranks as the fourth smallest town in the Windham Region, which encompasses 27 towns. Table 1 illustrates the decennial populations beginning in 1900. After experiencing a decrease of over 50% during the first half of the 20th Century, Windham began to experience population growth. From 1970-2010, Windham’s population has more than doubled.



**Table 1: Windham Population Trends**

<i>Year</i>	<i>Annual Population</i>	<i>Percent Change</i>
2010	419	28%
2000	328	31%
1990	251	13%
1980	223	28%
1970	174	29%
1960	135	-8%
1950	146	-20%
1940	183	-28%
1930	254	-3%
1920	261	-24%
1910	345	-3%
1900	356	-6%
1890	379	-29%
1880	536	-1.5%
1870	544	-20%
1860	680	-11%
1850	763	+8%
1840	757	-10.6%
1830	847	-9%
1820	931	+19%
1810	782	+83%
1800	427	NA
1791	NA	NA

(Source: U.S. Census, UVM Center for Rural Studies)

Population trends are of interest in projecting future housing, facility, and service needs. One method of predicting population trends is to assess demographic trends over the past two decades and make assumptions in regards to future fertility, mortality, migration trends, and group quarters population. These projections are subject to a degree of uncertainty because it is impossible to predict future trends, especially those related to migration. The population projections for Windham are shown in Table 2. The data suggest that Windham will continue to experience a steady rate of population growth in the immediate near term.

**Table 2: Windham Population Projection 2000-2015**

<i>2000 US Census</i>	<i>2005 Projection</i>	<i>2010 Projection</i>	<i>2015 Projection</i>	<i>% Change 2000-2005</i>	<i>% Change 2005-2010</i>	<i>% Change 2010-2015</i>
328	351	370	393	7%	5%	6%

(Source: VT Department of Aging & Independent Living, MISER Population Projections 2003)

**Table 3** shows Windham's growth as compared with data from neighboring towns in Windham and Windsor Counties. Windham was the fastest growing town when looking at the percent change in the population, and all of the neighboring towns but Chester had smaller increases in

the actual population numbers than Windham. It should be noted that from 2000 to 2010 Windham's actual population growth was from 328 to 419, an increase of 28%. The decade from 1990 to 2000 had growth of 31%. In the absence of any real change in the commercial or industrial profile of the community over those 20 years, this cannot be considered the result of economic development. The fact is that Windham has attracted this growth by virtue of its quiet and pristine rural beauty. The growth has been due to a fairly constant trend of seasonal homeowners becoming full time residents and to new landowners building permanent homes. The years 2000 to 2010 have shown a marked increase in the number of residents aged 45 – 64. (Table 4)

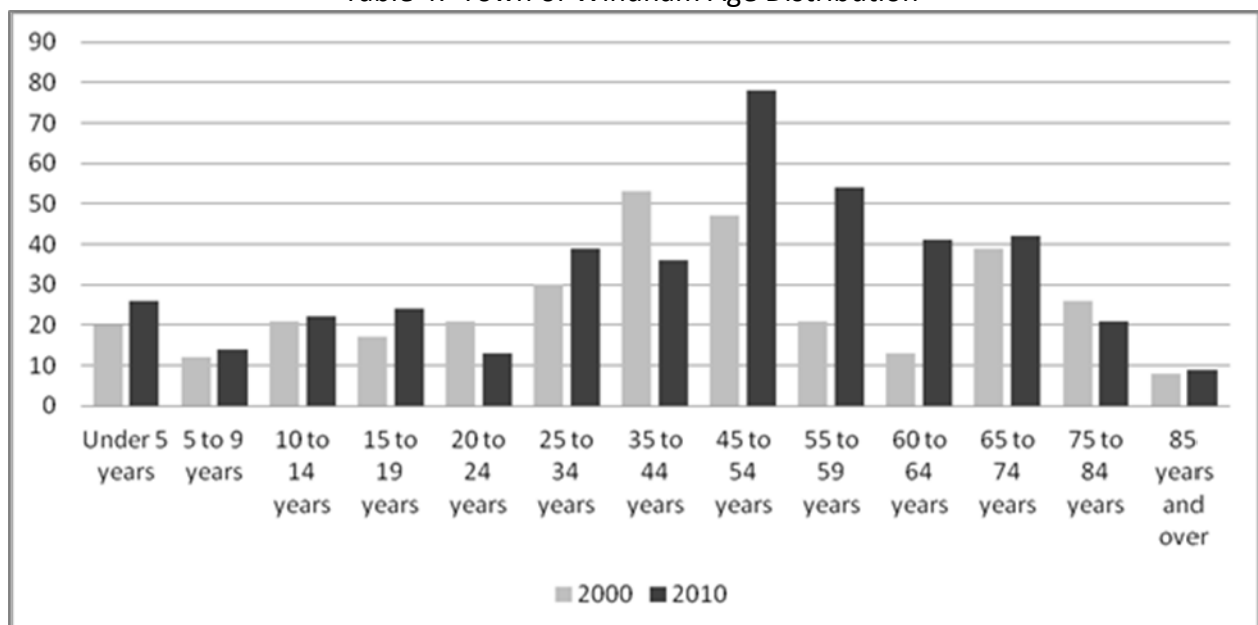
**Table 3: Population Trends in Nearby Towns**

<i>Town</i>	<i>2000</i>	<i>2010</i>	<i>Percent Change</i>	<i>Actual Change</i>
Windham	328	419	28%	91
Londonderry	1,709	1,769	4%	60
Jamaica	946	1,035	9%	89
Townshend	1,149	1,232	7%	83
Grafton	649	679	5%	30
Chester	3,044	3,154	4%	110
Andover	496	467	-6%	-29

(Source: 2000 & 2010 U.S. Census, UVM Center for Rural Studies)

**Table 4** shows the age distribution of Windham residents is changing over time, reflecting two population trends. The more dramatic of the two is the aging of the Baby Boomer cohort, an unusually large segment of the United States' population who were born following World War II. They are now approaching the ages of 50 to 70. The second trend is the growing proportion of residents 65 years of age and over. They currently represent approximately 17% of the town's population, a number sure to grow significantly over time as the Baby Boomers continue to age. Also evident in this data is the decline in younger (ages 20-24) and middle (ages 35-44) segments.

**Table 4: Town of Windham Age Distribution**



(Source: 2000 & 2010 US Census)

## E. HOUSING

Windham had a total of 396 housing units in 2010. Table 5 provides a breakdown of the number of housing units by type existing in the given year. According to the US Census, over the last twenty years, Windham has consistently had more seasonal units than owner occupied units although the gap is closing. Annual Town Reports provide further evidence of the fact that the majority of homes in Windham are for seasonal use. Table 6 shows the distribution of parcel types in Windham and the number of parcels with vacation homes have historically outnumber the number of parcels classified as residential. Data for 2012 indicates Windham is increasingly becoming a town of full-time residents.

In 2010, of the 187 occupied housing units, 89% were owner-occupied, with the remaining 11% being renter occupied. The number of owner occupied and renter occupied housing increased from 1990 to 2000 and from 2000 to 2010. This is an indication that there was growth in the year round residential population of the town. From 1990 to 2000 there was a decrease and then from 2000 to 2010 an increase in seasonal housing.

**Table 5: Housing by Unit Type**

<i>Unit Type</i>	<i>1990</i>	<i>2000</i>	<i>2010</i>	<i>% Change 1990-2000</i>	<i>% Change 2000-2010</i>
Owner Occupied	86	126	167	47%	33%
Renter Occupied	15	24	20	60%	-17%
Seasonal	198	182	198	-8%	9%
Vacant	35	22	11	-37%	-50%
Total Units	334	354	396	6%	12%

(Source 1990, 2000 & 2010 U.S. Census)

**Table 6: Parcel Ownership**

<i>Parcel</i>	<i>1997</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2012</i>
Residential	121	117	126	128	183
Vacation Home	209	226	222	225	183
Mobile Home	19	18	18	16	14
Woodland	152	144	143	143	132
Commercial	n/a	8	7	7	6
Farms	3	3	3	2	3
Other	17	7	7	7	-

(Source: Windham Town Plans and 2004 & 2012 Windham Town Report)

Windham is predominantly a community of single-family detached homes. Table 7 shows the number of housing units by the number of units in the structure.

**Table 7: Number of Units in Structures**

<i>Units in Structure</i>	<i>Actual Number</i>	<i>Percentage</i>
1-unit, detached	324	89%
1-unit, attached	2	0%
2 units	6	2%

3 or more units	10	3%
Mobile Home	15	4%
Boat, RV, Van, etc.	9	2%

(Source: 2006-2010 American Community Survey 5-Yr Estimates)

## **F. ECONOMY**

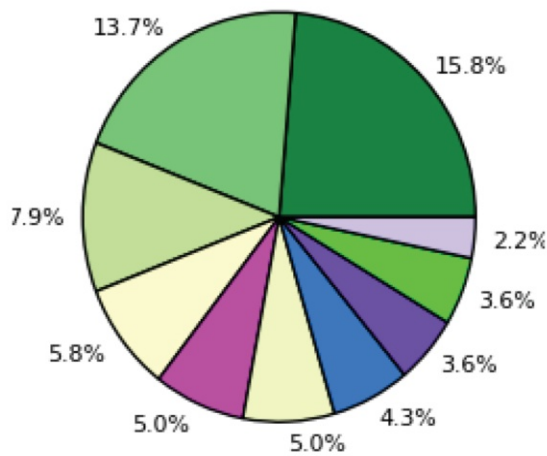
At the time of the 1990 Census, 96 Windham residents aged 16 and over were employed in the regional work force, compared to 178 in the 2000 Census, and 285 in the 2010 Census. Most of this increase is likely a reflection of the increased population in the Town over that period.

Windham residents are employed in a variety of industries. The 2000 Census indicated that the largest percentage (26%) of Windham residents were employed in the education, health and social service fields. For 2012, the Vermont Department of Labor reported a figure of 29%. (For further discussion of this subject see Chapter X of the Plan: Economic Development.)

**Figure 1: Place of Work** (Source: US. Census OnTheMap, <http://onthemap.ces.census.gov/>)

Percentage of Job Counts by Town, 2011

Legend

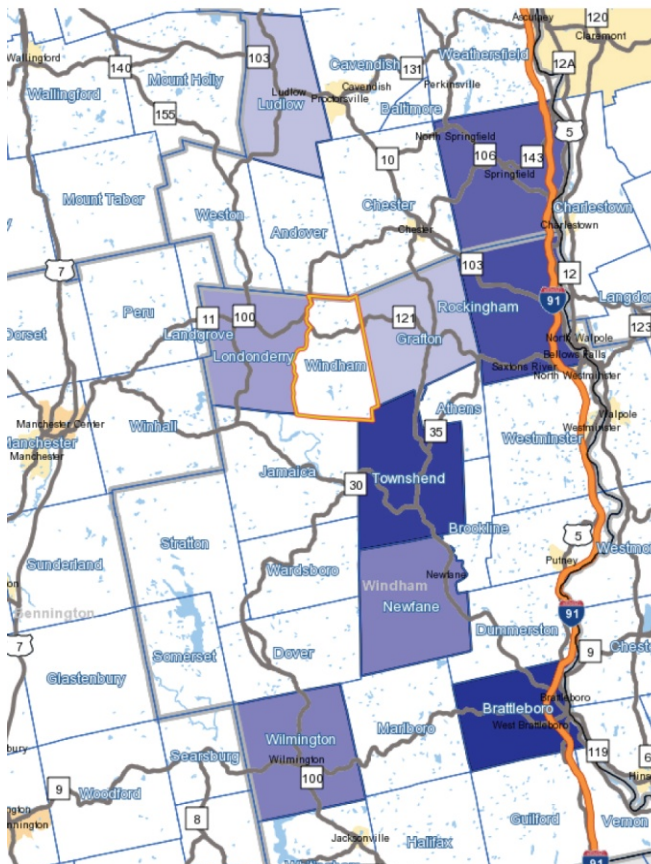


Note: Jobs in All Other Locations (33.1%) are not shown in chart.

	Count	Share
All County Subdivisions	139	100.0%
Brattleboro town (Windham, VT)	22	15.8%
Townshend town (Windham, VT)	19	13.7%
Rockingham town (Windham, VT)	11	7.9%
Springfield town (Windsor, VT)	8	5.8%
Newfane town (Windham, VT)	7	5.0%
Wilmington town (Windham, VT)	7	5.0%
Londonderry town (Windham, VT)	6	4.3%
Grafton town (Windham, VT)	5	3.6%
Ludlow town (Windsor, VT)	5	3.6%
Rutland city (Rutland, VT)	3	2.2%
All Other Locations	46	33.1%

Job Counts on the Map by Town 2011

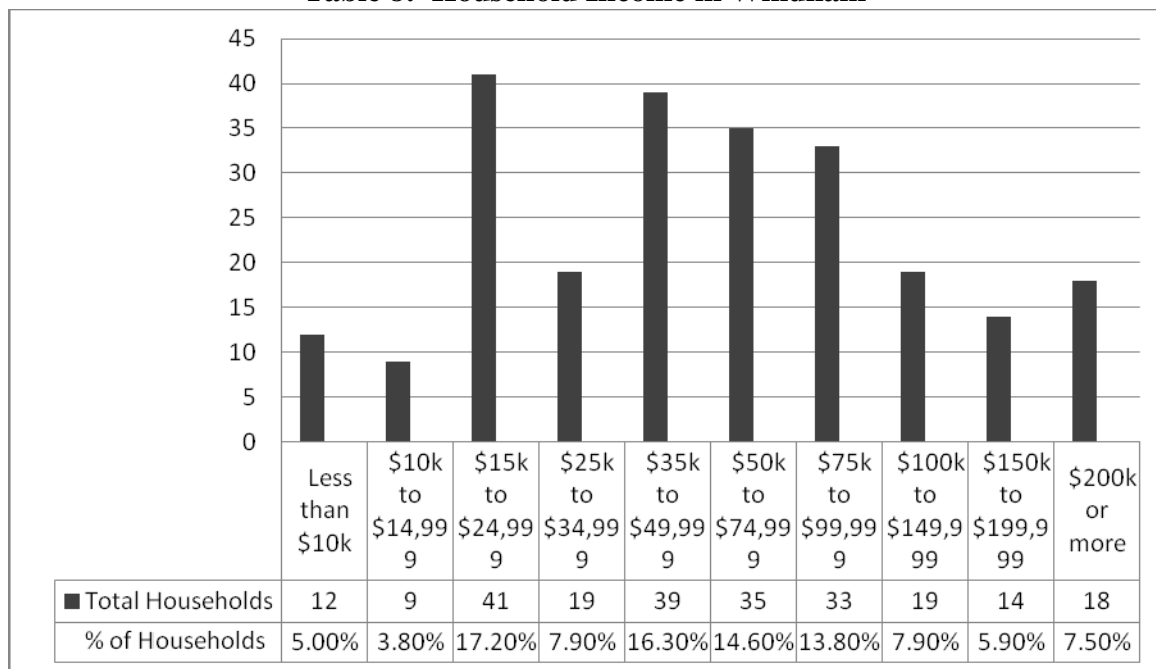
Legend



The Vermont Center for Geographic Information's website shows that the median household income in Windham, adjusted to 2009 dollars, rose from \$27,441 in 1979 to \$48,060 in 1989, then declined to \$40,141 in 1999, and rose back up to \$42,750 in 2009.

Table 8 shows the greatest percent (17.2%) of Windham households earn between \$15,000 and \$25,000, and a larger percentage of households (44.7%) fall in the combined income brackets between \$35,000 and \$100,000. Data from the 2005-2009 American Community Survey 5-Year Estimates reveal there has been an increase in the number of residents falling below the poverty level, with 10% of Windham residents below the federally defined poverty status in 2009 compared to 6.3% of the population below that income level in 1990.

**Table 8: Household Income in Windham**



(Source: 2006-2010 American Community Survey 5-Yr Estimates)

## **CHAPTER III COMMUNITY UTILITIES, FACILITIES AND SERVICES**

Community utilities, facilities and services are the infrastructure provided by the Town of Windham, or provided in cooperation with the Town, for the health, safety, benefit and enjoyment of the general public. These include municipal government facilities, emergency services, schools, solid waste disposal, and recreational facilities.

### **A. TOWN GOVERNMENT AND FACILITIES**

#### **1. Government**

The official business of the Town is conducted at the annual Town Meeting held in March and at occasional special Town Meetings. The three-member Selectboard conducts most of the regular business of the Town between Town Meetings. All elected officials are chosen by ballot and, with the exception of education items which are voted on at the appropriate school district meeting, the other items on the Warrant are voted on at the Town Meeting. The Town functions through the active participation of its residents and volunteer groups. Residents serve on boards and committees. Various ordinances and bylaws are in force in Windham, including, but not limited to the Zoning Regulation and Traffic Ordinance, Dog Ordinance and Road Ordinance.

#### **2. Facilities**

The following facilities are owned by the Town of Windham (see Utilities and Community Facilities Map for locations):

- **Town Office** - The Town Office is located on Windham Hill Road, adjacent to Windham Elementary School. It is a new building that was erected in 2001. In addition to housing the Town Clerk and the Town Treasurer, the Listers have an office which they share with the Zoning Administrator, Planning Commission, and Zoning Board of Adjustment. The Selectboard's office also has meeting space that is used by the various boards.
- **Town Garage** - The Town Garage is located on Windham Hill Road. It houses the town highway maintenance equipment. A covered salt and sand shed is also located on the property.
- **Windham Meetinghouse** - The Windham Meetinghouse is located on Windham Hill Road. Built in 1802, the Meetinghouse contains the Town Hall which is owned by the Town and the Congregational Church. The Meetinghouse is located in the Windham Historic District which is on the National Register of Historic Places.
- **Windham Town Library** - The Windham Town Library is located within the Windham Meetinghouse. The Library offers programming for both adults and children. Membership is free and books and videos are available for borrowing. It is open from 3-5 P.M. on Wednesdays and during the Windham Day Camp. The Library offers many programs including a Swap Table, reading group, knitting class, strength building and yoga classes and serves as a community meeting place. In 2013, the library participated in a statewide grant program to bring high speed internet service to Vermont's schools and library at a reduced rate. This installation was a precursor to the entire community having high speed internet service.

- **Town Cemeteries** - The Town maintains cemeteries, each under the supervision of a separate cemetery commission. There are four cemeteries in Windham: Center Cemetery, North Windham Cemetery, West Windham Cemetery, and Woodburn Cemetery.
- **Windham Elementary School** - The Windham Elementary School is located on Windham Hill Road. It serves Pre-Kindergarten through Grade 6 and has two classrooms, an auditorium, and offices. (Windham's school is designated as a remote school.)

**Policy 1: Provide as efficient, effective, and convenient municipal services as is possible keeping within the financial capabilities of the Town.**

*Actions*

1. Proactively assess the evolving needs of Windham concerning its current Utilities, Facilities and Services. Request the Windham Select Board appoint a committee to assess the changing needs of the Town as relates to the Windham Elementary School, Town Meeting House, Town Garage and Volunteer Fire Service.
2. Promote volunteerism and recruit to fill vacancies on Town committees as appropriate.
3. Continue to evaluate and strengthen local government with technical assistance from appropriate state and regional agencies.
4. Encourage the use of the Windham Elementary School facility by community groups.

**Policy 2: Maintain library services.**

*Actions*

1. Provide necessary funding to the Windham Library so that the Library can meet the State of Vermont's minimum standards.
2. Maintain a public access internet station at the Library.

**B. COMMUNITY SERVICES**

**1. Solid Waste Disposal, Recycling, and periodic Hazardous Waste Removal**

Windham is a member of the Londonderry Group Solid Waste District which includes the towns of Landgrove, Londonderry, Peru, and Weston. Town residents utilize the Waste Disposal Center in Londonderry located on Route 100 North. Permits are obtained and fees are paid at the Waste Disposal Center.

**2. Education**

Windham is a member of the Windham Central Supervisory Union, which includes the towns of Jamaica, Townshend, Newfane, Brookline, Marlboro, Wardsboro, and Dover, and is also a member of the Leland & Gray Union. Middle and High School (grades 7 through 12) are provided at Leland & Gray Union High School which is located in Townshend.

Windham Elementary School provides education for Pre-kindergarten through Grade 6. An addition to the school was completed in 1996. The population at the school has generally remained between 18 and 32 students. No significant change in the student census is projected and therefore expansion of the facility is not anticipated to be required.

**3. Child Care**



According to the 2002 Windham County Vermont Child Care Needs Assessment, Vermont has a large percentage of women in the workforce. If this trend continues it is possible that there will be an increased need in the community for child care.

As of August 2013, the Vermont Department for Children and Families website reported that there was only one registered or licensed child care facility in the Town of Windham, the Windham School Pre-K Program. Child care facilities can be found in some of the towns that surround Windham including Grafton, Londonderry, Townshend, and Chester.

#### **4. Senior Services**

As a small, rural town, Windham depends on regional services to offer opportunities for its seniors. Some of the services that they can take advantage of include:

- **Meals on Wheels** – While there are no community dinners held in Windham, residents can take advantage of meals in the neighboring towns of Grafton, Londonderry, and Townshend. The Council on Aging for Southeastern Vermont (COASEV) also coordinates home delivery of meals by using volunteer networks that bring the meal to the individuals.
- **Transportation** - Local transit services are provided by CT River Transit. They provide transportation for Medicaid recipients; non-Medicaid medical transportation for life threatening conditions, and bus service for groups of people as long as 20% of the cost of the service is recovered from donations.
- **Housing** - The Smith Haven Home in neighboring South Londonderry is the closest subsidized housing facility, offering 24 units for the elderly. The West River Valley Senior Housing complex in Townshend was completed in 2007 with 24 units in affordable housing and 28 units for assisted living. Other senior housing opportunities are available in the Windham Region.

Senior Solutions also provides support services to seniors aged 60 years and older living independently. This organization can assist seniors in obtaining information on caregiver support, nutrition and legal services, transportation, housing, as well as many other services.

#### **5. Recreation**

Windham's recreational resources are predominantly based on its natural resources. There is a playground and an adjacent area that can accommodate field games such as soccer at the Elementary School. In July, the Windham Day Camp is operated for children ages 3 to 12 at the Windham Meeting House. Funding for the camp is provided by donations and camp fees. Other recreational facilities include the Tater Hill Golf Club which provides 18 holes of golf. There are five major ski areas (Okemo, Magic Mountain, Bromley Mountain, Stratton Mountain, and Mount Snow) that are located within 35 miles of Windham. School children are accommodated at some of the ski areas. Other recreational activities include hiking, hunting, fishing, trapping, snowshoeing, camping, ice skating, and snowmobiling on VAST trails.

#### **6. Fire and Emergency Services**

The Town of Windham is served by a voluntary fire department located in North Windham. A two-bay garage houses equipment consisting of two fire trucks and a water tanker. The Windham Volunteer Fire Company is a member of the Tri-Mountain Mutual Aid. Emergency services in Windham are provided by the Londonderry Volunteer Rescue Squad, Inc. Both are volunteer non-profit organizations which are funded through donations and fundraisers. The Town is part of the Enhanced 911 state service.

Windham also supports a small Emergency Management team of volunteers whose role it is to stay informed about emergency management methods for situations other than structure and wildland fires. Their role includes keeping the Town's Basic Emergency Operating Plan (LEOP) up to date; seeing that appropriate training opportunities are made available to team members and town officials; communicating with Emergency Management counterparts in nearby towns and the region and informing the community members regarding emergency management resources. The designated Incident Command Center is the Town Office, and the Elementary School and Meeting House are both designated Red Cross Shelters. Windham was an early participant in the Red Cross Community Shelter Initiative and has a trained group of volunteers to open and manage a shelter if needed.

## **7. Police**

Windham is served by the State Police and the Windham County Sheriff's Department which are on call for emergencies.

## **8. Health Services**

Healthcare services are available in nearby towns. Medical care is usually obtained at one of the area facilities including Grace Cottage Hospital in Townshend or the Mountain Valley Medical Clinic in Londonderry. The Mountain Valley Medical Clinic is a non-profit organization that is supported by its own fundraising, volunteers, and community stipends and fees. Other health services in the area include the Ellsworth Home Health Agency, Visiting Nurses Alliance and Health Care and Rehabilitation Services of Southeastern Vermont along with nearby regional hospitals in Springfield, Brattleboro, and Lebanon, New Hampshire.

## **9. Community Service and Education**

The Windham Community Organization (WCO) provides financial and other assistance to families experiencing short term needs and sponsors activities and education to encourage a strong sense of community. The WCO sponsors a bi-monthly newsletter informing all residents and non-resident subscribers of Town activities. The newsletter includes public service announcements, local news, personal profiles of town residents, articles relating to Windham's history and a calendar of town events.

## **10. Public Utilities**

**Electric:** Electric service in Windham is provided by Green Mountain Power (GMP).

The Vermont Electric Power Company (VELCO) maintains a major transmission line that runs north to south through Town near Windham's boundary with Grafton.

**Telecommunications:** There are two different phone companies providing service to customers in town, FairPoint (south of Windham Center) and VTel, (Windham Center and North Windham.)

As of 2013 both companies are well along in a major upgrade of their outside plant which includes the installation of fiber optic cable. A variety of “last mile” programs should see high speed internet service and improved telephone service throughout the Town by 2014.

**Cell Phone:** There are some areas of the Town that are able to utilize cell phone communications, but due to the hilly contours of the Town, this is not available to all residents and visitors.

**Policy 1: Maintain effective safety services.**

*Actions*

1. Continue to provide support to the Windham Volunteer Fire Company so that an effective fire protection and fire prevention system can be maintained.
2. Continue to work with neighboring communities to ensure adequate ambulance services for the Town.
3. Ensure necessary police services for the Town by periodically reviewing the police protection available to residents.

**Policy 2: Provide quality education while keeping within the financial capabilities of the Town through the stewardship of the School Board.**

*Actions*

1. Monitor population and school enrollment trends to address future needs in an efficient manner.
2. Plan cooperatively with the Windham Central Supervisory Union and Leland & Gray Union Middle and High School to prevent undue burdens on the schools and Town.

**Policy 3: Support regional efforts to provide affordable childcare.**

*Action*

1. Continue to allow state registered and/or licensed child care facilities serving 6 or fewer children as a permitted use of a single-family home in accordance with state law.

**Policy 4: Support the well-being and quality of life for seniors in Windham.**

*Action*

1. Provide information to community members of services available to seniors.
2. Insure that policies, regulations and ordinances are written to afford maximum protection of land values for all property owners.

**Policy 5: The development and provision of public and community utility facilities and services should be based upon projection of reasonably expected population increase and economic growth and shall recognize the limits of the town’s human, financial and natural resources.**

*Action*

1. Natural and cultural resource areas, as identified elsewhere in this Plan, shall be avoided in the location or routing of new power generation stations, distribution lines and phone lines and substations.

**Policy 6: The location of utility poles and transmission and distribution line routes shall be designed to minimize aesthetic impacts.**

*Action*

1. Use of appropriate support structures, appropriate conductor colors for the background and direct burial is encouraged.

**Policy 7: Advocate for communication and internet upgrades to the latest technology in Windham.**

*Action*

1. Communicate to the Public Service Board and providers expressing concerns over service in Windham.

**Policy 8: Promote efficient and environmentally sound solid waste disposal and recycling.**

*Action*

1. Support local recycling efforts, hazardous material collection, battery and electronics collection, etc.
2. Participate in Green-Up Day.
3. Position recycling bins in all public buildings.

**C. LOCAL EMERGENCY PLANNING**

The Town of Windham supports emergency planning and disaster preparedness. Planning and preparedness may help reduce the risk to life and health, the damage to public and private property and the environmental damage that often occurs as a result of a disaster. This encourages the Town to prepare calmly and realistically for likely emergencies; to know the location of resources and equipment that will be needed; to inform residents of the potential dangers and the ways to avoid these potential dangers; and to quickly arrange for help when it is needed.

With the problems resulting from Tropical Storm Irene and other recent storms it is incumbent on Windham to better understand how our mountains and high elevations wetlands and waterways help to protect our settled communities from unnecessary flooding and other damage. Our Forest areas retain water and retard run off thus acting as a flood deterrent that prevents even greater stormwater runoff.

**1. Hazardous Materials**

The Federal Emergency Planning and Community Right to Know Act (EPCRA) requires that when certain quantities of hazardous materials are stored at a facility, they must be reported to state and local officials. According to the 2003 list of Vermont's Tier II sites, the Windham Mine, Hamm Mine, and Town Garage are listed as storing hazardous chemicals at such a quantity to require reporting to the State and local fire department. Information about EPCRA can be found here: <http://www.epa.gov/agriculture/lcra.html>)

**2. Inundation Flood Hazards**

Windham participates in the National Flood Insurance Program (NFIP). Maps published by the Federal Emergency Management Agency (FEMA) in 2007 show flood information for town,

including Flood Hazard Areas. These are defined as locations that have a 1% chance of flooding in any given year (i.e., they are expected to be inundated by a 100-year flood).

NFIP is a Federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods. Participation in the NFIP is based on an agreement between the Town and the Federal Government that states if a community adopts and enforces a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the Federal Government will make flood insurance available within the community as a financial protection against flood losses.

According to the Flood Hazard Area Maps, the middle and south branches of the Williams River, Saxtons River, and Burbee Pond have areas in the 100-year floodplain. Flooding is a serious problem in Windham. The Town experienced extensive public and private property damage as the result of significant flooding over the period of July 21 through August 18, 2003, resulting in approximately \$700,000 in damages. The storm all but destroyed Route 121 and was so significant that the Town had to obtain financial aid from a local bank in order to subsidize the repairs. This disaster was declared a federal emergency and federal funding was provided for road assessment and repairs. (\$834,874 was provided Windham.)

Extensive damage was done to Windham's roads and culverts in August 2012 during Tropical Storm Irene. The southern end of Harrington Road was destroyed and almost all town roads sustained some damage. Although Windham received all but 5% of the \$718,667 spent on recovery, we continue to seek grants to enable us to upgrade culverts and bridges in order to meet new state requirements.

### **3. Fluvial Erosion Hazards**

In addition to inundation hazards, flooding can cause fluvial erosion hazards. While some flood losses are caused by inundation (i.e., waters rise, fill, and damage low-lying structures), most flood losses in Vermont are caused by "fluvial erosion," erosion caused by rivers and streams, which can range from gradual bank erosion to catastrophic changes in river channel location and dimension during flood events. The Vermont Agency of Natural Resources notes that NFIP "floodway" and "flood fringe" areas are often inadequate as an indicator of flood hazards, especially erosion.

Areas subject to fluvial erosion hazards, from gradual stream bank erosion to catastrophic channel enlargement, bank failure, and change in course, due to naturally occurring stream channel adjustments, can be identified and mapped in accordance with accepted state fluvial geomorphic assessment and mapping protocols. Windham should seek resources to determine fluvial erosion hazard areas associated with streams, such as the Williams and Saxtons Rivers, and augment the town's flood hazard area regulations to include fluvial erosion hazards. (For further information regarding management of area watersheds see River Corridor Plan for the Saxtons River Watershed, Sept 30, 2010 by Fitzgerald Environmental Associates and the Windham Regional Commission and Basin 11 Management Plan West River, Williams River, Saxtons River by Vermont Agency of Natural Resources, May 2008.)

There are open mine pits at the U.S. Talc/North Windham Talc Mine which have been subject to flooding. As a result of litigation among the current mine owner, the original Act 250 permit holder, the Town of Windham and one or more of its landowners, this hazard has been mitigated as of 2012. A state of the art system for flood control and fluvial diversion has been installed and is monitored and maintained both physically and electronically to standards set by the State of Vermont Dam Safety Department.

**Policy 1: Land subject to periodic inundation flooding and fluvial erosion hazards shall be limited to development which will not restrict, accelerate, or divert the flow of flooded waters and thereby endanger the health, safety, and welfare of the public during flooding.**

*Action*

1. Continue to participate in the National Flood Insurance Program.
2. Work to identify fluvial erosion hazard areas and add protections for them to the existing (inundation) flood hazard area regulations.
3. Work to preserve forested areas at higher elevations to protect settled areas.

**Policy 2: All new public and private roads and driveways shall be properly constructed so that they do not contribute to the damage of Town roads from run-off.**

*Actions*

1. Continue to enforce the Windham Road Ordinance.
2. Review the Ordinance and update as necessary.

**Policy 3: The Town will actively pursue emergency preparedness.**

*Actions*

1. Annually update the Local Emergency Operating Plan (LEOP) for the Town.
2. Adopt an all hazards pre-disaster mitigation plan.
3. Maintain the generator supporting the town office, which is a Red Cross Emergency Command Center, and the school, which is a Red Cross Shelter.
4. Pursue funding for a generator for the Meeting House and Congregational Church, which is a Red Cross Shelter.

## CHAPTER IV NATURAL RESOURCES

### A. LAND RESOURCES

#### 1. Forest Resources

Windham has abundant forest cover throughout the Town. The Town is fortunate that it retains several areas of large, unbroken forest. In 2001, Windham's citizens voted to amend the Windham Zoning Regulations to create four Forest zoning districts within the town. These areas are shown on the future land use map that is included in this Plan. It is the policy of the Town of Windham that land uses and development in these Forest Resource districts be limited to forestry, agriculture, recreation, and low density residential uses, as specified in the zoning regulation. Commercial and industrial\* uses other than those related to the foregoing are not permitted in the Forest districts. In the case of any ambiguity, State regulatory boards and commissions, including the Act 250 commissions, Public Service Board and Public Service Department, and other users of this plan, shall consider both the provisions of this Plan and the provisions of the Windham Zoning Bylaw when making determinations for the future use and development of the lands within the Forest districts.

The Town's forestland is managed by private landowners. The Stiles Brook Tract, currently owned by Meadowsend Timberlands, is one of the largest contiguous, privately owned parcels of forestland in Windham County. The parcel contains approximately 3500 acres in Windham and 1500 adjoining acres in Grafton. It is currently managed for long term timber production. Another accumulation of parcels on the west side of town totaling roughly the same amount is owned by McGraw Family Holdings. With so much forest land in private ownership, the challenge for Windham is to ensure the health of its forest ecosystems, water quality, scenic ridgelines, natural resources and wildlife while also sustaining the economic health of the forest industry.

With over 90% percent of the Town made up of forestland, careful consideration must be given to the sustainability of this resource in the town planning process. Further, it is important to note that as of 2013, 60% of Windham's land area is enrolled in Vermont's Use Value Appraisal Program. (see Table 9.) While it is important to track the resources or potential resources in each forest parcel, it is also critical to look beyond parcel lines and understand the forest landscape without divisions. Below are the important aspects that Windham's Town Plan is designed and written to protect:

- a. ***Wildlife Habitat*** - Diversity of forest type is essential in preserving wildlife habitats. It is important to evaluate existing wildlife habitats and to consider those in the forest planning process so as to avoid forest use conflicting with wildlife preservation. Special care must be taken to protect wildlife, including critical moose wintering areas, deer yards, bear and bobcat ranges, habitat of the endangered American Marten, beaver and other fur bearing animals, and a large number of upland songbirds, especially the endangered Bicknell's Thrush and other necessary wildlife habitat and endangered species. Knowledgeable hunters and wildlife professionals estimate that lands to the east of town contain more moose than any comparable area in Southern Vermont. Any development that endangers or adversely affects these and similar populations as

discussed in Paragraph A.5 is prohibited.

*(\*Throughout this Plan a commercial operation is defined as an enterprise that is carried on for profit by the owner, lessee or licensee; and industrial uses are defined as the processing, treatment and/or conversion of raw or semi-finished materials into a different form or state, excluding forestry and agricultural goods raised on the premises. ).*

- b. **Recreation*** - Windham's natural environment is a tremendous resource in regards to outdoor recreation. Residents have enjoyed the use of forest land belonging to many private landowners. Recreational use requires tracts of connected land. Windham's forested land offers recreational opportunities such as camping, wildlife viewing, hunting, and fishing. Informal and formal trails provide for camping, hiking, biking, skiing, snowmobiling, and other recreational pursuits.
- c. **Aesthetic Features*** - Scenic landscape is an important core resource for the town. Distance (foreground, middle, and background), topography (slope, ridgelines, contrasts providing shape and texture), forest cover, forest districts, ridgelines special features, visibility and protective screening are features that are essential to the well-being of the Town and its residents and must be protected.
- d. **Forest based Industry*** - Windham has a sustainable forest resource which can and does provide quality forest products. A forest-based economy supports employment and provides landowners with financial returns through planned timber harvesting. These interests are promoted and protected in the Forest district areas, where prohibited activities include structures above tree height and/or tall enough to require FAA lighting, mineral resource extraction, and commercial and industrial wind towers and meteorological towers. See Zoning Regulations Section 204 for additional uses prohibited which are specifically authorized and incorporated within this Plan.

## **2. Agriculture**

The US Department of Agriculture has identified soil types that are best suited to crop production based on soil quality, growing season and moisture supply. These areas, called prime agricultural soils, are likely to produce the highest crop yields using the least amount of economic resources and causing the least environmental impact. Windham has a very small area of prime agricultural soils but its residents have been successful at farming on the secondary agricultural soils.

Windham allows agricultural activity in any part of Town. Although agriculture is not extensive in Windham, the remaining agricultural areas are important resources that serve many essential functions including providing local seasonal produce and planting materials; providing open space, serving as an educational resource, and contributing to the rural character of the Town.

The largest active farming operation in Windham is the Dutton Farm, which has been a dairy farm for several generations, encompassing 230 acres. The farm continues under family ownership, and has been converted from dairying to the production of fruits and berries. Farming operations in Windham in 2013 include:



**Table 8: Farming Operations in Windham**

<i><b>Owner</b></i>	<i><b>Agricultural Products</b></i>
Corriveau	cattle, chickens, hay
Dutton	fruits, berries, hay
Lemay	hay
Partridge	sheep, rabbits, horses
Pease	Christmas trees
Merinoff	cows, bees, sheep, llama, poultry, exotic birds

(Source: Windham Planning Commission)

### **3. Use Value Appraisal Program (also known as Current Use)**

The Use Value Appraisal Program was established by the Vermont Legislature in 1977 in recognition that the high tax burdens placed on farm and forest lands was contributing to the rapid development of prime agricultural and forest lands across the state. The Current Use program allows farm and forest lands to be taxed on their resource production rather than their value for development purposes. The program includes a Land Use Change Tax as a disincentive to develop land. For forest land to be eligible, participating owners must have a minimum of 25 contiguous acres to enroll in the program (not counting the 2 acres surrounding any dwelling) and must manage the forest land according to the provisions of a 10 year forest management plan. Agricultural land has a different set of eligibility requirements; however, the land must be at least 25 acres, not counting the 2 acres surrounding a dwelling.

Table 9 indicates that there were 41 properties enrolled in the Use Value Appraisal Program in 2013 for a total of 10,450 acres, over half of the Town's acreage. Most of the land in the Current Use program is contained within the adopted Forest Zoning District, further supporting the desire to maintain these areas as rural and undeveloped.

**Table 9: 2013 Use Value Enrollments in Windham**

Number of Properties	Total Program Acres	Forest Acres	Agricultural Acres
41	10,450	10,264	186

(Source: VT Dept. of Taxes)

### **4. Soils and Topography**

Soils are one of the most important environmental factors that governs the use of land in rural areas. Soils are classified on the basis of structure, form, composition, and suitability for various types of development. Four characteristics are of primary concern when doing land use planning: bearing capacity, erodability, drainage, and resource value.

The Town's agriculture and forestry depends upon the availability of high quality soils in large, adjoining parcels. The Windham County Soil Survey has ranked soils in Windham. Approximately 1,130 acres are categorized as having important farmland soils with about 15 acres being ranked as prime soils. However, only 44% of the important farmland soils are located on lands that are classified as open. The majority of Windham's important agricultural soils are located along the Town's streams and brooks and major transportation routes, as shown

on the Earth Resources Map.

Forestry soils are important to maintaining the forest and timber resources that are a part of Windham's identity. Many activities, such as timber harvesting, tree farming and maple sugaring, are dependent on the presence of quality soils. Using USDA Soil Conservation Service soil data, soils in Vermont have been assigned a productivity class for application in the state's Use Value Appraisal Program. Windham's soils are predominantly classified as Site I, the most productive sites. Table 10 shows the breakdown of the percent of land area by each forest productivity site classification:

**Table 10: Forest Productivity Classes for Use Value Appraisal Program in Windham**

Site Classification	Potential Productivity (per acre per year)	Percent of land area
Site I	>85 cubic feet	54%
Site II	50-85 cubic feet	37%
Site III	20-49 cubic feet	6%
Site IV	<20 cubic feet	3%

(Source: WRC GIS)

The slope of the land is also an important determinant of development capability. Slopes of less than 8 percent are generally most suitable for building. The erosion potential of such slightly sloping land is low, its ability to absorb runoff is high, and soils are usually of adequate depth and composition for septic systems. Exceptions are extremely flat areas, some of which may be classified as wetlands, where drainage is poor. As slopes increase, the suitability of the land for development decreases. In areas of steep slopes, the velocity of runoff, and therefore the potential for erosion, increases. The ability of the soil to filter septic leachate is decreased.

Overcoming site constraints becomes increasingly costly. Slopes of 15 to 20 percent present extremely significant constraints and under certain conditions may not be acceptable for certain types of development. Commercial and industrial development are prohibited on slopes exceeding 20%. (Refer to Slope Map in Chapter XIV)

## **5. Wildlife**

Windham provides habitat for a wide diversity of plant and animal species. Windham's unfragmented forest land provides some of the most valuable wildlife habitat in the region. Fragmented habitat inhibits wildlife migrations to seasonal food sources, localized climate conditions (winter grounds), and habitat specific activities such as birthing young. Habitat Fragmentation can isolate breeding populations, prohibit sub adult dispersion and increase the impact of human interaction, all of which can seriously endanger specific species. Large blocks of habitat have an exponential benefit. One 1,000 acre tract is more productive than ten 100 acre blocks. A primary characteristic of habitat that is not fragmented is the absence of roads. Roads often are a barrier to wildlife movement and can be a cause of mortality. The impact of roads can vary with their type and intensity. A dirt road that is not maintained does not represent the same threat to wildlife as most paved highways for several reasons. Dirt roads tend to be narrower, necessitating lower speeds and lessening the chances of automobile-wildlife contacts. Narrow dirt roads in wooded areas also allow the tree canopy to extend over the road, thereby retaining a

greater degree of forest cover and habitat for many species of wildlife, particularly birds. Although vehicle traffic is less of a problem on these smaller roads, any travel route subjected to frequent unnatural compaction has the potential to disrupt the balance between prey and predator species for whom ground surface composition is a vital part of species preservation. Careful consideration of road placement and configuration is therefore one of the most important steps that can be taken to safeguard significant blocks of wildlife habitat.

In addition to the large forest blocks, other important wildlife habitat areas include the woodland, wetland, and surface waters in and around Burbee Pond. Abundant wildlife has been sighted in this area including, but not limited to beaver, bear, deer, moose, otter, mink, fox, fisher, Canada goose, osprey, blue heron, red-tail hawk, bald eagle, cormorants, and American bittern.

## **6. Earth and Mineral Extraction**

Windham has a history of mining activities with both talc and marble having been mined in the Town. Talc mining operations ceased in the mid-1980s. A green marble quarry, located at the end of Abbott Road and Wheeler Road, is also no longer in operation. Planned amended zoning regulations prohibit mineral resource extraction. (See Zoning Regulations, Section 204 for additional uses prohibited).

Inactive talc mine sites continue to pose health and safety hazards, not only on the property, but for neighboring properties as well. Flooding from the open pits may pose serious problems. (Refer to Emergency Management Planning Chapter III for recent mitigation steps.) In addition, unsecured mine shafts and abandoned equipment must be addressed by property owners and comply with all applicable state and federal regulations.

## **7. Ridgelines**

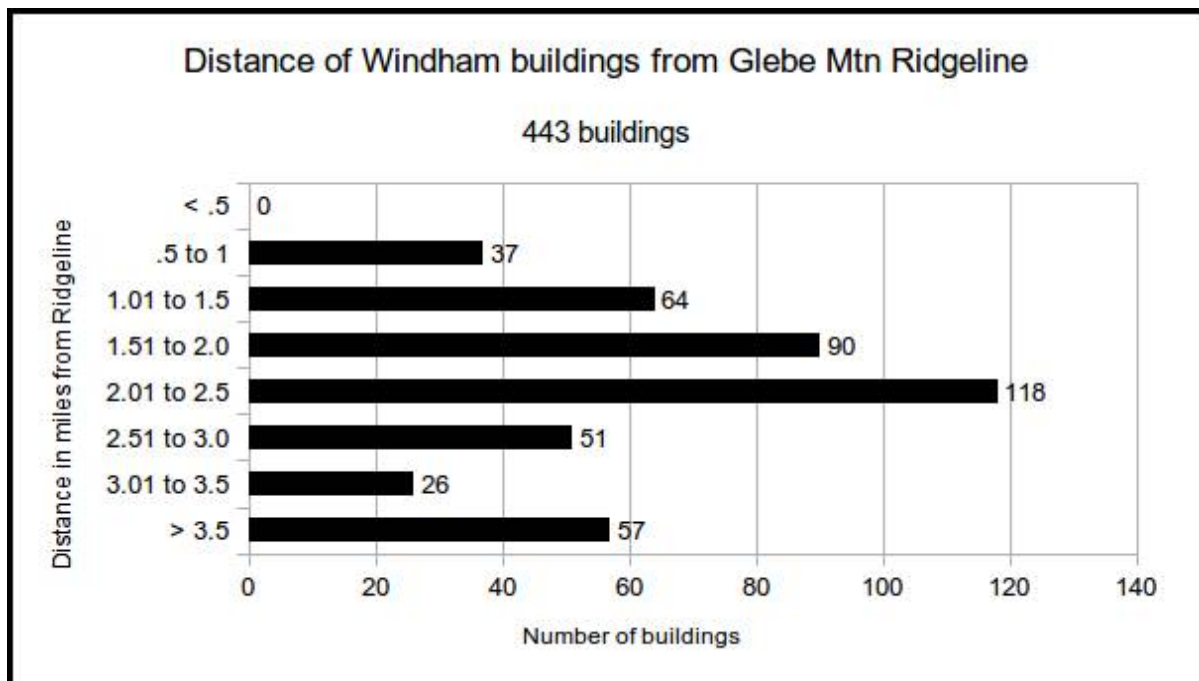
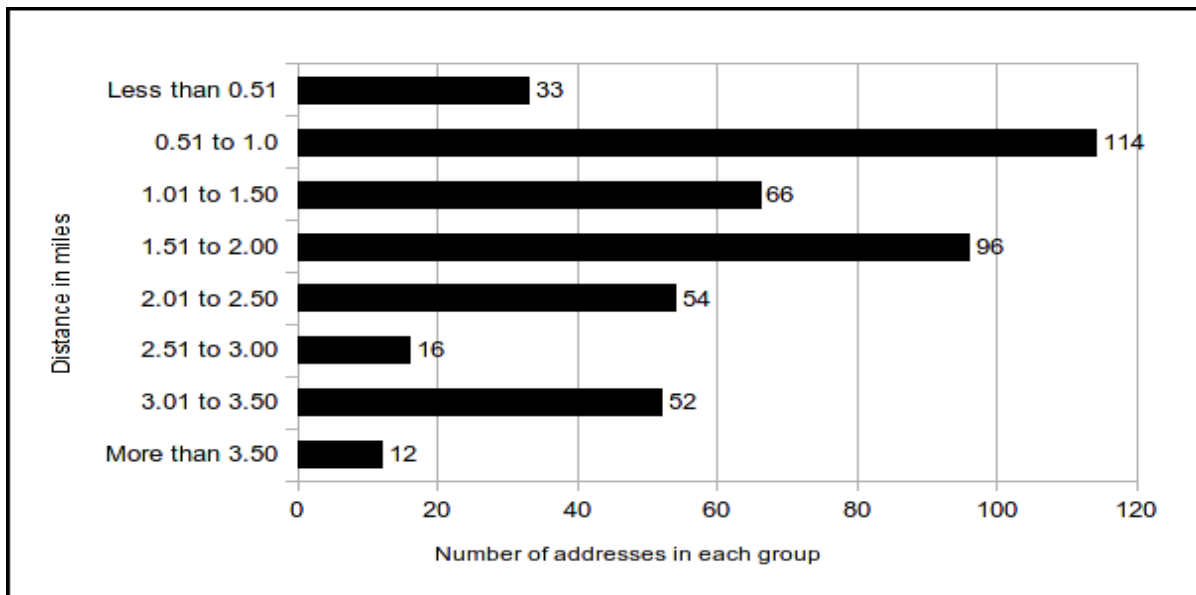
Windham's ridgelines contribute significantly to the scenic landscape of the town. Parallel north-south ridges run almost the entire length of Windham. The main north-south road, Windham Hill Road, is located in a high-elevation valley that runs between the two ridges. To the west of Windham Hill Road is Glebe Mountain which rises steeply in elevation. To the east of Windham Hill Road and south of Route 121 is a series of lower elevation hills that form a distinct horizon with many points of significant elevation and very steep slopes located in very close proximity to residences. (Reference Windham Settlement Graph below and Map 10 in Chapter XIV.) Both of these features, shown on the Utilities and Community Resources Map, form a forested backdrop for views from lower areas and also provide high elevations for viewing distant ridges. Settlement has occurred in harmony with this landscape. West Windham, South Windham, and Windham were settled on flatter terrain with views of the hillsides in the foreground.

All of Windham sits at elevations of 1500 feet or above. To the west of Town, Glebe Mountain reaches to a peak of 2900 feet while the highest points to the east barely reach 2500 feet. Traditional settlement has expanded along existing roads which are primarily located in the lower elevations in close proximity to the ridges. The Windham Meeting House in the Hamlet has a geodetic marker of 2000 feet, which serves to emphasize that the difference between the highest elevations in Town and the settlement areas is much less than in most other mountain communities. The narrowness of the valley results in uniquely close proximity of the settled areas to the steep slopes rising to the high points on either side.

The following two graphics give an appreciation of the number of residences in Windham at various distances from the highest points on the ridges east and west of Windham Hill Road. (For additional reference Map 11: Settlement Patterns Relative to Topography).

## **WINDHAM SETTLEMENT PATTERNS**

### **Distances of Windham buildings to the highest elevation points east of WHR**



Not only are these ridgelines highly visible from lower elevations in Windham, they serve an

important ecological function as headwater areas. The cumulative effects of development in these sensitive areas (which include significant destruction of the scenic beauty of the community, degradation of water quality, increased downstream runoff and flooding problems, destruction of roads and bridges, loss of habitat linkages, and erosion) would have a substantial impact on the character and environmental quality of Windham and the Region. Consequently, these areas referred to in graphic #1 above have been included in the Forest District to limit development and prohibit all commercial and industrial use except that which is already permitted in the Zoning Bylaw. (See Zoning Regulations Section 204 for additional uses prohibited.)

**Policy 1: Direct development away from unsuitable areas.**

*Actions*

1. Prohibit development in areas where the topography and soil conditions may cause contamination of surface, sub-surface waters or wells or failure of waste disposal systems.
2. Prohibit development on slopes of 20 percent or greater.
3. Minimize areas of earth disturbance, grading, and clearing of vegetation on slopes over 15%. Evaluate erosion and sedimentation control measures in areas where development occurs on slopes over 8% during Site Plan Review.
4. Only proven technologies for stormwater mitigation will be allowed.
5. Further delineate ridgelines and other visible high-elevation areas requiring protection.
6. Revise Zoning Bylaws to prohibit visible development and permit only allowable activities on ridgelines.
7. Prohibit development in areas of wetlands and vernal pools.
8. Prohibit development in rare and irreplaceable natural areas, areas with necessary wildlife habitat and/or critical wildlife populations, and areas with endangered species. (Reference Title 10 Section 6086(a)(8)(A).

**Policy 2: Enhance the economic viability of agriculture and forestry activity in Windham.**

*Actions*

1. Maintain the purpose of the Forest District primarily for forestry activities.
2. Work with the Vermont Land Trust, or other appropriate non-profit organizations to encourage the voluntary protection of productive agricultural, forest lands and critical natural areas. Techniques such as conservation easements or donation of land should be actively explored.
3. Continue to evaluate timber harvesting practices during the site plan review process to ensure that natural resources, including surface waters, wildlife habitat, wetlands, vernal pools, shorelines, streams and stream banks are protected.
4. Continue to allow agriculture in all districts in Town.
5. Encourage participation in the Vermont Land Use Appraisal Program to support the viability and maintenance of farm and forest land.

**Policy 3: Preserve and protect the natural scenic beauty and related natural resources in Windham.**

*Actions*

1. Site buildings and structures below the ridgelines so as not to intrude upon the skyline.
2. Create additional conditional use standards for the Forest District that will be designed to prevent erosion and sedimentation associated with stormwater runoff; to ensure that new

development allowable in the forest districts is sited and landscaped in a manner which limits the visual impact of ridgeline development; and to avoid adverse impacts to natural resources, including water quality and headwater supplies and streams, wetlands and vernal pools.

3. Amend the Zoning Regulations to require that all proposals for earth and mineral extraction include a site rehabilitation plan that ensures the future use of the land.

## **B. WATER RESOURCES**

### **1. Headwaters and Watersheds**

Headwaters within the Town of Windham are critical resources to the Town and the region and are intended to be protected by this Plan and the Town's Zoning Bylaws discussed in Section 2 below.

A watershed, also known as a drainage area, is a land area which collects precipitation and contributes runoff to a receiving body of water or point along the watercourse. Watersheds are delineated by identifying the highest topographic points in a given area, and determining the direction in which water will flow from these points. Land uses within a watershed can affect water quality. Because the drainage area of any given water body may extend beyond the Town's borders, inter-municipal coordination of land uses is essential to ensure effective management and protection of the water resource.

Lands within Windham drain into the West, Williams and Saxtons Rivers watersheds, with sub-watersheds including Cobb Brook, Turkey Mountain Brook, Tannery Brook, Stiles Brook, Willie Brook, Howe Brook, Saxtons River headwaters, South Branch Williams River, and Middle Branch Williams River (see Map 3: Watershed Map). These three watersheds are identified by the state Agency of Natural Resources, for planning and management purposes, as Basin 11. In fact, Windham contains many of the headwater areas of this basin. The Agency of Natural Resources adopted a Basin 11 Management Plan (available at: [http://www.watershedmanagement.vt.gov/planning/docs/pl\\_basin11%20Plan.6-08.pdf](http://www.watershedmanagement.vt.gov/planning/docs/pl_basin11%20Plan.6-08.pdf)). This was developed through a public process that inventoried uses and problems and developed strategies for maintaining or enhancing water quality; identified strategies to remedy problems, and was supposed to assign Water Management Types to maintain or attain desired water quality, but that part of the project was not completed. The Agency of Natural Resources, however, has been given the authority to assign types to watersheds with the support of the Town Government. (See discussion of the Tier system below.) Issues such as water quality, erosion control, stormwater runoff, deforestation and buffer loss, and flow regulation and flood control are addressed within the basin planning process.

### **2. Surface Waters**

The surface waters and vernal pools of Windham include lakes, ponds, rivers, streams, and wetlands (see Map 4: Natural Resources Map <http://windhamregional.org/images/maps/watershed/regionwaters36x48.pdf>) and represent a critical natural resource to the Town and its residents. Surface water resources serve many functions for a community and its region. Windham's surface waters provide for water storage, groundwater recharge and water supply which are critical to human and wildlife inhabitants of Windham as well as nearby towns.

Headwater streams and wetland areas are the birth place of our surface water resources. They constitute the greatest percentage of total stream length in an undisturbed river system. They are vitally important for providing clean and cold water, habitat, and food control; however, they can only provide such services if they are protected from disturbance. Headwater streams offer the greatest opportunity for interaction between water and land; and it is with this interaction that numerous biological, chemical, and physical processes are constantly occurring to clean storm water runoff. These are the processes which are responsible for maintaining water quality downstream. Windham's location at the headwaters of many of the areas brooks and rivers means that each headwater watershed in Windham plays a very important role in determining the water quality in the downstream, lower elevation areas of Basin 11. The downstream water quality is established here at the headwaters in Windham. Of particular note is the Cobb Brook watershed, a Class A1 stream by recognition of the State of Vermont. In the 1991 decision to reclassify Cobb Brook, it was noted that the Cobb water quality was among the very highest in the state and the level of sedimentation was among the lowest of streams in the state. Turkey Mountain Brook includes a spectacular gorge on its way downstream to Jamaica and encompasses another notable resource in Windham, namely Burbee Pond. Covering 50 surface acres, Burbee Pond is a source of constant wildlife sightings of Bald Eagles, hawks, osprey, otter, beaver, blue heron, deer, moose, mink, ducks, and geese. It is also a popular canoeing and fishing location. The upper reaches of the pond offer diverse wetland habitat, which supports this rich diversity of wildlife. Other critical surface water resources include Saxton's River, South Branch of Williams River, Middle Branch of Williams River, Howe Brook, Wiley Brook, Stiles Brook, and Tannery Brook.

The water quality of Windham's surface water is protected under the Vermont Agency of Natural Resources Anti-Degradation Implementation Procedure (<http://www.vermontwaterquality.org/www/Rules/101012VTANRDECInterimAntiDegradationImplementationProcedure.pdf>). The Policy establishes three tiers of protection for water resources. Tier I is described as the protection and maintenance of existing designated uses such as fishing, swimming, and/or aquatic biota, and the water quality supporting those uses. For all waters, a Tier I level of protection must be maintained and therefore existing uses may not be diminished. Tier II is a level of protection applied at locations where the quality of the water exceeds the applicable water quality standards, which is often the case in headwater stream and wetlands. Any lowering of Tier II water quality is prohibited unless it is necessary to support important economic or social development. Tier III protection is offered for waters of the most exceptional value, as previously noted for Cobb Brook.

All headwater areas above 2,500 feet are currently afforded the highest level of protection as they are classified as A1 waters according to the Vermont Water Quality Standards. Many headwater seeps and 1st order streams exist at lower elevations. These headwater areas can be just as sensitive and valuable as headwaters above 2,500 feet, but are not by regulation afforded the same level of protection by the ANR as those higher headwater areas. These lower elevation headwater areas may have water quality that is far greater than the minimum Class B standards and therefore the Town concludes they shall be afforded the higher level of protection. The Vermont Agency of Natural Resources now has the ability to reclassify waters provided the reclassification is supported by the Town and by scientific findings.

### **3. Wetlands**

Wetlands are lands that are saturated with water at least part of the year and include marshes, swamps, sloughs, fens, mud flats, vernal pools, seeps, and bogs. Wetlands serve many critical functions for the Town. They store large quantities of water during periods of high runoff and gradually release water during low flow periods. Loss of the storage capacity will not only adversely affect stream behavior but will also increase floods and reduce stream flow during crucial low flow periods. Wetlands are critical during periods of unusual behavior such as what we are seeing as a result of climate change. Wetlands are also significant for the maintenance of water quality. The biological activity of a wetland area enables the absorption and assimilation of nutrients and thus purifies, to some extent the water which is discharged. Wetlands are centers of ecological activity and support many kinds of wildlife and their habitat. Several state and federal laws also provide protection for wetlands including the US Army Corps of Engineers permits, Act 250, and the Vermont Wetlands Rules.

Windham has extensive wetlands providing the essential functions identified above. Some examples of the wetlands include the upper reaches of Burbee Pond, an extensive wetland complex which provides for diverse wildlife. Also, in Windham Center, an excellent chain of wetlands begins just north of the Village and stretches along the east side of Windham Hill Road all the way to Route 121. An active beaver population there maintains open water for wildlife and habitat similar to the Burbee Pond area.

There are also important wetlands to the east of Windham Hill Road in Howe Brook, Willie Brook, Stiles Brook, and Turkey Mountain Brook watersheds. Cobb Brook headwaters emerge on Glebe Mountain. In addition, east of Windham Hill Road and below the ridgeline that parallels it, there are significant wetlands to the south of the Meeting House. This collection of seeps, bogs, streams and beaver meadows (both active and inactive) drain southward through a low area that crosses several smaller private parcels in which these features are relatively undisturbed. The system crosses Windham Hill Road near Abbott Road and drains into Burbee Pond and continues into Turkey Mountain Brook.

These wetlands described above are likely to provide a high function and value for filtering water, providing flood control, recharging ground water, and mitigating erosion and sedimentation. It is likely many other high quality wetlands exist within the Town which have not been formally mapped and assessed but which provide the functions identified above and deserve protection.

Many of Windham's significant wetlands are created, inhabited by and dependent on beavers. Beaver wetlands, or flowages, support a remarkable density and diversity of life. They provide sites for hunting, fishing, wildlife viewing and environmental education. Flowages also abate flood damage by acting like giant sponges, holding vast amounts of water during floods and then releasing it slowly over subsequent weeks. In the absence of beavers, dams decay and wetlands eventually disappear and become forested. The Vermont Fish & Wildlife Department recognizes the value of beaver flowages for the variety of ecological benefits they provide. The cycle of beaver maintains an ever changing diversity of habitat benefiting a whole host of species. For this reason, the Department strives to maintain beaver-influenced wetlands across landscape whenever possible.

Conflicts with beavers usually come in the form of clogged road culverts resulting in water



encroaching on yards or roads. There are three ways of approaching the issue: trap and relocate the beavers, kill the beavers, or make use of high quality flow-control devices. Well built and designed flow devices are a superior tool for both ecological and economic reasons.

#### **4. Flood Hazard Areas**

The floodplains in Windham are primarily related to seasonal high water flow in the middle and south branches of the Williams River and the Saxtons River. Floodplains are low-lying terraces adjacent to rivers and streams which are periodically inundated when swollen waterways exceed their bank-full capacities. Federal mapping indicates that floodplains exist in the central and northern portion of the Town. There are also areas along rivers and streams subject to risk of erosion, particularly in high flow events, known as Fluvial Erosion Hazard (FEH) Zones. These areas have been and are being defined through the State River Management Program protocols in cooperation with FEMA. State maps are not yet available for all towns due to lack of funding, but remain a part of the goals of the River Management Program and could be released during 2014. Once defined, these areas should be included in the town's flood hazard area regulations to protect the public and the river corridor environment from adverse consequences of development there. A detailed discussion of FEH Zones can be found here:

[www.vtwaterquality.org/rivers/docs/rv\\_vtfehqa.pdf](http://www.vtwaterquality.org/rivers/docs/rv_vtfehqa.pdf)

#### **5. Groundwater**

Groundwater is an extremely valuable natural resource in the Town of Windham because it provides the primary source of potable drinking water for residents. Groundwater is water that has infiltrated into the soil through sand, gravel, or rock. The area where groundwater is stored is called an aquifer. Groundwater occurring in fractured bedrock is highly susceptible to contamination. Failed or inadequately designed septic systems are potential sources of groundwater pollution. Aquifer recharge areas for Windham are not currently mapped. Regardless, it is important to note that the entire Town is an important groundwater recharge area for the Town and the region.

Of particular concern in Windham is the safety of groundwater supplies in the areas where the talc mines were operated. The network of mine shafts was extensive and their exact locations are not well known. Since the closure of the mines, the water table has returned to a higher level, flooding the mine shafts. There remains a possibility that a water supply system might tap into one of the mine shafts and the water may not be potable. Any parcel of land with mineral rights has the potential to be impacted by an underground mine shaft.

A third area of concern is any development that requires significant blasting that could impact residential water supplies. Commercial and industrial development is prohibited that could affect groundwater supplies as a result of techniques including but not limited to blasting, drilling, and hydro-fracking.

In 2008 ground water protection waters in Vermont were strengthened when the legislature designated ground water as a public trust resource. The result of this designation is that ground water must now be managed for the benefit of all citizens. The 2008 law and the interim implementation procedure put forth by the Vermont ANR in 2011, proclaims that certain activities present a heightened risk to ground water quality and that changes must be made at the

regulatory level to require applicants to clearly demonstrate proposed actions do not harm water quality. The Town of Windham fully supports the declaration of groundwater as a public trust and ANRs interim procedure to strengthen groundwater protections and make people accountable for damage to this critical public resource.

## **6. Surface Water Quality**

There are several threats to surface water and ground water quality. The two main categories of pollution are point source and non-point source pollution. Point sources are those that can be traced to a specific source, such as a pipe or sewer outfall. Non-point sources of pollution are more diffuse in origin. They can include storm water runoff, septic system effluent, snow dumps, road salt, soil erosion, etc.

Water quality is greatly impacted by the presence of impervious surfaces that are associated with development. Impervious surfaces include buildings, paved roads, driveways, industrial platforms and parking lots. These surfaces reduce the natural infiltration of stormwater into the ground, thereby reducing the recharge of groundwater resources. Where increased imperviousness results in direct stormwater discharge into streams or rivers, the result is often the alteration of the natural flow of the stream, causing erosion and sedimentation, pollution, loss of aquatic wildlife habitat, and increased flood hazards. The most significant and on going source of sediment discharge to streams and ponds in Windham is sand and gravel washed off of gravel surfaced town roads. The erosion of road surface material into watercourses damages both the watercourse and the road, and is wasteful of public funds. The material eroded into the watercourses must continually be replaced in order to maintain the road surface.

Often runoff from private roads and driveways is directed into the public road drainage system resulting in concentration and increased volume of runoff that contributes to erosion and flooding problems. In addition, inadequately maintained private driveways and road ditches and culverts are vulnerable to failure during storm events as available area for runoff is compromised and erosion results in instability of the traveled surface. In some instances failure of private infrastructure propagates downstream to the public right-of-way resulting in much more significant and costly damages to this public infrastructure.

In 2013, the Lake Champlain Basin Program released a report on the effects of unpaved roads on Lake Champlain water quality. The report findings suggest that 31% of the annual average Winooski River suspended sediment load and 11% of the annual average phosphorus load can be directly attributed to the unpaved road network. In addition, the findings demonstrated that the magnitude of the erosion and pollutant production increased as road grade increased. In Windham, the higher grade roads are more prevalent at the higher elevations.

Many new advances are occurring with how storm water is managed from developed sites. Green storm water infrastructure as defined by the Vermont Agency of Natural Resources is “a wide range of multi-functional, natural and semi-natural landscape elements located within, around, and between developed areas at all spatial scales.” Green stormwater infrastructure or GSI are Best Management Practice tools which can be used to effectively restore and maintain natural hydrologic processes when developing land. The core benefit of these systems is that runoff generated from development is infiltrated, evaporated or recycled rather than polluting downstream resources.

In 2011 the Vermont Agency of Natural Resources released the Green Infrastructure Strategic Plan which has the over arching goal of restoring and maintaining the pre-development hydrology of the State's watersheds through the use of GSI. Objective 2 of the Plan states that "municipalities understand the impacts of stormwater runoff and work to mitigate the effects." Notably to accomplish this objective according to the Plan, the Town will regulate land use with an understanding of the impacts on water quality and natural hydrologic systems and should coordinate with the ANR for local GSI implementation. The Town of Windham recognizes the importance of GSI for preserving hydrology and protecting its sensitive water resources relative to the region's watersheds. The Town supports ANR's mission of promoting the use of GSI at the municipal level by informing its citizens, applying GSI to municipal projects, and requiring GSI implementation for development projects.

This advance in stormwater treatment has also spurred regulatory changes. The Vermont ANR is in the process of updating the current Vermont Storm Water Management Manual ("VSMM"), which was developed originally in 2002. The VSMM regulates the creation of impervious surfaces. New standards being discussed are focused on integrating infiltration-based GSI requirements. The Town of Windham will stay abreast of changes in this area and modify its plan, policies, and zoning regulations as appropriate.

The Town of Windham is fully aware of the evolution of new regulations and scientific advancement in stormwater management. The Town understands many professionals including regulators at the State and Federal level are of the opinion that current techniques and regulations have not been adequate to preserve existing hydrological conditions. The Town supports the development and implementation of new GSI-based regulatory tools to better protect water resources.

Recent research has revealed new understanding of the effect of the loss of forest cover. Newly developed estimates suggest that water sinks into the soil under trees at 67x the rate at which it sinks into the soil under grass. (Impermeable surfaces represent even starker contrasts. M.R. Marshall et al, 2013. The impact of rural land management changes on soil hydraulic properties and runoff processes: results from experimental plots in upland UK. Hydrological Processes, DOI:10.1002/hyp.9826.<http://onlinelibrary.wiley.com/doi/10.1002/hyp.9826/abstract>).

## **7. Wastewater and Potable Water Supply**

In 2002, the State passed new Wastewater System and Potable Water Supply Rules. As part of those rules, the State of Vermont has had the sole responsibility for issuing septic permits unless the Town of Windham decides to seek approval to be delegated that responsibility. As a part of the new rules, all permits, licensed certifications of design and installation, and installer certifications of installation related to the Wastewater System and Potable Water Supply Rules generated by the state will be required to be filed in the municipal land use records.

## **8. Culvert Design**

Proper culvert design allows for passage of aquatic organisms and sediment through the culvert to maintain geomorphic equilibrium. Historically, stream crossing structures have provided a block to organism passage as perched structures that are disconnected from the stream channel. Further, inadequately sized structures do not allow for the passage of sediment and debris downstream causing the stream to aggrade or build up on the inlet end of the structure and to degrade or scour on the outlet end of the structure resulting in a loss of equilibrium. Current

guidance including in the Vermont Fish and Wildlife Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont provides technical standards for retrofit of existing culverts and the installation of new structures. The Town will support proper culvert design by following these procedures for municipal projects and requiring new development projects to follow the standards as well. Assessment and retrofit of existing problem culverts will be completed as funding becomes available for such projects.

## **9. Buffers**

Stream, lake, and wetland (including vernal pools) buffers provide many critical functions that serve to protect water quality, including the stabilization of banks and shorelines, shading, habitat, and filtration and infiltration of runoff and pollutants. To protect buffer zones during the development evaluation and permitting process, the document titled Guidance For Agency Act 250 and Section 248 Comments Regarding Riparian Buffers provides technical guidance on determining the appropriateness of buffers widths depending on specific site conditions. According to the policy, the State will recommend a minimum of 100 foot undisturbed vegetated buffer for lakes, and either 50 or 100 feet of undisturbed buffer for streams. In some instances, even greater buffer widths would be warranted for especially sensitive streams with 1.) the potential for significant lateral or vertical adjustment, 2.) significant wildlife travel corridors, riparian dependent species, and/or significant natural communities in close proximity, and 3.) site characteristic indicative of increased erosion risk and/or potential for overland flow of pollutants. In the Town of Windham for any development project a riparian management plan must be prepared by a development project applicant and approved by the Town. The Town supports the buffer policy and will require mandatory minimum buffers on streams, lakes, wetlands and vernal pools to the ANR standards at a minimum.

### **Policy 1: Maintain and enhance the chemical, physical and biological quality of Windham's surface and ground waters.**

#### *Actions*

1. Support the Agency of Natural Resources Green Infrastructure Strategic Plan by:
  - a. Evaluating a by-law within the Town regulatory framework to require GSI for new development projects and to integrate GSI such as rain gardens and filter strips at existing Town facilities.
  - b. Reviewing new development projects for jurisdiction under State Stormwater Operational standards and requiring that the terms of the permit, including the installation and maintenance of GSI systems, are complied with by the project owner.
2. Assess existing river crossing structures in need of repair and prioritize retrofit or replacement based on aquatic organism passage and sediment transport considerations depending on financial resources and Agency support.
3. The Town will request that the Vermont Agency of Natural Resources complete an assessment of high-quality water resources including streams, wetlands and vernal pools, especially in headwater areas, for additional protection through the Agency's reclassification program.
4. On-site septic systems are to be designed and then permitted by the State.
5. Use road maintenance methods and materials that will maintain or improve water quality, such as those described in the *Vermont Better Backroads Manual*.
6. Evaluate standards for private roads and driveways including minimum culvert sizing, culvert spacing, as well as roadside ditch construction and erosion control to reduce the

energy and volume of runoff entering the public right-of-way thereby reducing the likelihood of erosion and sedimentation to surface waters.

7. Maintain the Forest District which prohibits commercial and industrial development in:
  - a. Headwaters and Watersheds of upland streams
  - b. Headwaters and Watersheds characterized by steep slopes and shallow soils
  - c. Areas supplying large amounts of recharge waters to aquifers.

**Policy 2: Preserve the natural condition of watercourses and their shorelines.**

*Actions*

1. Devote lands within flood-hazard areas to agricultural, forestry, and open space uses. Windham has enacted a Flood Hazard Bylaw and should continue its enrollment in the National Flood Insurance Program.
2. Require that site plans identify all water features, including but not limited to rivers and streams, wetlands, vernal pools, and lakes and ponds. Use the Zoning Bylaw to require maintenance of undisturbed, naturally vegetated buffers sufficient to protect water quality and other natural resources. Buffer areas, including the depth and type of buffer, shall be shown on the site plan.
3. Require a riparian management plan for development projects and/or where sensitive streams including headwater areas are potentially threatened by development. In cases where buffers are comprised, the Town will institute a “no net buffer loss” standard, meaning that greater buffer areas must be preserved to compensate for areas lost.

**Policy 3: Retain wetland areas and vernal pools and their buffers in their natural state for the provision of wildlife habitats, retention areas for surface runoff, recreation and resource value.**

*Action*

1. Require independent field studies to identify and better understand and protect wetlands and vernal pools before permitting any development in forested areas involving or adjacent to wetlands or vernal pools.
2. Study the means and implications of reclassification of Windham’s critical surface waters described in Section 2 Surface Waters.
3. Create a subcommittee to inventory headwaters, wetlands and vernal pools and how the Town can ensure protection into the future.
4. Develop zoning regulations to protect Windham wetlands to the minimum ANR standards.

**Policy 4: Stay informed of new State and Federal data and mapping resources related to Flood Hazard Areas and work with downstream communities to mitigate possible flood hazards.**

**Policy 5: Windham supports and encourages the use of flow control devices (“beaver deceivers”) in preference to extermination or relocation to maintain beaver flowages whenever the circumstances allow.**

## C. AIR RESOURCES

Windham's air resources and air quality are generally good. There are no major noise sources so that the predominant sounds are natural. This contributes significantly to the high quality of life in Windham, as well as the health and the well-being of its residents. Air resources should be protected and improved to protect these values.

### 1. Air Quality

Windham air quality is impacted by local, regional and global pollutants. Windham is a rural community with few local air pollution sources. There are no industrial sources of air pollution, and minimal contributions from commercial properties. While Windham's air quality is considered high, some pollutants are emitted from home heating and vehicle transportation. These same pollutants contribute to local and regional environmental problems, and on a global scale to climate change.

**Policy 1: Protect Windham's air quality by reducing current energy use and ensuring that new development does not degrade air quality.**

#### *Actions*

1. Activate the Town's Energy Coordinator and Conservation Commission to seek ways to utilize more sustainable, clean, local, small scale energy sources and reduce energy use in residential and town buildings by working in conjunction with the Energy Coordinator or Committee.
2. The Energy Coordinator and Conservation Commission should seek and apply for grants to reduce energy use at public facilities in Windham including the school, town office, library, Meeting House, and garage.

## D. NOISE

### **Introduction to Windham Noise Standards**

Noise pollution tends to be a fairly localized pollutant. As such, Windham has exceptional natural quiet. Commercial and industrial noise is very limited in Windham, with occasional forestry operations the only significant source of noise. Transportation related noise is also very limited, due to the lack of major highways and slower travel speeds. As a result, Windham's acoustic environment is exceptionally pristine, particularly in the evenings, night time, and on weekends and deserves the most protection. In Windham, over large areas and for long periods of time, no anthropogenic noise can be heard. Quiet is a highly prized characteristic of rural residential life in Windham, allowing people to better experience nature and natural sounds, and to better enjoy their property without acoustic intrusion from the surrounding lands.

Property line noise standards are a common way to protect the acoustic environment, and also provide more effective protection of soundscapes in districts, and not just around residences. Decibel based noise standards are also important for developers, so that they can know with certainty the design criteria they must meet.

In this Plan, Windham seeks to protect and preserve the full use and value of all residential, and potential residential, properties from encroachment by disturbing types and levels of noise. In order to protect all lands, a "property line standard" for noise and setbacks, which are used in noise regulations throughout the country, are used.

This Plan also seeks to protect both health and aesthetics. We are mindful that the clinical definitions of the health hazards from sound are under investigation and remain epidemiologically unsettled. In addition, noise need not rise to the level of a proven health hazard to represent a significant deprivation of use and value in nearby properties.

The Plan has relied upon the World Health Organization Night Noise Guidelines to set noise and setback limits. Night Noise Guidelines recommends 40 dBA L<sub>night</sub> outside to protect against sleep interference and health effects. The Plan has also relied upon the US EPA Levels Document recommendations adjusted using the correction factors in Table D-7. For Windham, that results in a recommended level of 35 dBA L<sub>dn</sub>.

In developing its noise standards, Windham has sought to implement levels which both correspond well with those recommended by scientists at the WHO and EPA, while recognizing that the metrics used by those agencies are not workable as enforcement conditions. Yearly or nightly average levels and background levels cannot be easily measured or enforced. In fact, even one hour average levels are difficult to enforce because there can be significant contaminating background noise over one hour. Therefore, Windham has relied on a Fast L<sub>max</sub> and minimum setbacks as the easiest and most cost effective enforcement metrics, and increased the criterion level to account for variations in noise levels that are masked by averaging.

Windham's Policies recognize that noise measurement and setback distance requirements must be used conjunctively to insure adequate protections. The Town also recognizes that noise monitoring can be prohibitively expensive particularly for small towns and individual property owners. The Town of Windham therefore requires that industrial wind generators, should they be installed anywhere within the Town, be placed at least 2,500 feet from property lines and noise levels not exceed 45 dBA Fast L<sub>max</sub>. The setback is designed to result in a similar noise level to the decibel standard, since noise decreases with distance. Most importantly the setback is easily measured and compliance is easily insured.

Finally, for noise sources that have a significant low frequency noise component, decibel level does not adequately reflect or predict health and well-being effects. Low frequency noise is of particular concern because it travels further and is not easily blocked by buildings. Therefore, it can have a greater impact on residents. The WHO noted this when they recommended lower thresholds for noises with low frequency components. In cases of low frequency noise, a lower criterion level shall be used.

In arriving at these standards the Town has reviewed a variety of publications including but not limited to the EPA "Levels Document" ([nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=20012HG5.TXT](http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=20012HG5.TXT)) and A Brief Review of Wind Power in Denmark, Germany, Sweden, Vermont and Maine: Possible Lessons for Massachusetts by Mill and Manwell, January 11, 2012. The latter is a condensed review of standards used in Northern European countries with decades of experience with policies designed to accommodate renewable generation facilities without doing harm to the population.

**Policy 1:        Protect the acoustic environment of Windham with noise standards enforced at or beyond the property line of the source.**

*Actions*

1. Limit property line noise from sundown to sunup to 45 dBA Fast Lmax.
2. Limit source noise dBC Fast Lmax minus dBA Fast Lmax to less than 15 dB beyond the property line and inside homes, schools, and town offices and buildings.

**Policy 2: Protect the health and well-being of all people residing in Windham or staying in Windham, regardless of the frequency or duration of their stay.**

*Actions*

1. Prohibit noise that is plainly audible within a residential structure (one that is used for sleeping and is occupied either full or part time).
2. To control noise pollution, placement of commercial/industrial development facilities within the stated minimum setback requirements (see Energy Chapter V Community Standards) is prohibited.
3. Specific Community Standards for setbacks of wind turbines have been established (reference pages 62-67) to protect properties against noticeable shadowing, shadow flicker and the risk of ice throw landing on neighboring properties or tower collapse affecting neighboring properties.



## **CHAPTER V ENERGY**

### **INTRODUCTION**

Reliable, affordable, properly sited, clean and sustainable sources of energy are vital to Windham's economy, social well-being and future development.

Under the Planning and Development Act ("the Act"; 24 V.S.A. Chapter 117) Vermont municipalities are authorized, but not required, to develop and adopt comprehensive municipal plans including an Energy Plan. Accordingly, Windham Vermont's 2014 Energy Plan includes an analysis of energy resources, needs, scarcities, costs and problems within the municipality, and statements of policy and standards for:

- the conservation of energy, including programs, such as integrity standards for buildings, to implement that policy,
- the minimum siting requirements for energy projects to protect our environment, the character of our community, and the health and safety of our residents.
- promoting patterns and densities of land use likely to result in conservation of energy and promoting energy efficiency.
- the development of appropriately scaled and sited renewable energy resources.

The State of Vermont created a Comprehensive Energy Plan (CEP) in 2011 which purports to examine all forms of energy usage and sets ambitious goals for the adoption of renewable sources for 90 per cent of the State's energy usage in all categories by 2050.

The core of the CEP is the belief that it is only by replacing our existing energy sources with energy from renewable sources that the State can make a contribution to the problem of GHG emissions and their effect on the global climate. Available information regarding the economic and environmental aspects of the plan makes it far from clear that these goals are either attainable or advisable, but for the State's CEP to be effective it is clear that the State and local communities must work together. Communities should appreciate that they play a major role in conserving energy, becoming more efficient, and providing the State with information and guidance on how to develop appropriately scaled and sited renewable energy resources within their community. It is with this vision that this Chapter is written – as a partner, and advisor to the State and an active player in reducing Green House Gases through a series of meaningful steps consistent with CEP with awareness and compliance with 24 V.S.A. § 4302.

In order for a community to plan usefully to make a positive contribution to this effort it is important to understand the components of the problem and the ways in which individuals, communities and states can make a difference.

The previous state energy plan was released in 1998 and focused exclusively on the sources and uses of electrical energy. The current plan purports to analyze all forms of energy including that used in transportation, home heating and agriculture and industry in addition to electricity. Often the lay reader will assume that "energy" refers to electricity, especially when the term appears in

connection with “renewable.” In fact this conflation is understandable since it is in the area of electric generation that the most renewable technologies are widely available.

Windham’s topography and settlement patterns are unique and different. As the highest incorporated village in Vermont, our highest points of land not only lie in close proximity to our residential communities, but they contain many important headwater environments critical to the water quality of the Town and the region and help to protect the area from flash floods and tropical storms. It is a requirement under this Plan that siting electric and energy facilities must consider the unique topography, character, natural resources and settlement patterns of the Town.

## **Transportation**

Renewable fuels for transportation are limited to bio-fuels. At present, for example, ethanol can only represent 10% of automotive fuel; and even then there is controversy as to whether the environmental benefits of ethanol production are meeting expectations. Bio diesel can be used to replace diesel petroleum, but availability is an issue in many places and some of the same efficacy questions apply to it as to ethanol. The extent to which electric vehicles will replace petroleum fueled vehicles in Vermont is not yet clear. As of 2012 there were fewer than 200 plug-in electric cars registered in Vermont. According to the Center for Transportation Studies at the University of Vermont with proper grid management, the plug-in fleet could grow to 200,000 vehicles without requiring the construction of additional electric generation or transmission capacity.([www.uvm.edu/~transctr/pdf/EffectsofPHEVsontheVTElectric.pdf](http://www.uvm.edu/~transctr/pdf/EffectsofPHEVsontheVTElectric.pdf).)

## **Home Heating**

In Vermont, 60% of homes are heated wholly or in significant part by petroleum fuel oil or propane. The balance of home heating energy is produced from burning wood. There is no generally available natural gas in the southern part of the state. The availability of natural gas will presumably change now that the Public Service Board has approved Vermont Gas Company’s proposed gas pipeline expansion to Addison County. This will have some immediate impact on both replacing fuel oil for heating, and perhaps to a lesser extent, in replacing electricity for some home heating, refrigeration and cooking. It is unclear at this point how much, if any, new electric generation in New England will be supported by this influx of lower cost natural gas supply.

## **Electricity**

Although electricity is consumed in home heating, it is largely for air handling rather than thermal warming. The greatest amount of electricity used by Vermonters is in lighting, refrigeration, laundry appliances, entertainment, air conditioning and in what are called phantom loads produced by the proliferation of led lights on appliances of all kinds.

## **Energy Definitions:**

***Energy Conservation:*** Reducing energy use. This applies to measures, including changes in personal habits (eg. turning off lights, driving less, improve insulation of homes and other buildings) that reduce the amount of energy consumed.

***Energy Efficiency:*** Using less energy to perform the same functions and tasks. This applies to measures such as the use of new technologies (eg: LED lights, energy efficient appliances and more efficient vehicles) that use energy more efficiently and reduce waste.

***Net-Metered System:*** An onsite generating system for local use that is connected to the power grid. The state defines this more specifically as a facility for the generation of electricity that is of no more than 500 kW capacity, operates in parallel with facilities of the electric distribution system, is intended primarily to offset the customer's own electricity requirements, is located on the customer's premises, or for group net-metered systems, on the premises of a member of the group, employs a renewable energy source or is a qualified micro-combined heat and power system of 20 kW or less, that meets state definitions and may use any fuel source that meets air quality standards (30 V.S.A. 219a). Net metered systems are considered residential or small business applications and represent an example of community scale, decentralized or distributed energy generation.

***Renewable Energy:*** (1) Energy available for collection or conversion from direct sun light, wind, running water, organically derived fuels and agricultural resources, waste heat, and geothermal sources. (2) Under the state's renewable energy programs, "renewable energy" means energy produced using a technology that relies on a resource that is being consumed at a harvest rate at or below its natural regeneration rate (30 V.S.A. 8002).

***Residential:*** Small-scale renewable energy facilities most often consist of systems such as those listed in the paragraph above and can range up to 15 kW in power.

***Commercial/Industrial:*** These are energy systems that are greater than 500 kW. These are generally large scale projects designed to generate profit for owner, lessee or licensee by sale of the output to or through public utilities.

## **Energy Goal**

The overall goal of Windham's Energy Plan is to encourage the efficient use and conservation of energy in all categories (including transportation, heating and electricity) and the appropriate siting and development of appropriate renewable energy resources.

Windham believes it can best achieve these goals by:

- Promoting and facilitating the use of state, utility and municipally-supported energy efficiency and conservation programs re: home heating, transportation and electrical usage, as a means of increasing the effectively available energy resources without constructing new capacity.
- Encouraging individual and group net-metered and off-grid renewal energy projects, community-based projects and small-scale systems serving individual users, in appropriate, context-sensitive locations.
- Supporting and promote those facilities that are suitable for the topography and character of the areas within the Town and will avoid, reduce or defer transmission or distribution system investments.
- Supporting in-place upgrades, as opposed to new construction, of existing facilities, including transmission lines, distribution lines and substations as needed to serve the town and region.
- Exploration of safe and convenient alternatives to individual automobile travel.
- Education and promotion regarding ways in which homes and other buildings can be heated and insulated more efficiently.

## Plan Policies

Windham believes local energy planning is both relevant and important. While many energy issues are national or global in reach, local government has some control over its own energy consumption, and can lead by example to influence residents to be more aware of the ways to reduce energy use and costs, and to help develop local energy options, to the benefit of the entire community. The town is also in a unique position to understand, identify and protect our natural resources and land conservation opportunities (see Natural Resources Chapter IV) in the process.

Windham municipal plan policies and land conservation measures – as adopted Community Standards – provide the basis for local participation in state regulatory proceedings including Act 250 for energy facility development and Public Service Board (Section 248) hearings. Before the Public Service Board can issue a Certificate of Public Good (CPG), for most projects it must find that "the purchase, investment, or construction, with respect to an in-state facility, will not unduly interfere with the orderly development of the region, with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality." 30 V.S.A. &248(b)(1)

\* (<http://info.libraries.vermont.gov/supct/current/op2007-456.html>)

The municipal plan also considers community participation in long-range state and utility energy planning, including the update of the following plans, as required under state law:

- **Vermont Comprehensive Energy Plan**, updated every five years by the Department of Public Service.
- **Vermont Long Range Transmission Plan**, updated every three years by the Vermont Electric Company.
- **Utility Integrated Resource Plans** prepared by utilities for review by Vermont PSB.
- **Vermont 20 Year Electric/Energy Plan**

## Energy Coordinator / Energy Committee

Title 24 V.S.A. provides towns with the ability to appoint an Energy Committee or Coordinator. Consistent with this Title, Windham has appointed a Town Energy Coordinator responsible for developing and contributing to energy policy for the town and is considering expanding this function and developing a Town Energy Committee to work in conjunction with its Planning Commission & Zoning Administrator. The Energy Coordinator is responsible for quantifying and tracking municipal energy consumption and recommending actions that the town and community should take to conserve energy (transportation, home heating and electrical usage), increase energy efficiency, promote local energy production from community-scale renewable resources, and to reduce energy costs and greenhouse gas emissions. The Energy Coordinator, in conjunction with the Town Treasurer or Assistant shall separately quantify and track energy consumption and recommend action for improved efficiency and conservation for town owned buildings, vehicles and equipment.

## **Energy Objectives**

- To ensure the long-term availability of reliable, affordable, clean and safe energy supplies from a combination of utility-distributed sources and appropriately scaled community and residential systems
- To increase energy conservation and efficiency in home heating, transportation and electrical usage
- To promote the development of appropriate renewable energy resources in the Town of Windham to contribute to the energy needs of the community and region.
- To reduce energy usage and expenditures by residents through improved conservation and efficiency
- To reduce reliance on fossil and other polluting fuels, such as biomass for electric generation, and thereby reduce greenhouse gas emissions that contribute to climate change.
- To identify and limit the adverse impacts of energy development and use on public health, safety and welfare.
- To preserve the Town's historic districts and planned pattern of development, environmentally sensitive areas, and our most highly valued natural, cultural and scenic resources, consistent with related development, resource protection and land conservation policies.
- To identify, study and understand steps necessary to preserve and protect the Town and regional headwaters and water quality from negative consequences of new energy project siting such as pipelines, transmission lines, extraction processes and electric generation.

## **Energy Planning**

Windham actively supports partnerships, strategies, and state and federal legislation that will ensure the affordable and reliable production and delivery of electrical power to the community, in conformance with community goals, objectives and standards. It is our intent to work with utility providers, the Regional Planning Commission, the Department of Public Service and neighboring communities to plan for needed system upgrades and expansions to meet projected demand while protecting and preserving the natural environmental characteristics of the town. The Town will participate in long-range energy planning and development, in cooperation with the Regional Planning Commission, the Public Service Dept and neighboring communities, to ensure that local energy, resource conservation and development objectives are identified and considered in future energy initiatives including public utility or merchant power development.

Windham's Planning Commission believes that without widespread understanding of the issues, all renewable energy projects may be viewed uncritically as making positive contributions to society. However, not all energy projects, including Renewable projects, provide the same benefit(s) or present the same obstacles or impacts. With this understanding, we begin our planning by considering all renewables for the benefit(s) they potentially offer and the tradeoffs they may require.

Our plan requires us to apply our knowledge and understanding of the Town of Windham, its unique geographic features, critical natural resources and attributes to allow us to understand what may be best for Windham and its Region. The Planning Commission, in consultation with the Energy Coordinator, is responsible for preparing Community Standards for the siting and

development of generation, transmission and substation facilities, for reference by facility developers and local property owners, and for consideration in Section 248 proceedings.

### **Energy Facility Development**

The Planning Commission, in consultation with the Selectboard, is responsible for the development of guidelines and standards to direct local participation in Section 248 proceedings for the review of public utility or utility scale merchant generation projects located in Windham or in neighboring communities which may affect the Town. The guidelines and standards reflect levels of participation or formal intervention in relation to the type, location, scale, and magnitude of a proposed project, and its potential benefits and impacts to the health and welfare of the community and its residents and property owners.

The municipality will participate in the Public Service Board's review of new and expanded generation and transmission facilities as necessary to ensure that local energy, resource conservation and development objectives are identified and considered in proposed utility development. This may include collaboration with other affected municipalities and the Regional Planning Commission for projects that may have significant regional impact.

### **Energy Conservation & Efficiency**

Windham's local government will lead by example to increase energy efficiency and reduce overall energy consumption and costs to local taxpayers. Energy efficiency and conservation will be a primary consideration in all municipal construction projects, vehicles, equipment purchases and facility operations. Accordingly the Selectboard, with the assistance of the Energy Coordinator and municipal employees will:

- Conduct baseline energy studies and periodic energy audits or assessments of all municipal buildings, vehicles, equipment and facilities to identify improvements that will reduce energy consumption and costs. This may include, but is not limited to: an analysis of electricity, space heating, lighting and hot water usage for town halls, libraries, town garages, schools, etc.
- Profile municipal vehicle inventories and their associated fuel type and efficiency.
- Prioritize municipal energy efficiency projects and incorporate them into the municipal Capital Budget & Program.
- Apply for grants to pay for energy audits for the town and its residents and work in collaboration with Efficiency Vermont. [www.efficiencyvermont.com](http://www.efficiencyvermont.com)
- Develop facility maintenance and operation policies that maximize energy efficiency while maintaining comfort levels for employees and visitors, to include building temperature, heating and air conditioning guidelines, electrical equipment use guidelines, interior and exterior lighting guidelines, and the use of energy management devices (e.g., sensors, timers). Examples include installation of day-lighting tubes, programmable thermostats, occupancy light sensors, smart strips and energy star appliances.
- Prioritize weatherizing municipal buildings before conducting any space heating energy efficiency improvements.
- Replace facility lighting with energy efficient compact fluorescent or LED bulbs and fixtures with the assistance of Efficiency Vermont and local utilities. Some of these options include the elimination of certain fixtures, the replacement of inefficient bulbs with more efficient ones, such as LEDs, and the utilization of lighting controls such as timers or light sensors.

- Develop municipal vehicle purchase, maintenance and use policies, including minimum fuel efficiency standards for new vehicles. Consider alternative-fuel vehicles as available and appropriate. One example of such a policy would be to ensure all municipal vehicles are up to date with tune ups and tire pressure checks in order to maximize fuel economy.

The Town of Windham supports energy literacy, and voluntary energy conservation and efficiency programs for residential, commercial buildings, including home energy audits, retrofit and weatherization programs. The Town will:

- Develop community education, outreach and informational programs, in cooperation with Efficiency Vermont and other groups and organizations, to illustrate and promote the benefits of energy conservation and energy efficiency.
- Work with local school teachers and administrators to promote energy literacy in the classroom, for example, in association with the Vermont Energy Education Program (VEEP).
- Provide information on energy conservation techniques, energy-efficient products and efficiency and weatherization programs available to local residents and businesses.
- Develop community-based lighting design guidelines that promote energy efficiency, and reduce glare, light trespass, and light pollution or "sky glow."
- Consider establishing, by town vote, a municipal Property Assessed Clean Energy (PACE) program that provides loans to local residents, paid back through an assessment on their property, to help finance eligible energy efficiency projects.

New development and renovation projects should include measures to reduce energy consumption through site and building design, material selection and the use of energy-efficient lighting, heating, venting and air conditioning systems. The Town will:

- Provide available information on energy efficient development to individuals and developers seeking municipal land use [zoning, building] permits.
- Encourage new development and renovations to meet at least minimum state commercial and residential energy building codes. This may include a provision that state-required certificates of code compliance be filed with the town prior to the issuance of a municipal certificate of occupancy.
- Amend local regulations to provide incentives (e.g., waivers, density bonuses) for development that exceeds minimum state efficiency standards (e.g., Energy Star or Vermont Builds Greener program).
- Amend site plan, subdivision and planned unit development regulations to incorporate more energy-efficient siting, building orientation and landscaping standards.
- Develop municipal outdoor lighting standards to require lighting plans for larger development projects, and the use of energy-efficient lamps and fixtures, timers and sensors.
- Support local and regional programs for energy audits and cost-effective weatherization services on all existing homes, with a priority on affordable housing.

### **Renewable Energy Resources**

Renewable energy facilities have the potential to raise complex and controversial issues regarding the potential health, visual, ecological, environmental, social and economic impacts of large scale renewable (wind, biomass and solar, for instance) development initiatives. Even the

siting of small scale installations in certain locations has raised community concerns about the impacts such facilities may have on the health and welfare of town residents. Each proposed project must be reviewed based upon location and impacts to the Town, our natural resources and our residents. Every attempt will be made to balance town policies to maximize the positive benefit(s) of appropriately scaled renewable energy with community attributes, values and natural resources consistent with 24 V.S.A. Section 4302 and the CEP.

The Town of Windham continues to support the development and use of residential and community-scale renewable energy resources including off-grid and net-metered wind and solar, biomass, micro hydro, geothermal at a scale that is sustainable. Any and all of these approaches will enhance energy system capacity and security and promote cleaner, more resilient energy production.

The Windham Planning Commission has developed Community Standards for renewable energy projects (pages 62-67) that are intended to avoid and mitigate potential negative impacts of renewable energy. These standards are for municipal and Public Service Board (“PSB”) consideration and permitted residential and community-scale renewal energy projects and prohibit commercial/industrial-scale wind/solar development initiatives. The town has (or will):

- Mapped, in association with the Regional Planning Commission, those areas of Town with the highest potential for siting small scale net-metered and off grid renewable energy systems, based on resource availability, technical siting requirements, and the community's resource conservation, land use and development objectives.
- Prepared local guidelines for the development of renewable energy resources (including related access and transmission line extensions) for reference by utilities, developers and local property owners, and for consideration in state and local permit proceedings.
- Amended local regulations to allow off-grid solar and net-metered wind systems as accessory uses in all districts in which structures are allowed, subject to specific use standards, and to incorporate district height and setback waiver provisions for such facilities where appropriate. Development standards must be designed and enforced to address public health and safety, and potential adverse impacts to significant natural, environmental, historic and scenic features, public facilities, and neighboring properties and uses.

## Energy Usage and Sources

The EPA measures energy usage in four primary categories for purposes of calculating GHGs emitted by each. Vermont’s carbon footprint from all energy sources compared to New England and the Nation as a whole in 2010 was reported by the EPA as follows:

	<u>Vermont</u>		<u>New England</u>		<u>US</u>	
	<u>%CO2</u>	<u>%Energy</u>	<u>%CO2</u>	<u>%Energy</u>	<u>%CO2</u>	<u>%Energy</u>
Electricity	4%	20	33%	N/A	35%	38
Home Heating	33%	29	12%	N/A	10%	14
Transportation	59%	35	39%	N/A	30%	27
Agriculture / Industry	11%	16	10%	N/A	20%	21



## **A. ENERGY APPLICATIONS**

Energy resources are necessary for transportation, home heating and electricity usage. Sufficient clean energy supplies at an affordable cost are essential to a town's growth and economic health and development. Improved energy efficiency and conservation in all energy usage are key components of the town's energy plan.

### **Transportation**

Transportation accounts for the largest category of energy usage in Vermont and accounted for an estimated 35% of the total energy used in 2010 and 59% of GHG emissions. (The National equivalents are 27% of total energy and 30% of GHGs). Motor vehicles are the state's largest source of toxic and carcinogenic air pollutants, and greenhouse gases (GHGs).

Approximately 28% of Windham Town residents currently work at home, and we expect this figure to continue to grow as Windham is ideally suited for small scale home based businesses and telecommuting. Over time we expect this development will have a net positive effect on the town's energy and conservation as it relates to transportation.

In a rural community with no significant industry or commerce and no access to public transportation, the opportunities for reduced energy use in Transportation are somewhat restricted. The Windham Planning Commission and Energy Coordinator will attempt to raise community awareness of the environmental costs of unnecessary transportation and will try to inform residents of the advantages of sharing rides for shopping and other errands in addition to carpooling.

As noted in Figure 1 (page 17) of the Windham Community Profile, 73% of residents who work travel out of town for work. Table 11 (pg 55) indicates most residents (62%) drive alone to work and a minority (3%) carpool. These data underscore the geographical dispersion of employment opportunities for residents of rural communities like Windham and the absence of large employers in any of the immediate nearby towns.

One of Windham's important economic assets is the quiet, unspoiled natural setting which serves to keep disruptions to home and work environments to a minimum.

Windham supports ongoing and collective efforts to reduce transportation energy demand, vehicle miles traveled, fossil fuel consumption and greenhouse gas emissions. Windham will:

- Partner with local and regional service agencies to explore establishing a volunteer driver program that offers rides for local residents and opportunities to coordinate group travel.
- Work with local businesses and farmers to develop programs that support the local economy – for example a "buy local" campaign, a local business directory, a farmers market, or a vendors ordinance – to increase the availability of locally produced energy, food, goods and services.
- Adopt a no-idling policy or ordinance that limits vehicle idling on town and school property. For more information see [www.idlefreevt.org](http://www.idlefreevt.org).
- Investigate plug-in charging stations as appropriate vehicles become more available.
- Promote telecommuting to capitalize on expanded internet connectivity for at-home workers and to reduce unnecessary automobile travel.

## **Home Heating**

Residential Home Heating represents the state's second largest use of energy and accounted for an estimated 29% of the total energy used in Vermont in 2010. Home Heating is reported by the EPA to contribute 33% of Vermont's GHG emissions, and we assume Windham falls within that pattern. Home Heating offers both Windham and the state the most accessible opportunities to combat climate change through the reduction of GHGs.

The residents of Windham use a variety of energy sources for home heating. According to the 2000 Census, residents heat their home primarily with fuel oil (64.8%) and secondarily with wood (29.3%). The remaining heating fuel sources include propane (14%), electricity (2.7%) and solar energy (1.3%). Heating provides Windham its most significant opportunity to reduce energy use, GHG emissions and shift to cleaner fuels and technology. Energy efficiency and conservation are key component of the Town's Energy Plan.

The most practical means to reduce home heating emissions are in improved home insulation, modernizing HVAC systems, and/or converting to solar, geothermal, heat pumps or wood-fired heating sources. There is also the prospect of increased availability of natural gas supplies in the foreseeable future. Such a development would offer the combined advantage of much lower GHG emissions and lower heating costs (as compared to fuel oil) for households and businesses.

Wood is currently the most commonly used biomass fuel for residential home heating, and the town of Windham supports the continued use of wood as a fuel source. The Town encourages residents to use low-emission wood burning appliances and to install any wood burning appliances according to state standards and guidelines.

## **Electricity**

Electricity sold to residential, commercial and industrial customers in Vermont represents about 20% of the State's total energy usage and generates less than 4% of its Greenhouse Gas Emissions.

Windham's electrical supply is delivered by Green Mountain Power (GMP). Vermont Electric Power Company (VELCO) maintains two 345 KV transmission lines that run north to south near the Grafton-Windham boundary.

According to the Environmental Protection Agency (EPA), and other sources, Vermont uses less electric power than any state, and according to the Energy Information Agency (EIA), the electric power it both uses and generates is the cleanest in the US when measured in terms of GHG emissions per Megawatt hour and in millions of metric tons total GHGs. In 2010 Vermont's electrical energy produced 3 pounds of CO<sub>2</sub> per Mwh as compared to a national average of 1300 pounds per Mwh. (State CO<sub>2</sub> Emissions of Fossil Fuel Combustion –MMTons 1990-2011 [http://www.epa.gov/statelocalclimate/resources/state\\_energyco2inv.html](http://www.epa.gov/statelocalclimate/resources/state_energyco2inv.html)).

## **Residential Electric Energy Usage**

In per capita terms, Vermont ranks among the ten states with the lowest electric usage (EIA). Vermonters annually use 9000 kwh per capita. The New England average is 8500; and the average of the other 45 states is 12,700 kwh per capita.

A review of 6 years' aggregate electrical usage by residential accounts in the town of Windham shows an 8% decline from 5687 kwh per residence to 5241 kwh. (Note that this figure is 58% of the Vermont state average.)

<u>Year</u>	<u>Total Annual kWh</u>	<u>#Premises</u>	<u>Annual kWh per Premise</u>	<u>% Change</u>
2007	2,144,005	377	5,687	
2008	2,101,924	382	5,502	-3%
2009	2,063,785	383	5,388	-2%
2010	2,107,861	387	5,447	+1%
2011	2,142,570	389	5,508	+1%
2012	2,033,659	388	5,241	-5%

### **Commercial Electric Energy Usage**

According to data supplied by Green Mountain Power of a total of 412 location accounts in Windham, 24 were listed as commercial in 2013, or 5.8% of the total. Electric usage by these accounts represented 9.4% of the total electricity usage in the town. Commercial accounts include the Fire Departments, 1 School, 2 Churches, 1 Telephone facility, 1 Golf Course, 3 Town accounts, a small engine service and sales business, three B&Bs, a handful of home-based businesses and 3 working farms.

<u>Commercial</u>	<u>Year</u>	<u>Total Annual kWh</u>	<u>#Premises</u>	<u>Annual kWh per Premise</u>	<u>% Change</u>
	2007	156,226	20	7,811	
	2008	155,558	20	7,778	---
	2009	174,432	21	8,306	+7%
	2010	202,112	21	9,624	+15%
	2011	171,524	21	8,168	-15%
	2012	210,297	24	8,762	+7%

(See Section C Renewable Energy for a more complete review of Renewable Energy Sources).

## Facility Development

The following forms of energy development are supported by the Town of Windham in order of priority:

1. Increased system capacity derived through appropriate energy efficiency and conservation programs.
2. Small, onsite distributed energy projects, including individual and group net-metered renewable energy projects and community-based projects that conform to municipal policies and standards.
3. Give preference to in-place upgrades of existing facilities, over new construction including existing transmission lines, distribution lines and substations as needed to reliably serve the town and region.
4. New community-scale energy facilities (including transmission and distribution lines, substations, hydro dams, solar farms and small wind generation) as may be necessary to meet increased demand for power or to improve grid stability and community resiliency.
5. Public education on the subject of conservation and efficiency as real sources of more energy and a better alternative than new construction of generation or transmission facilities.

## B. ENERGY CONSERVATION AND EFFICIENCY

Energy resource availability and costs are generally not within the control of Windham residents; however, consumption can be influenced through education, technology, and the alteration of use patterns. Effective land use planning can promote energy conservation. Targeting new development towards areas located close to the community's major roads and existing settlements will minimize the energy consumed by residents commuting and will reduce the energy required to deliver essential services to residents and businesses. Decisions concerning capital expenditures on roads and other municipal infrastructure should be mindful of energy conservation.

As noted in Figure 1 (page 17) of the Community Profile, 72% of Windham's residents who work travel out of town for work. Table 11 indicates most Windham residents continue to drive alone to work and reflects a sharp decrease in those that carpooled. Car-pooling is beneficial for residents not only because it conserves fuel, but also because it reduces wear and tear and maintenance costs on individual vehicles. The Planning Commission will continue to promote carpooling for both work and pleasure activities as a means of enhancing energy conservation.

**Table 11: Commuting to Work: aged 16 and older**

<i><b>Method</b></i>	<i><b>1990</b></i>	<i><b>2000</b></i>	<i><b>2010</b></i>
Drive Alone	65%	74%	62%
Carpool	19%	11%	3%
Public Transportation	0%	0%	0%
Bicycle	-	-	0%
Work at Home or Walk	13%	14%	28%
Other Means	3%	1%	7%
Average travel time (minutes)	22.5	24.2	30.4

(Source: 2010 US Census, 2006-2010 American Community Survey 5-Year Estimates)

Energy savings can be realized by retrofitting existing buildings with insulation, more efficient doors and windows, weather-stripping, compact fluorescent lights, and energy efficient appliances. The following programs are available to residents of Windham:

- Southeastern Vermont Community Action (SEVCA): SEVCA is the service provider in Windham County that runs the Weatherization Assistance Program. Weatherization services, which include an energy audit, diagnostic tests, analysis, and installation measures, are available at no cost to income-eligible homeowners and renters. SEVCA is also available to help in the event of a heating emergency. They can help purchase oil, kerosene, propane, or wood. In addition, they also work with electric companies in order to prevent disconnection and help negotiate payment plans.
- Efficiency Vermont: Efficiency Vermont is the State's provider of energy efficiency services. They provide technical and financial assistance to electrical consumers for the purpose of improving the efficiency of existing and new facilities. (Efficiency Vermont.com)
- ENERGY STAR Home Rebates: Energy Star Homes meet strict energy efficiency guidelines set by the U.S. Environmental Protection Agency and U.S. Department of Energy. Efficiency Vermont provides free financial, design, and technical help to build an ENERGY STAR qualified home. Benefits of being an ENERGY STAR home include financial incentives such as product rebates; utility savings; higher resale value; increased comfort and air quality; and other environmental benefits.
- Windham's Energy Coordinator to help with specific energy saving programs.
- Call 211( the Vermont State information call line) for information on a variety of services available to Vermonters.
- Vermont Public Service Department has a line for energy efficiency advice at the Vt. State Efficiency Office.

**Policy 1: Reduce energy consumption and increase energy efficiency at both Town and Homeowner levels.**

*Actions*

1. Have the Town of Windham lead by example by seeking ways to increase energy efficiency and reduce energy consumption in all town offices, vehicles and buildings.
2. Support carpooling and promote increased use of the improving telecommunications infrastructure that can support telecommuting.
3. Provide information in the Town Office about energy assistance programs such as SEVCA and Efficiency Vermont.
4. When new residential construction is undertaken, provide informational materials to owners or builders at the time the Zoning Permit is issued to inform property owners.
5. Evaluate, and as appropriate, propose amendments to the zoning bylaws to regulate the siting of systems that make use of renewable energy, such as appropriately scaled solar panels and residential wind energy systems. Such regulations shall allow for flexibility in the application of setback, height, and other requirements, and they should also allow for building design and placement that maximize passive solar energy use.

6. Support appointment of the Windham Town Energy Committee to help educate residents on conservation practices and potential cost savings benefits.

**Policy 2: The placement of utility line extensions above ground and roadside must be sited to provide maximum protection of Windham's scenic resources.**

*Actions*

1. Require that electric poles that have been abandoned due to relocation or consolidation are removed from the landscape.
2. When relocating, upgrading, or establishing electric distribution lines, a review of operational maintenance, engineering design, direct cost, and visual impact should be undertaken to determine the appropriateness of the existing or proposed utility line location.

**Policy 3: Support the use of individual on-site energy sources.**

*Actions*

1. Cordwood for domestic use is an important by-product of better forest management. Encourage landowners with woodlots to participate in sustainable management programs that emphasize full utilization of wood fuel resources, as well as the production of high grade saw timber.
2. Refer to Community Standards and up-dated Zoning Bylaws for specific standards for residential wind energy systems that address limitations on height, separation of structures, minimum lot size, setbacks, aesthetics, operational noise, environmental impacts and other items as deemed necessary.
3. Residential connection of individual wind energy and photovoltaic systems to the electric power grid under "net-metering" shall not be considered commercial use for purposes of this plan. Add/Fix "Net-metered solar arrays or wind energy systems not to exceed 15 kW capacity shall not be considered commercial use for purposes of this plan."
4. Outdoor wood furnaces are regulated and shall comply with Vermont Air Pollution

**Policy 4: ~~Highlight, Section 5.204, Out-dated Residential Wind Energy Systems, prohibit Commercial/Industrial wind energy projects in the Town of Windham.~~**

*Actions*

1. Amend the zoning bylaw to add additional use classifications of commercial/industrial wind systems and individual wind energy systems. Expressly prohibit commercial/industrial wind systems.
2. Participate in and/or designate an expert agent to represent the Town's interests in any regulatory hearings for any potential commercial/industrial-scale wind energy development in and around Windham.

## **C. RENEWABLE ENERGY**

### **1. Hydroelectric**

Hydroelectric energy generation is one form of renewable energy. While Windham has abundant water resources, their potential to generate energy is limited because, as a headwater community, most of the streams are small and have low seasonal flows. The possibility of developing small "micro-hydro" systems may exist. Micro-hydro systems usually do not dam rivers or streams. Their utility depends on the dynamic head, amount of water flow, and the efficiency of the turbine. In Windham, if this type of system is feasible, it would probably act to augment other

power sources. However, in addition to stream flows, cost and the effect of cold weather climate on the equipment will likely be deterrents to wide spread usage of this type of renewable energy. (See Chapter IV Natural Resources for a more detailed discussion of Windham's water resources and their protection.)

## **2. Solar Energy**

Passive solar designs can reduce heating and electricity bills. No mechanical means are employed in passive solar heating. Instead, siting and design measures, such as south facing windows, open floor plans, and ventilation are used. Photovoltaic systems can be used to convert sunlight to electricity. These systems require equipment such as solar panels, a charge controller, batteries, and an inverter, which convert DC current into AC current for use in outlets for regular household appliances. Photovoltaic systems of up to 15kW or less are eligible for net metered electric rates after receiving a Certificate of Public Good. By special arrangements with the power company which may involve additional fees, larger systems can be constructed. (30 VSA Section 219a(h)(1)(E).

The Town of Windham supports the use of solar energy and encourages research and education on its use at both residential and community scales.

## **3. Wind Energy Systems**

The Town of Windham is supportive of alternative and renewable energy sources, but as with other development, it must fit the scale, topography, settlement patterns and character of the Town. It must be sensitive to the impacts on neighbors and quality of life. It must not adversely impact the unique qualities of our ridgelines or of woodlands that accommodate healthy headwaters, a wide variety of wildlife and its habitat and other unique features. There are many ways, especially those involving energy conservation and efficiency, for the Town and its residents to make a positive impact on the larger environment without compromising the local environment and ecology or the health of our residents.

## **4. Individual Wind Energy Systems**

Wind energy systems are beginning to be used as an energy source on a residential scale. There have been two individual wind energy systems in Windham; both are now inoperative. Towns may only regulate wind facilities that do not connect in any way to the public power supply.

Rural areas with low density residential development or working agricultural landscapes are the most appropriate places to locate individual wind systems. Their height and visual prominence make them incompatible with densely settled areas. Individual wind energy systems must be designed so that they are not located as a focal point in one of the designated scenic areas of Windham as listed and described elsewhere in this plan. The permitting of these facilities should be reviewed under the conditional use review process with additional safeguards specified in the Zoning Regulations. In addition, adequate setbacks which accommodate a fall zone, ice throw, operational noise levels, and lighting shall be addressed by the following:

- Turbines shall not be allowed or permitted unless they are set back a minimum of 2 times the highest blade height measured in a straight line from the closest property line.
- Turbines shall not be allowed or permitted unless applicant clearly demonstrates noise will not exceed the lesser of 45 dBA Fast Lmax at the closest property line or 5dBA Lmax above the ambient sound level.

- Turbines shall not be allowed with lights.
- Turbines and associated development shall not be allowed on slopes of 20% or greater.

## **5. Commercial/Industrial Wind Energy Systems**

Wind energy systems (wind farms) that are greater than 500 kW are defined as commercial/industrial systems. These are large-scale projects with large or multiple turbines designed to generate electricity for sale to or through regulated public utilities in Vermont or elsewhere. Windham has been studying commercial/industrial wind generation since 2004. Our 2008 Town Plan, re-adopted in 2013, contains a prohibition against this form of development based on the unique topography and settlement patterns of our Town, our ten years of research and knowledge and the support of the majority of our residents and property owners. That Plan was closely reviewed by the Department of Public Service in 2012 relative to Docket 7905. (Application of Atlantic Wind, LLC, for authority, pursuant to 30 V.S.A. & 246 and 248, to install temporary meteorological stations in the Towns of Windham and Grafton, Vermont filed July 31, 2012.) In a letter dated October 9, 2012 the Department said: “The Public Service Board should defer to Windham’s Town Plan intent to prevent the temporary siting of MET Towers within the Town.” In closing that letter the Department said: “The Board is required to give due consideration to the Town Plan with regard to the orderly development of the region § 248 criterion. The Board should treat the provisions prohibiting the construction of MET towers within the Forest Resource Districts and within the Town generally as dispositive.”

At the time of preparing the updated Town Plan, the State of Vermont has four operating utility-scale wind generation facilities: Searsburg, Lowell Mountain, Georgia Mountain and Sheffield. A large landowner in Windham is currently measuring wind resources (DOCKET 7905) with the stated intention of constructing another such facility. At this time, neither the landowner nor the developer has revealed any information to the Town about how the project might be laid out or how many turbines it might contain.

On October 2, 2012, the Governor’s Energy Generation Policy Siting Commission was created through Executive Order No. 10-12. The Commission was charged to recommend guidelines for permitting electric generation project of all kinds. The legislature is studying those recommendations, and may propose related legislation. The Agency of Natural Resources is studying new guidelines for wetlands management and for stormwater runoff, and the Public Service Board has recently opened its own investigation into the adequacy of the State’s noise pollution standards and their application. Public comment on the Total Energy Study and the Comprehensive Energy Plan is invited. While all these events are going on, the State is gaining valuable firsthand experience with the benefits costs and trade-offs of utility scale renewable energy.

As the Town of Windham approached the mandatory updating of the Town Plan, we are cognizant of these unfolding events. It is not our intention to address any particular landowner or project, but rather to extend and strengthen our published policy, which declares commercial/industrial scale wind development inappropriate for Windham for a variety of reasons. In addition to our unique relationship of settlement and topography those include but are not limited to the Town’s statutory responsibilities under the law to protect and preserve the health and welfare of residents and property owners, the preservation of the unique aspects of our natural environment as well as the quality of life and the values, both material and social, that have characterized our Town for more than 215 years.



Industrial wind energy systems are inappropriate in Windham for a variety of reasons including the nearness of many probable turbine sites to historic settlement patterns; the presence of steep slopes (slopes of 20% or greater); the presence of wildlife and their critical habitat; the many fragile natural areas including wetlands and vernal pools; several listed high-elevation headwaters draining through rugged terrain; pristine views and natural quiet and darkness.

It is the policy of the Town of Windham that commercial / industrial wind energy systems as defined above and temporary meteorological towers proposed as precursors to such projects are prohibited throughout all of town as potentially hazardous to the health and welfare of its residents, incompatible with high elevation headwaters and not compatible with the town's vision of appropriate development, or its historic settlement patterns and for other reasons set forth in this section.

This policy is consistent with Windham's Zoning Bylaw as well as with the Town's written Community Standards. (See pages 62-67) Commercial/Industrial wind is neither a permitted nor conditional use in the Zoning Bylaw; as such it is specifically prohibited. In addition, Windham's high elevation lands - those most desirable for industrial wind energy development - are unique and contain many important natural resources and are among the most sensitive sites from a development perspective. For these reasons, these high elevation lands have been located in the Forest District where development is limited to agriculture; commercial forestry; forestry for research, education, and demonstration; and camps.

If permitted by the Public Service Board, Commercial/Industrial Wind Energy Systems are subject to some of the same requirements articulated above plus some further specifics:

- Turbines shall be set back according to the following required measurements:
  - 2,500 feet from property lines
  - 1,300 feet from transmission lines & poles, ski lift equipment & structures, camps, other turbines and public travel ways.

These setbacks are intended to accommodate the impact on the surrounding area of commercial/industrial wind turbines. Potential impacts include not just a falling tower, but ice throw, shadow flicker, noise, size of mounting pads, storm water runoff, access roads and lighting which are potentially harmful to the community and its residents. (Reference Natural Resources Chapter 4.)

- Turbine noise shall not exceed 45 dBA Fast Lmax at the property line. or 5dBA Lmax above the ambient sound level.
- Turbines shall not have lights.

If, however, application for a utility scale generation project should be filed with the PSB for any location in Windham, the Town will ask the Board to deny such requests and will in so doing refer to 30 VSA Section 248. Section 248 was written to enable public utilities to site and build needed generation and transmission facilities without having to meet all criteria of Act 250 – most particularly the portions dealing with the role of town plans.

In Section 248 proceedings, the Town requests that the Public Service Board adopt Windham's Town goals and policies as criteria under which any such project should be judged. If we weigh

and balance the goals of Title 24 of the Vermont Statutes Annotated, which have guided us in the writing of this plan, we must conclude that certain types of development cannot co-exist in a Town with Windham's goals, unique attributes and historic treasured patterns of settlement. Commercial/Industrial wind projects are among those types of development and must not be sited within the town.

24 VSA Section 4302 (c)(5) charges towns to create plans that are written:

- (5) To identify, protect and preserve important natural and historic features of the Vermont landscape, including:
  - (A) Significant natural and fragile areas;
  - (B) Outstanding water resources, including lakes, rivers, aquifers, shore lands and wetlands;
  - (C) Significant scenic roads, waterways and views;
  - (D) Important historic structures, sites, or districts, archaeological sites and archaeologically sensitive areas.
- (6) To maintain and improve the quality of air, water, wildlife and land resources.

Each of these sections represents important elements of Windham's vision of its future and this plan endeavors to set forth how they contribute to our vision for the Town and should be protected. It is the Town's position that Section 248 of Title 30 and Section 4302 of Title 24 – should be read together to give support and meaning to each in a reasonable and just manner so that statewide projects take into account town standards and prohibitions and consider the differences of each town when it comes to topography, settlement patterns, natural resources and other unique features of the town.

## **6. Wood:**

Wood is considered a biomass fuel and can be beneficial if used appropriately. The use of biomass fuel can replace or reduce the use of non-renewable fuels such as heating oil. When grown and harvested in conjunction with effective forest management plans, woodlots can provide an alternative fuel source for landowners, thereby decreasing dependence on non-renewable resources. While burning wood does create air pollution, wood-burning technology has improved and emission requirements have been implemented. Windham supports the continued use of wood as a local thermal fuel source and encourages residents to use low-emission wood burning appliances.

Outdoor wood furnaces or boilers are gaining popularity across the country as a home heating method. These are free-standing combustion units located outside the home or structure that is to be heated. When used properly these systems can be a clean and economical way to heat a house and water. Nonetheless, concerns over the safety and environmental impacts of these heating devices, particularly the production of offensive odors and potential health effects of uncontrolled emissions exist. The State of Vermont does have regulations pertaining to these systems. Amongst the provisions are the fact that they must be located at least 200 feet from neighboring residences and that the stack on the furnace must be higher than the neighboring roof line if the furnace is between 200 and 500 feet from the nearest neighboring home. (Vermont Air Pollution Regulation, Section 5-204, Outdoor Waterstoves (September 1997)). The State regulations also permit towns to have their own ordinances regulating outdoor wood furnaces. Any installation shall comply with all local and state regulations. A Zoning permit must be obtained.

**D. WINDHAM COMMUNITY STANDARDS AND CONDITIONS  
FOR ENERGY DEVELOPMENT**

**Purpose:** The purpose of these municipal energy policies and standards is to promote the development of appropriate small-scale renewable energy resources and energy facilities in the Town of Windham, while limiting the adverse impacts of such development on public health, safety and welfare, the town's historic and planned pattern of development, environmentally sensitive areas, and our most highly-valued natural, cultural and scenic resources – consistent with related development, resource protection and land conservation policies included elsewhere in this plan. These policies are to be considered in undertaking small-scale municipal energy projects and programs, in updating the Town's bylaws to address energy development, and in the review of new or upgraded energy facilities and systems by the Town and the Public Service Board under 30 V.S.A. § 248.

To the extent physically and functionally feasible, existing utility systems, including transmission lines, distribution lines and substations, shall be upgraded or expanded on site or within existing utility corridors before new facilities or corridors are considered.

The Town of Windham will endorse or permit the development and installation of small-scale energy facilities that conform to community energy facility development and siting standards through participation in Public Service Board (Section 248) proceedings or, where applicable, through local financing and incentive programs and regulations.

**WINDHAM COMMUNITY STANDARDS FOR ENERGY  
DEVELOPMENT**

**Public Health and Safety Standards**

**Noise:**

Noise generated by any energy facility, including wind energy systems, or by any other industrial or commercial facility or operation shall not exceed the lesser of (a) 45 dBA Fast Lmax as measured at any property line, or (b) 5 dBA Lmax above the ambient sound level. (See Natural Resources Chapter 4.)

**Shadow Flicker:**

Wind energy facilities shall be sited or screened so that shadows cast by rotor blades will not result in shadow flicker on occupied buildings located within the viewshed of the project.

**Lighting:**

Energy facilities, including wind and transmission towers, are not to be artificially lighted.

- Substation lighting should be the minimum necessary for site monitoring and security, should be cast downward, and must not result in light trespass or glare on adjoining properties.

**Codes:**

Energy facilities shall comply with all manufacturer specifications, state or industry safety and electric codes, and utility connection requirements. Documentation of code compliance may be required for facilities subject to municipal review

**Height:**

The maximum tower height for energy facilities including net-metered, or similar off-grid wind energy facility shall not exceed the lesser of (a) 120 feet in total height, as measured vertically from the ground to the rotor blade tip at its highest point, or (b) the total height above the existing tree canopy.

**Setbacks:**

- All ground-mounted small-scale wind energy facilities must be setback at least 2 times the total facility height, as measured vertically from the ground to the rotor blade tip at its highest point, from all property lines, occupied buildings on adjoining properties, overhead utility lines, public and private rights-of-way and established trail corridors, unless easements are secured from adjoining property owners.
- Guy wires used to support wind towers are exempt from minimum district setback requirements, except they shall be set back at least 20 feet from all property lines.
- A building-mounted solar panel(s) must meet minimum setback requirements for the building on which it is mounted.
- Facility setback distances from property lines, or from occupied structures in existence at the time of application, shall be increased as necessary to mitigate identified public health and safety hazards or nuisances to adjoining property owners (e.g., noise, vibration, glare, shadowing and shadow flicker, ice throw).

**Ground Clearance:**

The blade tip of any wind turbine shall, at its lowest point, have a ground clearance of no less than 30 feet, as measured vertically from the ground to the tip of the rotor blade at its lowest point.

**Access:**

- Facility access shall be provided from existing access roads where physically feasible, and, where feasible and safe access roads and utility corridors shall be shared, to minimize site disturbance, resource fragmentation, the creation of additional edge habitat, and the introduction and spread of invasive exotic species.
- Public access to generation and transmission facilities, including substations, shall be restricted as necessary to protect public health and safety.

**Burial:**

Utility controls and onsite line connections shall be wireless or buried, except at the point of connection with distribution lines, transmission lines and substations.

**Signs:**

Energy facilities and structures shall not be used for display or advertising purposes. Signs, except for owner and manufacturer identifications and safety warnings, that exceed one square foot are prohibited on all facilities and structures.

**Interference:**

Facility operation shall not reduce or interfere with television, radio, telemetry, or other telecommunications signals, including public safety communications systems.

**Decommissioning and Abandonment:**

Generation facility permits or certificates must include provisions for system abandonment, decommissioning and site restoration.

**Facility Siting Standards****Hazard Areas:**

With the exception of transmission and distribution lines, new energy facilities that are not attached to existing or permitted structures shall not be located in:

- Special Flood Hazard Areas (SFHAs), including floodways and floodway fringes identified on Flood Insurance Rate Maps (FIRMs) for the town. Any allowed facility located within these areas must meet minimum National Flood Insurance Program (NFIP) requirements, as reviewed and permitted by the municipality or the state.
- Fluvial erosion hazard areas identified on Windham FEHA maps.
- Slopes, with natural (pre-development) grades of 20% or more.

**Conservation Areas:**

Energy facilities are to be sited to avoid where physically feasible, or to otherwise minimize encroachment and mitigate the adverse impacts of facility development on:

- Surface waters, wetlands, vernal pools and associated setback and buffer areas, as specified for all development under town bylaws.
- Primary agricultural soils as mapped by the USDA Natural Resource Conservation Service for the state.
- Significant wildlife habitat, including core habitat areas, and travel and migratory corridors, as identified from state inventories and data sets, local inventories, and site investigations associated with facility development.
- Onsite mitigation is required through a combination of facility clustering, relocation, buffering and permanent conservation easements. Mitigation to avoid flooding from storm water runoff will be limited to well proven, non-experimental technologies. Off-site mitigation measures should be required where on-site mitigation is not physically feasible.

(All of these topics are more fully developed in Chapter IV Natural Resources)

**Land Conservation Measures:****Headwaters, Wetlands, Slopes, Vernal Pools, Agricultural Land and Open Space:**

(See Chapter IV Natural Resources)

Energy facilities, including solar arrays and other generation facilities, transmission and distribution lines, accessory structures and access roads shall be located on non-agricultural land or along field edges to avoid fragmentation of, and to minimize and mitigate adverse impacts to agricultural land and open fields.

- Forestland Energy facilities, including wind towers and other generation facilities, transmission and distribution lines, accessory structures and access roads shall be located along existing tree lines, or on otherwise disturbed forestland, as necessary to avoid the fragmentation of, and to minimize and mitigate adverse impacts to productive timber stands and critical forest habitat.
- Forestland intended for commercial biomass production must be sustainably managed and harvested in a manner that preserves critical forest habitat and long-term forest health.

### **Visual Impacts:**

Applicants shall demonstrate through site planning, facility siting and proposed mitigation that the visual impacts of new and upgraded energy facilities will be minimized as outlined in the standards set forth below:

- All energy facilities and accessory structures are to be designed and constructed of materials, colors, and textures that blend into the surrounding natural or built environment to the extent feasible. Wind towers, turbines and blades shall be of a neutral, non-reflective and unobtrusive color (e.g., white, off-white or gray).
- Facilities are to be sited to outside of, or to the edge of scenic views or viewsheds so that they are not a prominent focal point.
- The facility should not extend above the background horizon line as seen from populated areas.
- The facility should be screened from view through the use of existing topography, structures, vegetation or strategically placed tree, shrub and ground cover plantings that do not block distant views.

### **Designated Scenic Areas:**

The documented historic, rural and scenic character of the following areas in the Town of Windham, its Hamlets and their environs shall be preserved under any form of new energy development. New energy facilities sited within or as viewed from these areas shall not create a significant physical, visual, audible, or historically incongruous or incompatible intrusion into these areas. New facilities, including generation facilities greater than 15 kW, substations and transmission lines, are specifically prohibited within or as viewed from these areas unless significant associated impacts can be avoided, for example through facility siting, screening or line burial.

- Designated historic districts, including the South Windham and Windham Central Historic Districts as described in the application filings for Historic Status.
- Windham has many significant and iconic views within the Town. (Please see Chapter VI Part C for an inclusive list.)
- Views from locally designated scenic roads, as listed under Chapter VI of the plan, or as subsequently designated by the Windham Selectboard.

### **Historic Districts, Sites and Structures:**

Energy facilities, including wind systems and solar photovoltaic (PV) or thermal panels, that are located in the town's two designated historic districts, or on properties with federal or state-listed historic structures, are to be sited in accordance with current Secretary of the Interior's Standards for Rehabilitation, and the following:

- The historic character of listed properties and structures shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be prohibited unless they are required for health and safety reasons, as certified by a Vermont professional historic preservation expert and a Vermont health official.
- Ground installations are preferred to roof-mounted installations on historic structures. Ground installations, to the extent functionally-feasible, shall be installed in locations that minimize their visibility, such as a side or rear yard, and be screened from view of public rights-of-way and adjoining properties.
- Roof-mounted systems may be placed on new construction, non-historic buildings and additions.
- Solar panels and other roof- or wall-mounted structures shall not be placed on primary building facades, including street-facing walls or roofs, unless there is no other suitable location on the site or structure.
- Roof- or building-mounted systems on an historic structure shall not physically damage the structure, alter its character-defining features, including existing roof lines or dormers, nor obstruct significant architectural features such as overlaying windows or architectural detailing. Attachment points must be minimized and allow for future system removal.
- Roof-mounted Installations are to be placed below and behind parapet walls and dormers, on rear-facing roofs, where feasible. Panels should be mounted flush with and at the same angle as the existing roof surface and, on flat roofs, set back from the roof edge to minimize visibility. They should not be visible above the roofline of the primary facade. Panels and mounting systems must be compatible in color to established roofing materials to minimize their visibility.

## **WINDHAM CONDITIONS FOR ENERGY DEVELOPMENT**

If allowed to proceed through a Section 248 application for any utility scale energy generation project, the developer, operator, landowner and their heirs and assigns shall provide a contingency plan to the Town that outlines mitigation action, in the event of unforeseen and unacceptable negative impacts from the project to the town, region and the residents. Such a plan shall be based on before and after assessments of impacts, including, but not limited to, the following issues:

- Resident Health and Safety including but not limited to air and water quality and noise that any commercial/industrial wind development project may have on Windham residents and/or property
- Air and water quality and noise impacts, pursuant to standards set forth under Chapter IV Air and Noise quality.
- Height restrictions set forth in Chapter IV.
- Fair and adequate financial compensation to Windham residents and/or property owners whose health and welfare are negatively affected by any commercial wind development project, e.g., sound-related or other health-related problems.
- Cultural, historic, and aesthetic impacts
- Impact assessment on the effect wind turbines would have on Windham's Historic Hamlets if they were visible to these Historic Hamlets.

- Property rights and values impacts
- Fair and adequate compensation to landowners and homeowners whose property values are negatively affected (decreased) by any Commercial/Industrial wind development project
- Fair and adequate compensation to anyone in Windham or surrounding towns who depends on Windham's headwaters for their drinking water if they should become imperiled as a result of construction related to energy generation siting of any kind.
- Hazardous materials contingency plan(s)
- Supplemental fire and rescue resources in the event of catastrophe
- A wildlife habitat assessment, including assessment of impact to migratory, resident and breeding avian and bat populations, and mitigation plans, if necessary.
- A rare, threatened or endangered species assessment, and mitigation plans, if necessary.
- Shadow flicker analysis (see Community Standards pages 62-67)
- An impact assessment for wetlands, seeps, springs, streams, ponds, and vernal pools, and mitigation plans, as appropriate under local, state and federal rules and laws.
- A visual impact assessment, including pre- and post-construction photo simulations of the project as seen under leaf-off conditions during the day and at night.
- Alternative sites analysis of tower locations within the site considering all criteria in Chapter IV.
- Adequate financial surety, either in cash or letter of credit, to repair damage to town and private roads and to stabilize the entire construction site during and after construction of the project, shall be provided. The financial surety must be provided to the municipality in the event that the municipality needs to conduct work to secure or remediate the stability of the soil and vegetation on the site, including any town and access roads, during or after construction. The Selectboard with the advice of the road foreman and planning commission will oversee this assessment.
- Sufficient decommissioning funds, kept in an escrow account associated with the property that is separate from the developer's general accounts shall be provided, so that the site will be restored to natural conditions when the project ceases to operate for whatever reason.
- Financial assistance to the town to pay for the hiring of qualified engineering, environmental, and legal consultants to assist the Town in reviewing state-level applications and permits, establishing local revenue agreements, and participating in permitting processes, and any other scientific experts and/or specialists, as needed.
- Any other matter (s) that becomes apparent due to the location of such facilities.

In framing these issues we are mindful that the PSB operates under Section 248. We are also mindful of Windham's unique topography, character, settlement patterns and natural resources, including much of the region's public water supplies. The Town is not suggesting that monetary payments are adequate to compensate it or its residents for the destruction of our unique qualities and settlement patterns or the health and safety of our residents or of those who rely on our critical resources.



## CHAPTER VI

### HISTORIC, RECREATIONAL, AND SCENIC RESOURCES

The cultural resources of Windham include, but are not limited to the important historical structures and archeological sites; outdoor recreational resources; and significant scenic lands, vistas, and viewsheds. These attributes are considered to be the very essence of Vermont and the reason why many people find Windham to be a desirable place to live. The loss of these special areas diminishes the community's identity and ignores the needs of future generations. Therefore, the protection and enhancement of these shared cultural and natural resources are vital community standards.

#### A. HISTORIC RESOURCES

Windham has an abundance of historic resources which contribute to the Town character and quality of life (see Utilities and Community Resources Map). Places of historic interest located in Windham include:

**Windham Village Historic District** - The Windham Village Historic District received National Register designation in 1984.

**South Windham Village Historic District** - The South Windham Village Historic District received National Register designation in 1988.

**Windham Meetinghouse** - The Windham Meeting House was built by subscription beginning in 1802. It was finished some years later. This clapboard building with a slate roof is a dominant visual landmark in Windham Village. Uses of the structure include the Congregational Church, Town Hall, the Windham Library, the Windham Summer Day Camp program and a variety of community classes. The Meetinghouse is located in the Windham Village Historic District.

**South Windham Church** - The South Windham Church (presently occupied by the Valley Bible Church) was built in 1825. This church is an example of vernacular Greek Revival architecture that uses both brick and clapboard on the exterior. The recessed arcaded wall treatment is found in many domestic building types built throughout Eastern Vermont as far north as Chester between the years of 1814 and 1830. This church is in the South Windham Village Historic District.

**Town Cemeteries** - There are four known cemeteries in Windham that are maintained by private and public funds. They are Center Cemetery, North Windham Cemetery, West Windham Cemetery, and Woodburn Cemetery.

**Existing Stone Walls** - Stone walls are part of the fabric that ties Windham's landscape to its past. They are remnants of the agricultural society and were most commonly used for the purpose of subdividing property (boundary markers, field subdivisions, and livestock enclosures). Windham's stone walls are a part of the town's heritage and sense of place. Most walls lie on private property.

As noted above, both South Windham Village and Windham Village are listed on the National Register of Historic Places. This is the official list of cultural resources worthy of preservation in

the United States. While listing on the National Register honors the property by recognizing its importance to the community, there are few restrictions on private property owners in place that help to preserve these important structures. The State of Vermont has authorized the creation of locally designated Design Review Districts and Historic Districts as regulatory tools in the zoning bylaw. The creation of an overlay district would help protect the neighborhood and community character by encouraging sensitivity to the architectural and historic resources that exist.

**Policy 1: Promote historic preservation and development that enhances the historic resources of Windham.**

*Actions*

1. Amend the zoning bylaw to incorporate incentives for historic preservation in the zoning bylaw by including provisions for adaptive reuse and considering the creation of a historic district or design review district in the villages of Windham and South Windham.
2. Promote grant opportunities, in cooperation with community organizations, to continue to protect and preserve Windham's historic resources.
3. Amend the zoning by law to require that stonewalls and cellar holes be shown on a site plan so that they can be considered during development review.

**B. OUTDOOR RECREATIONAL RESOURCES**

The natural recreational resources of Windham are its waterways and forests. These areas provide fishing, hunting, hiking, cross-country skiing, wildlife viewing, and other activities. VAST (Vermont Association of Snow Travelers) maintains a network of trails that run through town. The Town recognizes the importance of the variety of recreational resources, natural and manmade that currently co-exists in town. Special attention must be given to the unpaved rural road system, wildlife habitats, and water features.

The lands surrounding Cobb Brook are designated a Class A1 Watershed by the state of Vermont. The two largest tracts of forest in Windham are in private ownership. These are the McGraw Family Partnership, LP properties on the western edge of Windham and the Meadowsend Timberlands, LLC, Stiles Brook Tract, located on the eastern edge of Windham, which has numerous snowmobile and biking trails running throughout it.

The focus for Windham's recreational resources must be on the preservation of and access to the Town's natural environment. The Town should be alert to future or upcoming changes that would limit public access to these large recreational resources and be prepared to negotiate for mitigation for any loss of access.

**Policy 1: Preserve Windham's natural environment for outdoor recreation.**

*Actions*

1. Retain all existing town roads in order to provide rights-of-way for public access to recreational activities.
2. Continue to provide for natural and community resource benefits by protecting large contiguous parcels of land in the Forest District.
3. Investigate ways to ensure continued public access to significant holdings of land that are in private ownership, including, but not limited to, negotiation for mitigation of any loss of access..

## C. SCENIC RESOURCES

The scenic resources of Windham are numerous and varied. Together, they form the pattern that has come to be associated with Windham's landscape. There are numerous excellent views and vistas available from many points in Windham. The following is a partial list of the scenic landscapes and views that contribute to the cultural resources of Windham. (See Utilities and Community Resources Map)

- From Route 121 at Lawrence Four Corners looking south toward the Village encompassing the wetlands east of Windham Hill Road (TH #1) and the west facing ridge.
- The view from the Windham Center down the valley toward the south, east, and west.
- The view of Windham Center and its historic buildings from any direction.
- The view of Burbee Pond and the undeveloped, natural appearing ridgeline and east face of Glebe Mountain from the vicinity of Burbee Pond Road (TH #24) and West Windham Road (TH #20) looking west and north.
- The view looking south from Golding Road (TH #19) encompassing the West Windham Valley and distant ski areas.
- The view of the West Windham Valley including Cobb Brook from near the intersection of West Windham Road (TH #20) and Toad Road (TH #22) looking in any direction.
- The view across the same valley as above from Toad Road (TH #22) looking east over Turkey Mountain Ridge.
- The view of South Windham Village from Windham Hill Road (TH #1).
- The view of South Windham Village and surrounding farm land from Old Cheney Road (TH #25) looking east.
- The view from Old Cheney road looking west toward Turkey Mountain.
- The view from Center Cemetery looking east to the Stiles Brook Ridge and west to Glebe Mountain.
- View from Tater Hill Country Club in all directions.
- The view from Chase Road, including Smith Farm and Lemay Farm.
- The view from Timber Ridge looking in all directions.
- Views from elevation 2,000 feet and higher from the main corridors looking up, e.g., from Windham Hill Road looking north and south and from Route 121 looking east and west.
- The view from White Road toward the south.
- The view from Hitchcock Hill Road toward the south.
- Numerous views of Glebe Mountain and Turkey Mountain from along Windham Hill Road, Abbott Road, Wheeler Road.
- Views of Stiles Brook area from Ingalls Road, Old Cheney Road and Corn Hill and Old Farm Roads.

This Plan encourages the use of residential and community scale solar, but any larger projects,

not specifically prohibited in the Plan, shall be adequately screened to protect and preserve scenic views and values.

Windham's wetlands and water bodies, as well as ridgelines and hilltops and their upper slopes, are visible for great distances and give the landscape form and coherence. Open meadowlands provide contrast with the predominant forests, reminding one of the agricultural productivity of the past. Structures such as industrial wind generation towers are aesthetically incongruous with the scenic landscape and are prohibited.

Light pollution or "sky glow" is a problem that is facing many rural towns. The overuse of lighting can be harmful to the character of a town. It can also be detrimental to road safety (through distraction and glare), energy conservation, and wildlife interests. Development in Windham has been overwhelmingly residential in nature. Nonetheless, appropriate lighting must be designed to prevent private and public nuisances and protect property value.

**Policy 1: Protect and enhance Windham's Scenic Landscapes and Resources.**

*Actions*

1. Prominent ridgelines above 2,000 feet elevation shall be left in their natural condition, free from all development, including roads, building structures, utilities, wireless broadcast telecommunications facilities, and industrial wind turbines (except camps as provided for in Chapter IX Land Use.)
2. Preserve & protect Windham's Scenic Resources (inventoried on page 70) that represent the Town's scenic and cultural resources.
3. Enact a telecommunications ordinance to minimize the visual impacts of communication towers through co-location, design, siting, and color choice.
4. Encourage the donation or sale of easements to public and private natural resource/conservation agencies and organizations.
5. Buildings and structures should comport to the size and scale of existing buildings and structures to protect the historic scale, natural landscape, and sense of community. Under no circumstances shall any building be greater than 60 feet high, and no structure shall exceed 100 feet high.

**Policy 2: Protect scenic landscape resources from sky-glow.**

*Actions*

1. Reduce light pollution by using fixtures that direct light below the horizontal plane, utilizing energy efficient lamps, and using light levels appropriate for the use of the property.
2. Communication and other high elevation towers must be designed and sited so that they do not require night-time lighting.
3. Illuminate structures and exterior areas only at levels necessary to ensure safety and security of persons and property.

## CHAPTER VII TRANSPORTATION

The public road network in Windham consists of town highways and roads (see Transportation System Map). Windham can be reached from Windham Hill Road which connects with Route 30 in West Townshend; Route 121 which runs east/west through Town and connects Windham with its neighbors Grafton and Londonderry; and from a small section of State Highway 11 which runs through the northwest corner of Town. Several smaller roads also enter Windham from neighboring towns.

The State of Vermont has developed a classification for Town Highway Mapping and Inventories, maintenance schedules, and State aid. Class 1 roads are those highways that are the responsibility of the town, but are also extensions of the state highway system. Class 2 roads serve as main corridors between Windham and other towns. Most Class 2 roads are paved. Class 3 roads are comprised of secondary town highways that are passable year round by standard vehicles. Class 4 roads are all other town highways. Typically Class 4 roads are seasonally functional for normal vehicular traffic and have a dirt surface.

The State of Vermont Highway Map classifies Windham's public roads as follows:

**Table 12: Mileage Summary of Town Highway/Roadway**

<i>Class</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>Total Mileage</i>
Town Roadways	0	9.2	22.8	1.1	33.1
State Highways					.4
Total					34.1

(Source: State of VT Highway Map, 2009)

The Windham Highway Department maintains the roads within Town. There are two people employed by the Highway Department, including the Road Foreman. The section of State Route 11 that runs through Windham is the responsibility of the State's District #2 personnel. Many residents and visitors use the existing street system for walking, bicycling, jogging, and horseback riding.

Windham's side roads off Route 121 and Windham Hill Road are narrow dirt residential roads. All are tree lined, often with canopies, and many have old stone fences adjacent to the roadway. They are not to be widened or straightened for any commercial purposes. Notwithstanding the prohibition of industrial scale wind development contained in the Plan, in the event of approval by the Public Service Board of an industrial scale wind development on the Stiles Brook Tract or Glebe Mountain access to the site by large transport vehicles is prohibited on Class 2 and 3 side roads and permitted only off Rtes. 11 and 121.

## **A. FACILITIES AND EQUIPMENT**

The Town maintains its road equipment at the Town Garage located on Windham Hill Road. A covered salt and sand shed, built in 2000, is located on site. There is a reserve fund to assist in the planning for the purchasing of new equipment for the Highway Department.

At this time there is a need for several improvements to the town garage. The building is in need of external paint. It would also be useful for a third bay to be added to include a bay area and space for a bathroom and designated office space.

## **B. ROAD AND BRIDGE INFRASTRUCTURE**

In 2003 and again in 2011 (Tropical Storm Irene) heavy flooding devastated many roads and culverts in Windham. Several of the Class 2 and Class 3 roads were washed out due to culvert inadequacy. Damaged or collapsed culverts have been replaced and one bridge replaced according to state mitigation standards. Roads and bridges are maintained according to established state standards in order to guarantee safe and efficient passage.

## **C. LOCAL ROAD POLICIES**

The Selectboard is responsible for the maintenance and repair of public roads in Windham. It is the policy of the Selectboard to not take over new roads. In order for private roads or driveways to access town roads the Selectboard must issue an access permit. Applicants must adhere to driveway design standards which follow the State's recommended standards. [www.aot.state.vt.usa/standards](http://www.aot.state.vt.usa/standards).

All Windham roads are built and maintained to the standards of the State of Vermont. Windham does not enforce design standards for private roads.

The Selectboard grades Class 4 roads on a yearly basis and oversees the placement and maintenance of culverts throughout town. None of the roads in Windham has been designated for use by ATVs.

## **D. RSMS/CULVERT INVENTORY**

In 2012 the Windham Regional Commission assisted the Town with a culvert inventory and an associated map. Culvert locations are based on Global Positioning System (GPS) data. This inventory can serve as a helpful management tool to keep track of additions or deletions to the infrastructure and to plan for and schedule maintenance and repairs. Windham at present does not have an inventory of road surface conditions. Inventories of this type are excellent tools to help plan for roadway projects and culvert replacement programs. The Town intends to utilize the Road Surface Management System, or RSMS, which is specific software that can be used to inventory and prioritize roadway surface improvement projects. It is most useful for tracking construction needs on paved roads.

Regardless of the level of technical commitment to these efforts, an inventory should be kept and updated as often as possible and it should be used to manage all components of the transportation system infrastructure. (Reference [Windhamvt.info](http://Windhamvt.info))

## **E. PUBLIC TRANSIT**

Windham, being a rural town, does not have any mass transportation systems, however, transit service is provided by CT River Transit. The Town contributes towards CT River Transit's operational costs. Based in Rockingham, CT River Transit offers transportation for Medicaid recipients and non-Medicaid medical transportation for Windham residence for life threatening conditions. The Windham Congregational Church provides transportation to Windham residents for both medical, such as doctor's appointments, and non-medical reasons. The Londonderry Volunteer Rescue Squad is available for emergency medical transport. Windham has one certified first responder (EMT) and frequently publicizes the need for more.

### **Policy 1: Maintain a safe and functional public road system that respects the integrity of the natural environment.**

#### *Actions*

1. Enforce existing standards for road construction and maintenance. Continue to review sight distance when issuing access permits.
2. Shoulders should be widened when upgrading or reconstructing Windham Hill Road
3. New subdivisions shall not be permitted to have individual driveway access for each unit on a town highway. Collector roads or common driveways shall be constructed in order to prevent strip development.
4. Continue budgeting for highway department needs.
5. Periodically update the culvert inventory and conduct a road inventory.
6. Install and implement the RSMS software program
7. The Town shall not take over private roads.
8. Consider reducing speed limits on Windham Hill Road in the Town Hamlets (South Windham and Windham Center)

### **Policy 2: The Town shall not discontinue any roads without first consulting the Planning Commission and Conservation Commission to make a finding that no public benefit exists.**

#### *Action*

1. Research town roads and make a list of those roads which should be retained because a public benefit has been determined.

### **Policy 3: Protect the physical features that contribute to the scenic and rural character of roads in Town.**

#### *Action*

1. Conduct an inventory of scenic roads in Windham and establish management guidelines to protect the distinctive features located in the right-of-way, such as road surface and width, canopy trees, and stone walls.

**Policy 4: Support CT River Transit in providing transportation options that meet the mobility needs of all of Windham's residents, as well as people who come to Windham for work.**

*Actions*

1. Publicize community transit options available to Windham residents in the Windham News and Notes publication.
2. Encourage ride share opportunities and encourage the Windham Community Organization (WCO) to organize multiple shoppers to join together to make trips to distant shopping locations.



## **CHAPTER VIII HOUSING**

An adequate supply of year-round housing that offers varieties of size, cost, and location is essential to the economic and social health of Windham. Communities benefit when employees are able to live close to their workplace, young adults are able to buy or rent in their hometowns, and elderly residents are able to remain in the community where they have family, friends, and history. Also, housing represents an opportunity for Windham to practice and promote energy conservation and efficiency. The Town, working closely with the Energy Coordinator, will proactively promote information/education initiatives centered on conservation practices for home heating, transportation and electrical usage.

### **A. EXISTING CONDITIONS**

Windham is a quiet rural residential community. The 2010 Census reported that there were 396 total housing units. Most new development has occurred along road frontage and has been built on a lot-by-lot basis as opposed to a large subdivision. Trends since 1990 include a substantial increase in year-round owner and renter-occupied units.

The rate of new housing construction has varied. Town records indicate that 4 zoning permits were issued for new houses in 2005. This compared to 9 zoning permits in 2004, 13 in 2003, and 3 in 2002. Since 2010, the rate has been relatively stable at 2-3 new home permits per year.

The town has a minimal supply of rental housing. Information from the 2010 Census showed that there were 20 occupied rental housing units at that time and 11 total vacant units. Based on a 2000 sample of 20 occupied rental housing units, all 20 units were single family homes. Forty-five (45) percent of the units were built prior to 1950 with none of the occupied rental units being constructed in the last 10 years. The Town's Zoning Regulations does provide for accessory units (also known as in-law apartments) to be constructed within or appurtenant to a primary single family residence. Prior to 2005, these units were restricted to family members only; however, state law was revised to take away this requirement.

**Special Needs Housing** - The special needs population for the purposes of this plan includes single parent households, physically and mentally challenged persons, and the elderly. In addition to requiring certain services that differ from a typical single-family household (i.e., physical accessibility, assisted living), these groups tend to fall into a lower income category.

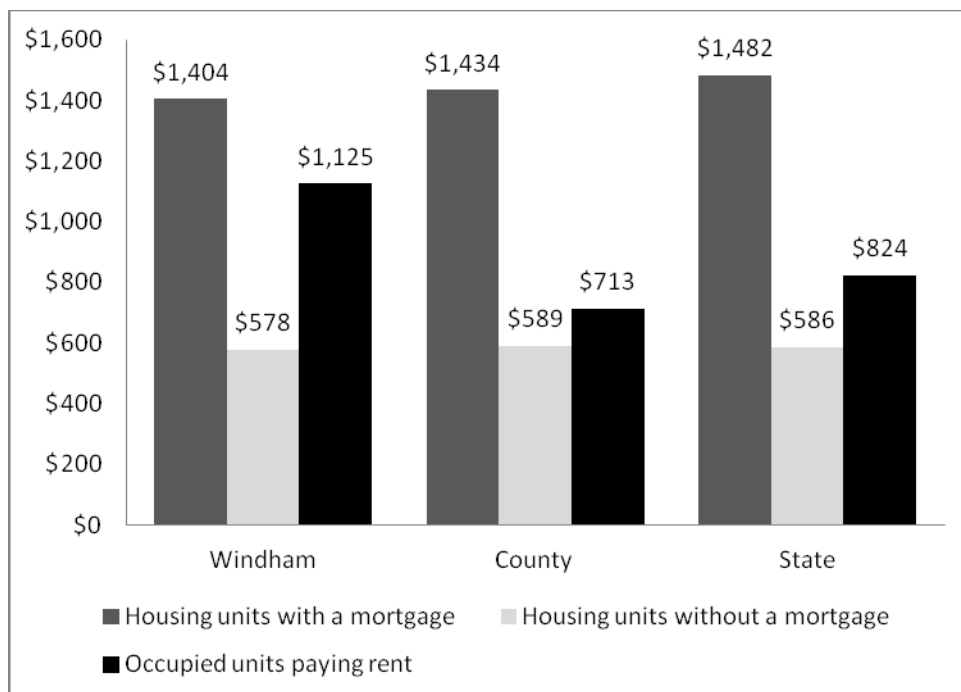
There is no project based rent-subsidized housing available in Windham. This is housing in which the subsidy is attached to a particular unit. The neighboring towns of Londonderry and Chester both have subsidized elderly and disabled housing units.

**Housing Affordability** - Affordable housing is defined as housing that is owned or rented by its inhabitants whose gross annual income does not exceed 80% of the county median income and housing costs should be no more than 30% of a household's income. For rental housing this includes rent and utilities. For homeownership this includes mortgage (principal and interest), taxes, and property insurance.

The median monthly housing cost for renters and homeowners in Windham is illustrated in

Figure 3. Windham generally follows the trends that are occurring at both the state and county level.

**Figure 3: Median Monthly Housing Costs in 2010**



(Source: 2006-2010 American Community Survey 5-Year Estimates, Windham, 2008-2010 American Community Survey 3-Year Estimates, County & State)

According to Vermont Housing Data, from 2000 to 2004, housing values and prices increased in Windham as in the rest of Vermont as the median price of primary residences that were sold rose by nearly 200%. The Vermont Department of Taxes Property Transfer Return Report listed the median sales price in 2004 for a residential home on less than six acres in Windham as \$239,000.

Since that time, the average purchase price of a house in Windham has generally declined, as shown by the following figures from the equalization study for Windham, Produce by the PVR department of The Vermont Department of Taxes:

2008 -	\$235,786	
2009 -	\$232,929	-1%
2010 -	\$181,179	-23%
2011 -	\$198,000	+9%
2012 -	\$192,816	-3%

Housing trends are cyclical in nature. For example, in the third quarter of 2004, the Vermont Housing Price Index, which tracks percentage increases in homes, reached a record level, accelerating faster than the real estate market boom of the 1980s. According to the Vermont Housing Awareness Campaign, in order for housing to become more affordable, home prices would need to fall significantly, interest rates would need to stay low, and Vermonters would need to see increases in their income.

Housing affordability is in part addressed through the activities of non-profit agencies in the area. Windham and Windsor Housing Trust provides affordable rental housing to low and moderate income households, including families and individuals, persons with disabilities or special needs, and the elderly. The Trust can also provide income-eligible homebuyers with a subsidy towards the purchase of a qualifying home. In addition, homebuyers under this program have access to below market rate mortgages as well as financial assistance with closing costs. The Land Trust is committed to preserving the affordability of housing in perpetuity by conveying parcels of land to individual homeowners through long-term land leases. Southeastern Vermont Community Action Agency (SEVCA) provides referrals to area shelters, landlord lists, and assists individuals in completing applications for affordable housing possibilities.

Windham does have a Housing Rehabilitation Program. The program is designed to benefit elderly, handicapped, and income-eligible homeowners with rehabilitation activities. It is a revolving low-interest loan program. The Citizen's Advisory Committee administers the program and puts all interest and principle back into the fund to keep loans available in perpetuity. Applications are available at the town office.

## **B. LOCATION OF RESIDENTIAL DEVELOPMENT**

According to the Vermont Department of Aging and Independent Living, Vermont Population Projections 2000-2020 (August 2003), Windham was projected to have 416 people by 2020. (In 2013 Windham's actual population was at 419.) There is a sufficient amount of land that is not unduly steep (slopes of 20% or greater) that likely has soil suitable for on-site wastewater management, and that is located outside of the Forest District to accommodate additional housing growth associated with the projected population growth.

There are certain locations that are more appropriate to handle residential growth than others (see the Future Land Use Section). Higher density residential development should occur in the historic settlement areas of South Windham and Windham Center. The Forest Districts are not appropriate areas for residential development because the purpose of these areas is to provide for forestry uses while protecting large, contiguous areas of timber and wildlife and water resources. Due to the remote nature of the Forest Districts, residential development may serve to increase municipal expenses and therefore is generally discouraged.

## **C. FUTURE HOUSING NEEDS**

Windham must continue to address the need for affordable housing in the town. As with other towns located near vacation and resort areas, the availability of affordable housing has become a problem for Windham. During the past 20 years, second home construction has boomed in this area, generally increasing the prices of real estate. Even when those second homes become available for year-round resident housing, the eventual sale price is likely to be the seller's offering price, or more, resulting in a cost that is usually higher than a local family can afford. This imbalance makes it very difficult for local families to find adequate, affordable housing or land on which to build. An exception to this is Timber Ridge where high density ski resort seasonal homes are being converted to year round and are relatively affordable.

In addition, the median age of residents of Windham is increasing. To the extent that older people are able to live on their own and not need significant care, their housing needs are not significantly different than the rest of the community. There is a noticeable increase in the special needs of older people. The ability for an elderly person to stay in their home depends on connections to the community and services.

**Policy 1: Support a range of residential development to meet the diverse housing requirements of Windham, especially those of low and moderate incomes.**

*Actions*

1. Amend the Zoning Bylaw to make accessory dwellings a permitted use as required by state statute enacted in 2004. Make information available to the public so that homeowners are aware of their ability to create an accessory dwelling unit.
2. Revise the Zoning Regulations to conditionally permit multi-family housing in the Hamlet, Recreation-Commercial, and Rural Residential districts.
3. Support the efforts of non-profit housing organizations, such as Windham and Windsor Housing Trust, and private developers to implement opportunities for affordable housing in Windham, including housing that meets special needs populations, such as the elderly or the handicapped.

**Policy 2: Preserve the natural resources and rural qualities of Windham by siting new housing so as to respect the existing natural environment and preserve the greatest amount of open space.**

*Actions*

1. Review Windham's existing Zoning Bylaw and make changes that encourage additional diversity of housing types including the following:
  - a. Promote housing development within the historic settlement areas of South Windham and Windham Center (designated as Hamlets in the Land Use Section of this Plan). Consider allowing smaller lot sizes to promote clustering and shared septic systems.
2. Encourage, through Planned Unit Development provisions in the Zoning Bylaw, creative site design which minimizes development costs while preserving natural resources and open land. Provide a density bonus in the Planned Unit Developments in the Zoning Bylaw.

**Policy 3: Support homeownership and property upkeep efforts of citizens.**

*Action*

1. Continue to promote the Housing Rehabilitation Program and other options for owners to rehabilitate housing structures so that they are safe and sanitary and more energy efficient and can remain active in the town's housing stock.

**Policy 4: Continue to promote the benefits of energy conservation & efficiency to preserve our environment among both new and current Windham home owners and potential developers.**

*Action*

1. Offer information in the Town Office pertaining to energy assistance initiatives e.g.; SEVCA and Efficient Vermont (Efficiency Vermont .com)
2. Provide information on those initiatives in the Windham News and Notes community newspaper.

## **CHAPTER IX LAND USE**

### **A. EXISTING LAND USE**

Windham's patterns of land use are clearly defined by the Town's existing transportation network and elements of the natural environment. The Town is situated in a high mountain valley. A portion of the western edge of Town has substantial areas of level topography and areas that are dominated by shallow soils.

Development in Windham has been overwhelmingly residential in nature. Most of this residential development is located along Windham Hill Road or on unpaved secondary roads. It is generally characterized as scattered, low density single family development. There are pockets of more dense residential uses in Windham Center, South Windham and near the former Timber Ridge Ski Area. Because residential properties in Windham do not have public sewer systems, residences tend to be located where soils are more suitable for individual wastewater disposal systems.

Other development in Windham consists of public and semi-public land uses and commercial uses. Public and semi-public land uses include schools, churches, and municipal government. With the exception of the Windham Elementary School, these uses are concentrated in the historic settlements of South Windham and Windham Center. A few commercial enterprises (bed and breakfasts, Tater Hill Golf Club) have been established in Town, though they are scattered and do not represent sufficient contiguous area to be considered as a separate existing land use for the purposes of this section of the Plan.

Forested land, most of which is undeveloped, is the predominant land cover in Windham. Overall, forested land covers nearly 15,610 acres, representing approximately 93% of the Town. Approximately 6% of land cover in Windham is classified as open space. These open spaces, some of which are in agricultural use, are primarily located along the roads of Windham, as shown on the Existing Land Use/Land Cover Map that is incorporated into this Plan. The Natural Resources chapter of this Plan contains a further discussion of forestry and agricultural uses in Windham.

### **B. FUTURE LAND USE PLAN**

The following land use districts shall provide the basis for municipal land use regulations. While the zoning regulations specify use and dimensional standards for each district, the Town Plan sets the foundation. The locations of the districts are represented on the Future Land Use Areas Map that is incorporated into this plan.

#### **1. Forest**

Windham has designated four Forest Districts. They are located in areas of steep slopes and contiguous forest. The land is characterized by the absence of development or improved roads. The following are the general description of the Forest Districts:

- the eastern slopes of Glebe Mountain and the Cobb Brook watershed
- the land area of the Stiles, Willie and Howe Brook watersheds that lie between Windham

- Hill Road and the Town's eastern boundary;
- the area located in between Popple Dungeon Road and White Road in the northeastern portion of Town; and
- the land around Turkey Mountain.

The purpose of the Forest Districts is to provide for forestry uses while protecting large, contiguous areas of timber and wildlife/natural resources. Appropriate uses in the Forest Districts include agriculture, commercial forestry, other forest uses (i.e., education, research, etc.) and seasonal camps. Industrial and commercial uses (other than forestry) and mineral resource extraction are prohibited. Uses such as single family dwellings, and non-intensive recreation may be allowed after careful review by the Windham Planning Commission to ensure that the viability of the timber resources or wildlife habitats will not be jeopardized. See Zoning Regulations Section 204 for uses prohibited. The minimum lot size shall be 27 acres.

## **2. Hamlet**

South Windham and Windham Center are classified as Hamlets. These two areas represent distinct nodes of development with the following elements that are characteristics of these historic rural settlements: residences, government services, small businesses, civic uses, and fairly dense development when compared to the rest of the Town. The purpose of the Hamlet is to continue the historic development pattern of Windham by encouraging high density and mixed use development. The principles to be followed in the governing of land use in the Hamlet include:

1. Retain the mixed use zoning that already exists in these areas;
2. Remove barriers to multi-family housing development in the Hamlets;
3. Encourage community-scale commerce, e.g., general store;
4. Provide for a balance of communal open space and structures; and
5. Preserve the historic character of the Hamlets.

Appropriate uses in the Hamlets include residential dwellings, home industries and businesses, personal services, and professional offices. See Zoning Regulations Section 204 for uses prohibited. Lot sizes should be small so long as the capacity of the soil to handle wastewater is not exceeded and the required well isolation distances can be met. The goal is to encourage a compact pattern of development in the Hamlet.

## **3. Rural Residential**

The Rural Residential area comprises areas which are already committed to rural development, are easily accessible from the existing road system, or which appear capable of being developed at a low to moderate density. Some of the lands in the rural residential district have slight to moderate physical limitations to development.

The purpose of the Rural Residential areas is to accommodate low to moderate density development that is consistent with existing land uses and sensitive to the limitations of the land. Residential uses and accessory uses (including home businesses or industries) are permitted. Multi-family housing increases Windham's mix of housing types and is supported in the Rural Residential area. Non-residential uses, including service businesses, professional offices, and inns are acceptable land uses for the Rural Residential area provided that such uses are planned to be relatively small in scale; are not primary or dominant uses in the area; do not unduly conflict with existing or planned residential, forestry, or agricultural uses; and do not unduly

affect rural character. In order to prevent commercial development that may be inconsistent with the rural character, consideration should be given towards developing rural standards that deal with size, scale, and development standards (i.e., no lighting, limited parking, soft surfaces, visual screening, etc.). See Zoning Regulations Section 204 for uses prohibited. Road construction should be carefully planned so as to respect the natural environment and to promote the clustering of houses on appropriate sites. Long roads, whether public or private, should be designed to serve more than one property.

#### **4. Recreation-Commercial**

The Recreation-Commercial areas are comprised of lands within the former Timber Ridge Ski Area that were formerly occupied by the original base lodge, accessory structures, and parking areas, as well as the Tater Hill Golf Course and some of the adjacent parcels. The purpose of the Recreation-Commercial area is to allow the development of commercial recreation facilities and commercial enterprises that are ancillary to recreational uses. Compact development is desired in this area to protect open spaces and to prevent a linear pattern of development.

Appropriate uses include dense residential development and recreational facilities. Other uses such as personal service, retail stores, restaurants, and hospitality-commercial uses such as inns and bed and breakfasts may be allowed after further development review. See Zoning Regulations Section 204 for uses prohibited. The minimum lot size shall be one acre with a density of one dwelling unit per lot. Higher densities should be allowed for development of multi-family housing.

#### **5. Resource Protection Areas**

Resource Protection areas are defined as the areas with special natural resources that contribute to Windham's rural character. They include, but are not limited to, areas within the Rural Residential areas that contain productive farmland, wetland chains, and significant wildlife areas or crossings. Also included are the Town's scenic areas (Chapter VI part C) as well as fragile resources that are significant resources within the Town including ridgelines, headwaters, watersheds and aquifers. In order to sustain Town and region's health and safety, and Windham's rural character, as well as fish and wildlife habitats, these landscapes must be preserved so that future generations can benefit from the natural resources environment that currently exists in Windham.

- Policy 1:        Preserve the character, scenic landscape and environmental well-being of Windham through the designation of distinct zoning districts.**
- Policy 2:        Preserve and protect Windham's headwaters and watershed areas as a high priority to help ensure the health and safety of the town and area residents.**
- Policy 3:        Require that all development decisions, especially those involving land in the forest districts, at higher elevations and near surface water resources contain a review of possible stormwater runoff consequences for downstream settlements in Windham and neighboring Towns.**
- Policy 4:        Regulate land use activities to ensure compatibility with the purposes of the districts.**

### *Actions*

1. Maintain the Forest District for the purpose of protecting large contiguous forest land and natural and community value. To this end:
  - a. Consider whether future changes to the Forest District boundary are required.
  - b. Maintain provisions in the Zoning Bylaw that limit permitted uses within the Forest District to agriculture, forestry, individual recreational hunting and fishing camps, seasonal or occasional use camps, and accessory uses to the permitted uses on the same lot.
  - c. Maintain an overall density of one unit per 27 acres.
2. Maintain the Hamlet Districts for the purpose of continuing the areas of historic, high density, mixed use development. To this end:
  - a. Consider whether future changes to the Hamlet boundaries are required.
  - b. Maintain a mix of the following or like uses in the Hamlet Districts: residential, personal service, professional offices, bed and breakfasts and inns, government/community services appropriate in scale.
  - c. Review site design, parking, lighting, setbacks and related standards for development within and create standards that will protect and enhance the scale, pattern and character of development that defines the Hamlets.
  - d. Maintain a maximum density of one unit per ½ acre.
3. Maintain the Rural Residential District for the purposes of encouraging low density development, encouraging continued agricultural and forest management, continuing the historic residential settlement pattern of Windham. To this end:
  - a. Revise the Zoning Bylaw to conditionally permit multi-family housing in the rural residential district.
  - b. Continue to permit a mix of rural land uses, including agriculture, forestry, outdoor recreation, housing, and home businesses. Continue to conditionally permit a range of low-impact commercial uses such as retail, bed and breakfasts, inns, repair shops and other similar uses.
  - c. Evaluate the existing density of one unit per acre and lower the density if deemed necessary.
4. Maintain the Recreation Commercial District to promote development of commercial recreational facilities and support consistent uses around the Tater Hill Golf Course and the former Timber Ridge Ski Area. To this end:
  - a. Maintain a minimum lot size of 1 unit per acre (1/2 acre for planned unit developments).
  - b. Continue to conditionally permit a mix of commercial uses that include recreational facilities, garage and gas stations, restaurants, retail stores, and similar uses.
  - c. Amend the zoning bylaw to conditionally permit multi-family housing.
  - d. Consider amending the planned unit development standards to allow for greater density than 1 unit per acre.



**Policy 5: Require that development projects integrate natural features and resources so that the losses of these are minimized.**

*Actions*

1. Revise site plan review standards to ensure that overall site design is consistent with the purpose and character of the district within which a development is located. Standards and conditions should emphasize those considerations related to the internal layout of the site, the physical design, and the functional integration of the site with surrounding properties and uses.
2. Evaluate land uses that may require special considerations due to their scale, intensity or potential impact to neighboring properties or fragile features (e.g., timber harvesting, telecommunication towers, small-scale residential wind energy systems) and create specific performance standards that relate to site design and operation.
3. Develop standards in the Zoning Bylaw for development on steep slopes.

**Policy 6: Encourage the maintenance of open land in order to provide a diversity of habitat.**

*Actions*

1. Amend the Zoning Bylaw to create a Resource Protection Area Overlay District to preserve productive farmland, wetland chains, headwaters and significant wildlife crossing areas. Delineate overlay district boundaries and create development, clearing, and maintenance requirements.
2. Site structures to fit into the natural characteristics of the land, maintain vegetative buffers along scenic roads and parcel boundaries, and site development on the edge, rather than in the center, of open fields.
3. In order to preserve contiguous forest blocks and maintain wildlife corridors, evaluate areas suitable to provide connections between the Forest Districts and inventory property owners' interest in including their land in a Forest District and/or working with the Vermont Land Trust or other organizations or agencies to preserve open space in perpetuity.
4. Educate landowners on various ways to preserve scenic resources and open space.

**Policy 7: Provide sufficient distance to development and populated areas to preserve and protect community health and safety, natural resources, fragile areas, ambient noise levels, air and water quality and property values.**

*Action*

1. Any proposed development in the town shall be evaluated relative to the maps included in this Plan (Chapter XIV) with particular attention to those depicting settlement patterns relative to topography, steep slopes, watersheds, wetland and vernal pools, headwaters, earth resources, land use and viewsheds.
2. Town Selectboard and Planning Commission will undertake educational and out-reach efforts with counterparts in downslope communities regarding the implications of any potential developments in Windham which will impact headwaters or watershed areas.

## **CHAPTER X**

### **ECONOMIC DEVELOPMENT**

#### **Objective:**

Windham's objective is to maintain and sustain its traditional, small-scale business orientation and residential community character while encouraging economic enterprises which are appropriate to those traditions.

#### **Economy:**

Windham is a small, rural residential community comprised of 419 residents and 26 square miles and is one of the smallest towns in the Windham Region. The 2010 Census indicates Windham's population has grown 28% since 2000. This growth is primarily due to conversion of part-time residents to full time and to the construction of a few new residences in recent years. The town has long had a high percentage of second home to permanent residences. The 2010 Census reported approximately 198 seasonal homes and 167 owner-occupied, full time residences. There has been a 33% increase in the number of owner-occupied non-seasonal residences between 2000-2010.

The town is characterized by its remote geography, rugged terrain and high percentage of forest cover. These traditional aspects of Windham life encourage an emphasis on locally owned, independent small businesses. The 2010 Census shows 139 total workers, 93 (67%) of which work in one of 10 nearby towns while 18.6% of the town's workforce works at home.

Both Windham Center and South Windham at one time had small general stores, but both were closed by around 1950.

#### **Commercial Businesses:**

Today Windham is home to a variety of small businesses including a bed & breakfast, property rentals, seasonal caretaking, electrical contracting, small engine repair and sales, carpentry services, home construction and remodeling services, house painting, timberframe construction and restoration, excavation services, landscape maintenance, floor finishing, plumbing, firewood, woodstove and chimney servicing, logging, forest management and professional water quality testing. With the increasing availability of high speed internet (an ongoing process due for completion in 2013-14) other home-based businesses include consulting in marketing and communications, recruiting, foreign language translation, website development, and a growing amount of telecommuting. There is at least one artisan candle maker and a well respected producer of hand-dyed wools from local sheep.

Tater Hill Golf Course, owned and operated by Okemo Mountain Resort, is an 18 (eighteen) hole public golf course with a pro shop and on-site restaurant. Tater Hill has been managed by Okemo Mountain Resort since 2004 and was recently expanded from 9 (nine) to 18 (eighteen) holes.

Timber Ridge (formally an independently owned, local ski area) has been closed as a commercial enterprise and is expected to maintain this status. Recently, however, they have begun to host an annual, charitable, musical event known as The Friendly Gathering Music Festival which attracts several thousand people. Since there are no retail businesses in Windham there is little direct economic benefit to the town from such events, but the organizers have received the support of town officials in permitting and regulating the event; and there is some benefit to businesses in adjacent towns.

### **Farming:**

There are several small farm operations in Windham including: two commercial hay operations (Corriveau and Dutton), an apple orchard (Dutton), a small perennial nursery (Griffin), a sheep and cattle operation (Partridge) and a small cooperative dairy (Merinoff). As is typical in small, rural towns in the region, many households have vegetable gardens and chickens, and several families in town raise pigs for their own use. Windham has a demonstrated commitment to local agriculture as evidenced by the participation of its citizens, as both vendors and buyers, in the local farmers market in West Townshend and Londonderry.

### **Forestry:**

Although 95% of Windham's land area is forested and almost ten thousand acres are concentrated with two large owners, the economic impact on the town of forestry as an industry is difficult to measure. There are a total of 41 Windham properties enrolled in the State's Current Use Program in 2013 to help ensure responsible management of this resource.

Two private enterprises currently own and manage sizeable forested areas in the Town of Windham. These areas are owned, in absentia, by Meadowsend Timberlands LLC (referred to locally as the Stiles Brook Tract) to the East of town and McGraw Family Partnership LP which owns much of the land on Glebe Mountain to the West. Meadowsend Timberlands LLC is a New Hampshire company primarily engaged in the hardwood lumber industry and owns or manages other large tracts in Vermont and New Hampshire. Timber harvesting appears to be a sideline for the McGraw Family Partnership LP, driven principally by the requirements of the current use program.

Vermont has no provisions at the town level for either permitting or reporting on logging activities in terms of the nature, volume or value of timber harvested. The County Forester gathers data which is summarized and reported on a county-wide basis. It appears that relatively little of the logging in Windham's woodlands is done by Windham residents. The direct economic impact of forestry as an industry is therefore virtually impossible for the town to accurately measure.

Windham values our heritage as a community rich in forest resources, and is committed to working with landowners to insure sustainable land and timber management practices.

### **Economic Development Policies:**

**Policy 1: The town prohibits any commercial or industrial operations on its ridgelines other than forestry and will not support any commercial or industrial activity that exceeds the capacity of its public infrastructure including emergency response assets.**

**Policy 2: The town recognizes there are certain challenges inherent in encouraging economic development activity which will also preserve the natural environment that has for so long characterized the area.**

#### *Actions*

1. Continue to encourage the startup and support of Small Businesses appropriate to the rural and isolated nature of the area.
2. Foster and encourage development of cottage industries (home-based businesses) which

are in keeping with and preserve the rural character of Windham and have no negative impact on its environment and infrastructure.

**Policy 3: The town will strive to nourish and expand our array of traditional occupations while supporting the development of new home-based businesses which can utilize our expanding telecommunications resources.**

*Action*

1. Identify and actively promote the opportunities for internet based businesses and telecommuting services made possible by the recent widespread availability of high speed internet.

**Policy 4: The Town will work actively to identify and publicize local business opportunities.**

*Actions*

1. Encourage the reissuance of the Windham Directory of Skills, Knowledge and Services available from residents and property owners. This is a means of letting residents know what services are available from members of the immediate community.
2. Encourage the formation of a local task force to explore means of promoting Windham as a place friendly to entrepreneurs interested in creating businesses that will capitalize on our much improved communications infrastructure.

**Policy 5: All commercial and industrial development must adequately control its wastes, including noise and light pollution and stormwater runoff, relate satisfactorily to existing land uses, and not result in the degrading of valued views and vistas.**

*Action*

1. Permit only types of economic development that protect and enhance the traditional assets of Windham. Development which will create excessive noise, light pollution, large traffic volumes, and hazardous wastes or damage air purity and quality or degrade scenic views shall be prohibited.

**Policy 6: The town shall encourage the development and local support of small businesses which sell and add value to local agricultural products.**

*Action*

1. Encourage Windham residents to support and participate in the West Townshend Market, which, although located in West Townshend, is owned by Windham landowners. The West Townshend Market has created a location where community baking and local farm produce are offered and where a small dairy co-operative is starting up. They also operate a popular thrift shop and host regular events.

## **CHAPTER XI**

### **IMPLEMENTATION**

The Windham Town Plan is a comprehensive guide concerning the manner in which the town wants to accommodate future growth as well as maintain the features that make the community special. Implementation of the Town Plan is a local responsibility and must be accomplished through a continued commitment on the part of the community. This Plan will be used to form the framework of the Planning Commission's work during the duration of the Plan.

Zoning regulations are the most common method of implementing and enforcing the policies and programs set forth in a town plan. This Town Plan provides direction for zoning changes and the Windham Planning Commission will evaluate these policies and recommendations to propose changes as necessary. We are mindful that it is State policy, that if an Act 250 commission in researching findings whether a proposed project is in conformance with a duly adopted local plan, finds applicable provisions of the Town Plan to be ambiguous, the district commissions, for interpretative purposes, shall consider bylaws, but only to the extent that they implement and are consistent with those provisions. For interpretative purposes, other state agencies such as the Agency of Natural Resources, Public Service Board, Department of Public Service, and VTrans, should also consider the Town bylaws if they believe there is any ambiguity in the Plan.

Many of the Actions are, in and of themselves, a way to implement this Plan. Furthermore, the Town will:

1. Participate in regional and state planning activities such as Act 250 hearings and Section 246 and 248 Public Service Board hearings.
2. Participate in any reclassification hearings involving waters in the Town of Windham.
3. Hold quarterly meetings of all town officers to facilitate communications on issues and matters of mutual interest.
4. Continue to maintain a central filing system for all town records and publish in one booklet all town ordinances, regulations and standards.
5. Plan in advance for the expansion or creation of those town facilities or services which will be required by future development.
6. Improve understanding of and compliance with town ordinances and regulations.
7. Implement this plan by example.
8. Coordinate planning with surrounding towns.
9. Consider the Town Plan when designing public work budgets and capital improvements.
10. Encourage citizen involvement.
11. Continue to encourage participation in workshops and seminars to update and expand knowledge of all facets of town government.
12. Seek grants as a means for funding actions discussed in the Town Plan. State funding opportunities include, but are not limited to, Municipal Planning Grants, Community Development Block Grants, VTrans Transportation Alternative Grants, and Vermont Recreational Trails Grants. In addition, there are several private foundations and federal government entities that finance projects.

## **CHAPTER XII**

### **COMPATIBILITY WITH OTHER PLANS**

Windham shares borders with the Windham County towns of Grafton, Jamaica, Londonderry, and Townshend as well as Andover and Chester in Windsor County. When Vermont's Growth Management Law, Act 200, was passed in 1988, Vermont set up a system for communities to work in concert with their neighbors, and with agencies of state government, to shape the future. This chapter seeks to examine the development patterns as proposed in the Windham Town Plan with those proposed in the neighboring Towns.

#### **A. COMPATIBILITY WITH NEIGHBORING TOWN PLANS**

##### **1. Grafton**

The entire eastern boundary is shared with the Town of Grafton. The Grafton Town Plan designates the area along the border with Windham as primarily Conservation lands with the area along Route 121 as Rural Residential. On the Windham side of the border, the land is designated as Forest with Rural lands along the Route 121 travel way.

##### **2. Jamaica**

The Town of Jamaica shares much of Windham's southern boundary. Windham Hill Road, Old Cheney Road, West Windham Road, and Under the Mountain Road lead into Jamaica. The Windham Town Plan designates three land use areas along the border: Rural Residential in West Windham and surrounding South Windham; Hamlet in South Windham; and Forest along Turkey Mountain. Jamaica has designated the area bordering West Windham and South Windham as Rural Resource with the remaining land area as Conservation. The Jamaica Town Plan describes Rural Resource as areas suitable for low-density residential development that protects the resource value of the land. Windham is advocating for denser development in the historic settlement area of South Windham.

##### **3. Londonderry**

Windham shares a boundary with Town of Londonderry to its west. Most of the boundary is dominated by Glebe Mountain ridgeline, which both towns value as a natural resource as well as a scenic resource. The area on Glebe Mountain has been identified by Londonderry as Resource Conservation the purpose being the protection of significant forest areas, scenic resources, headwaters and Class A streams and wildlife habitat at higher elevations. Further to prevent the development on ridgelines, steep slopes, and shallow soils and in areas with poor access to public roads, municipal services and commercial centers. Windham's designation as Forest is compatible with Londonderry's desired land use. Windham and Londonderry also share a boundary along Route 11. Some of this area has been designated as Residential in Londonderry. Similarly, Windham has designated a portion of that boundary area as Rural Residential.

##### **4. Townshend**

The southeastern tip of Windham is adjacent to the Town of Townshend. The only road access directly from one town to the other is along Chase Road. Townshend has designated the area along the boundary as Resource Land. Windham has designated some of the lands as Rural Residential with a Resource Protection Area overlaying Chase Road. A portion of the land has also been designated as Forest.

##### **5. Andover**

The majority of the northern boundary of Windham is shared with the Town of Andover. Route 11, Howard Hill Road, and Christmas Tree Road travel into Andover. Andover has designated the lands bordering Windham as Forest, with the exception of the area around Tater Hill. Windham has designated a portion of the land surrounding the Tate Hill Golf course as

Recreation-Commercial with the remaining lands as Rural Residential and Resource Protection Area overlay. The proposed land use designations recognize that commercial development has occurred in the Tater Hill recreational area of both Andover and Windham. Windham, in this area, is proposing to allow the development of commercial recreation facilities and commercial enterprises that are ancillary to recreational uses while at the same time advocating for compact development to protect open spaces and prevent a linear pattern of development.

#### **6. Chester**

A small area in the northeastern corner of Windham borders the Town of Chester. Popple Dungeon Road links the two towns. In Windham, this small area is designated as Rural Residential along Popple Dungeon Road with a small area designated as Forest. Chester has also designated the area along Popple Dungeon as Rural, recognizing the area as already having small residential parcels, but designates the balance as Forest recognizing the importance of contiguous forest areas for wildlife habitat as well as recreational use and encouraging development to be clustered to maximize forest preservation.

### **B. COMPATIBILITY WITH THE WINDHAM REGIONAL PLAN**

The Regional Plan is intended to provide guidelines for the planning and coordination of change and development which will, in accordance with present and future needs and resources, best promote the health, safety, and welfare of the citizens of the Region. The Windham Town Plan supports and complements the land use and development goals of the Regional Plan.

The 2006 Regional Plan identifies the “valley” lands as Productive Rural and Rural Residential lands. The Regional Plan categorizes the lands on the eastern slopes of Glebe Mountain, West Windham, Turkey Mountain, and the Stiles Brook tract along the eastern boundary of the Town as Resource lands. The Town believes that its proposed land uses are compatible with the Regional Plan.

## **CHAPTER XIII SEVERABILITY**

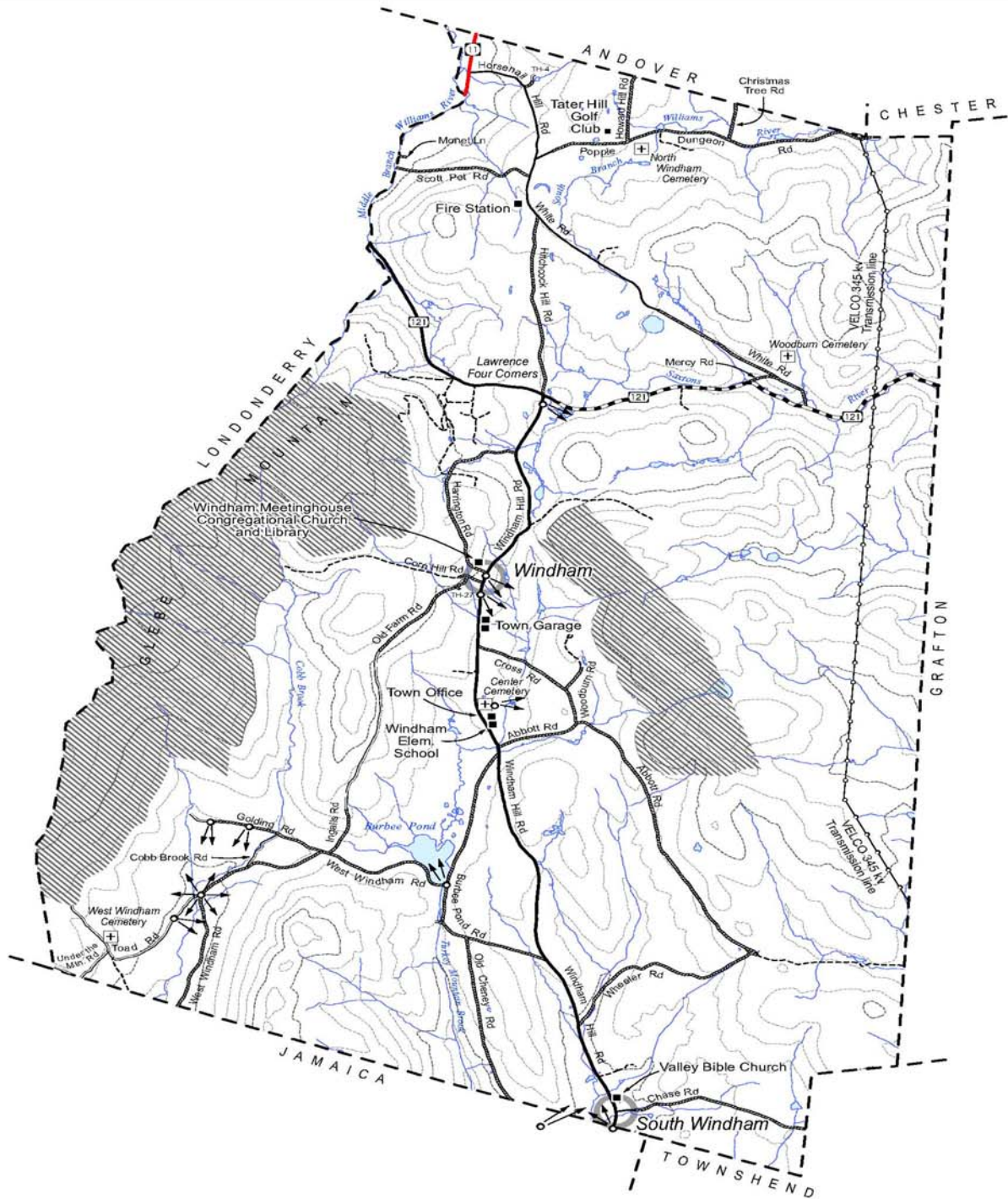
If any provision or portion of a provision of this plan is held to be invalid or unenforceable, all remaining provisions, or portions thereof, and the application of such provisions shall not be affected thereby, and shall remain in effect.

## **CHAPTER XIV TOWN PLAN MAPS**

A series of maps has been prepared to assist planners, public officials and citizens to understand Windham and to assist in the planning process, and governmental and business decisions. These maps are for planning purposes only. The policies and actions, and associated narrative discussions in the body of the Town Plan prevail as the guidelines for the Town's future growth.

- Map 1. Utilities and Community Resources
- Map 2. Earth Resource
- Map 3. Watersheds
- Map 4. Natural Resources
- Map 5. Transportation System
- Map 6. Existing Land Use/Land Cover
- Map 7. Future Land Use
- Map 8. Streams and Wetlands
- Map 9. Steep Slopes
- Map 10. Viewsheds
- Map 11. Patterns of Settlement vs. Topography





## Utilities and Community Resources

Town of Windham, Vt.

July 2007



GIS

0 0.5 1 1.5 Miles  
1:40,000

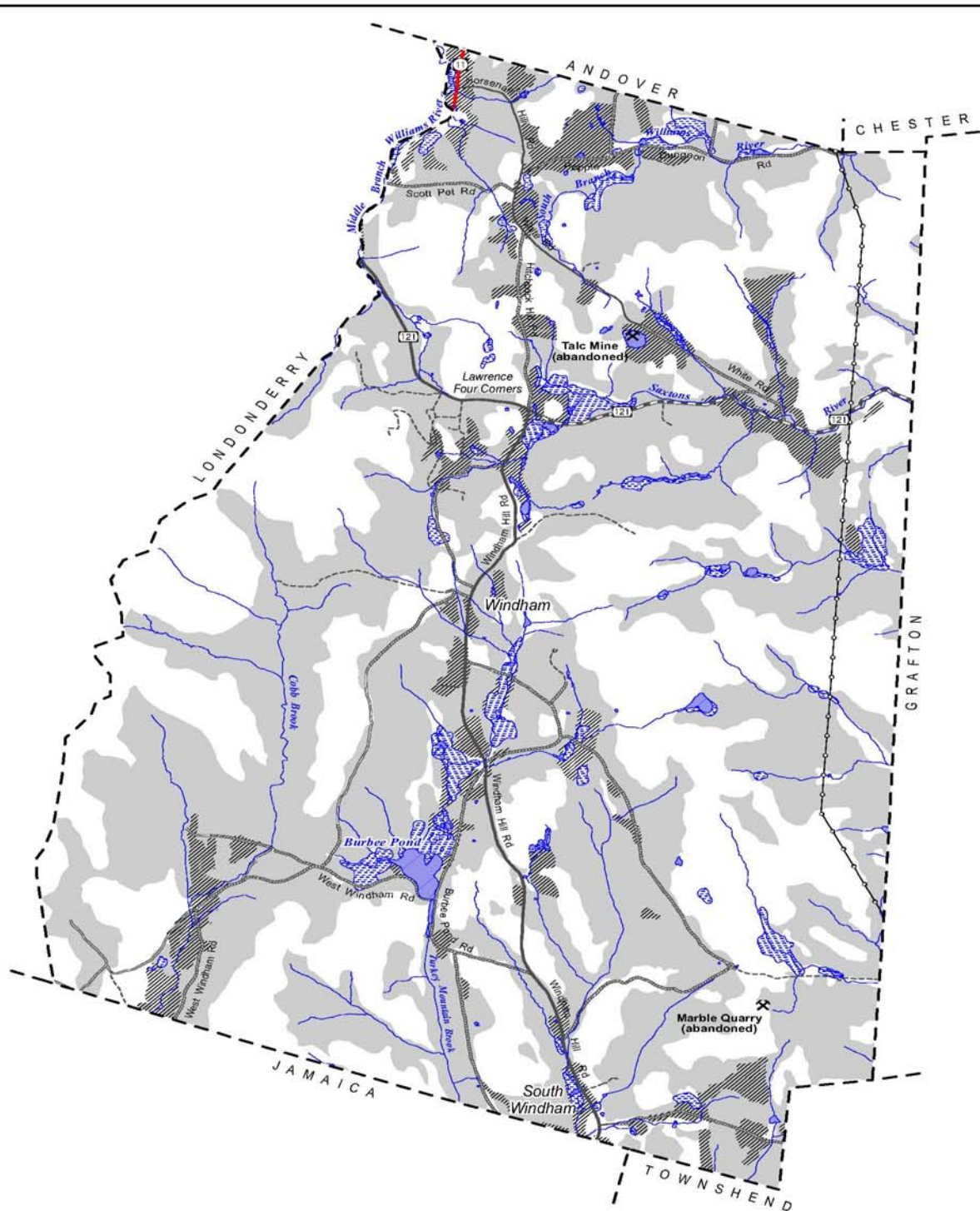
- Cemetery
- National Register Historic District (not actual extent)
- Electric transmission line
- Scenic view
- Prominent ridgeline
- 100-foot contour (approximate)

- Stream
- Lake or pond

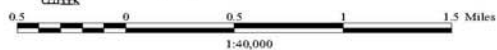
### Sources:

- Community Resources were identified by the Windham Planning Commission and data created by WRC GIS staff using 1:5000 aerial-photos, 1:25,000 USGS topographic maps, and Windham's GIS parcel data.

July 2007; C:\Towns\Windham\TP\_CommRes.mxd



# Earth Resources Town of Windham, Vt. March 2006



- Mine/quarry
- Important farmland soil (see data notes)
- Soil with Forest Productivity Class of Site I (see data notes)
- Wetland
- Stream/river
- Pond

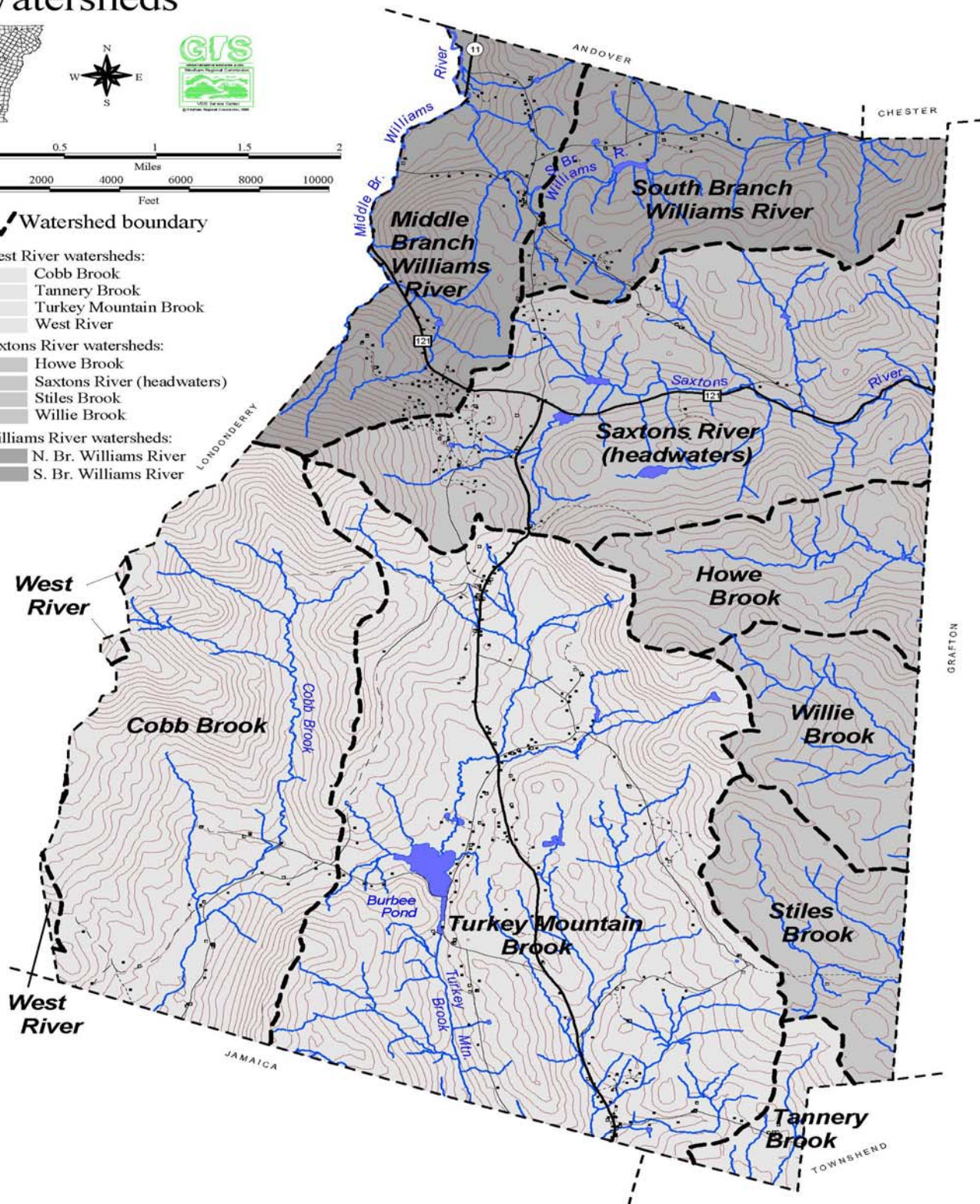
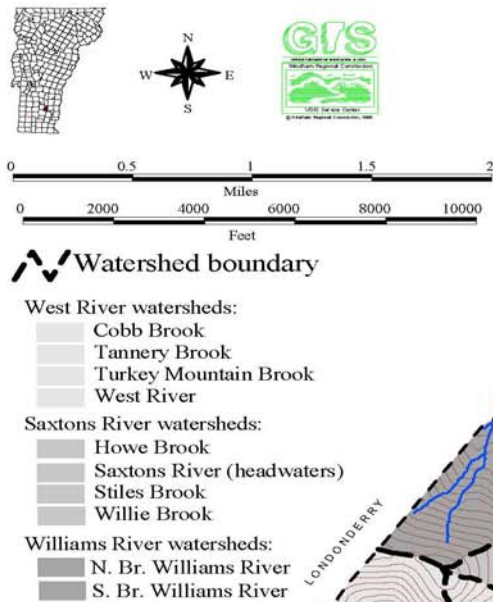
## Sources and data notes:

- Soil data are from VGIS data and are based on the Windham County Soil Survey.
- Forest productivity classes are based on the productivity of the land for forestry. Each class includes a range of potential productivity per acre per year. Site I soils are the most productive at greater than 85 cubic feet per acre per year.
- Important farmland soil delineations are derived from soils data. These soils qualify as Primary Agricultural Soils under Act 250.

March 2006; C:\Towns\Windham\TP\_Earth\_11x17.mxd



# Town of Windham, Vermont Watersheds



January 1999; C:\TOWNS\WINDHAM\WATERSHD.APR: watersheds-11x17 B&W

Commercial with the remaining lands as Rural Residential and Resource Protection Area overlay. The proposed land use designations recognize that commercial development has occurred in the Tater Hill recreational area of both Andover and Windham. Windham, in this area, is proposing to allow the development of commercial recreation facilities and commercial enterprises that are ancillary to recreational uses while at the same time advocating for compact development to protect open spaces and prevent a linear pattern of development.

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## **CHAPTER XIII SEVERABILITY**

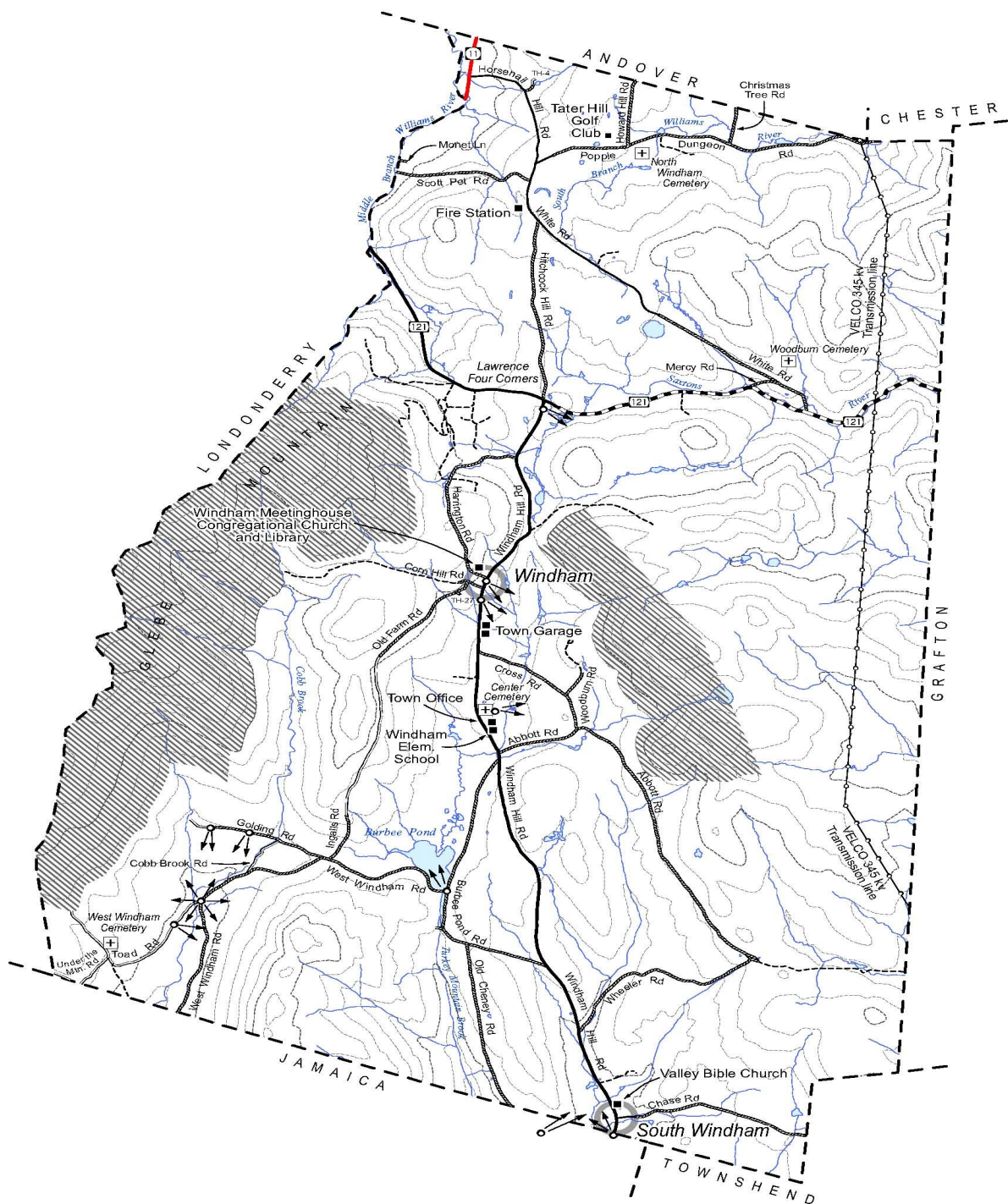
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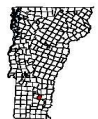




## Utilities and Community Resources

Town of Windham, Vt.

July 2007



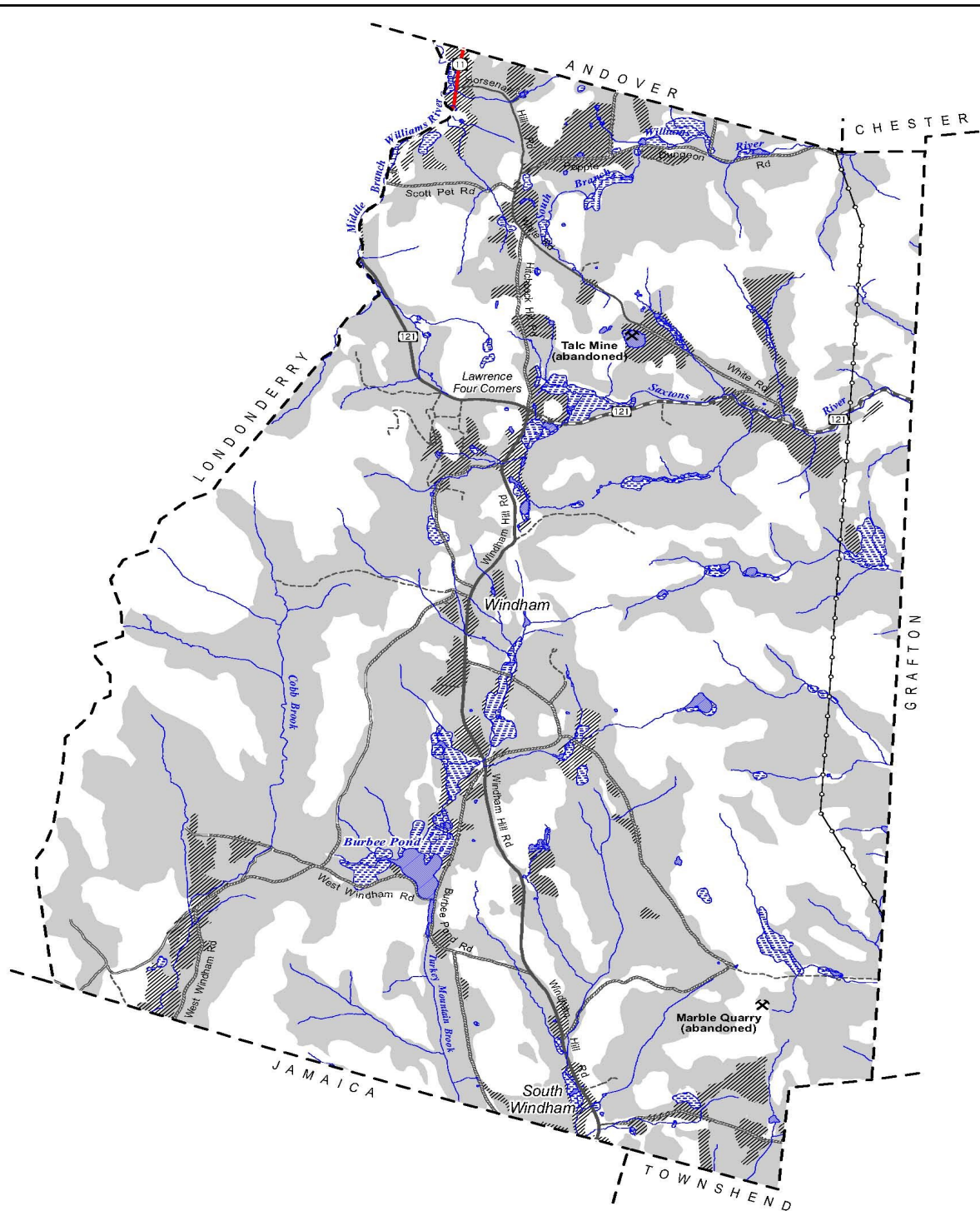
- Cemetery
- National Register Historic District (not actual extent)
- Electric transmission line
- Scenic view
- Prominent ridgeline
- 100-foot contour (approximate)

- Stream
- Lake or pond

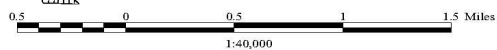
### Sources:

- Community Resources were identified by the Windham Planning Commission and data created by WRC GIS staff using 1:5000 orthophotos, 1:25,000 USGS topographic maps, and Windham's GIS parcel data.

July 2007; C:\Towns\Windham\TP\_CommRes.mxd



# Earth Resources Town of Windham, Vt. March 2006



- Mine/quarry
- Important farmland soil (see data notes)
- Soil with Forest Productivity Class of Site I (see data notes)
- Wetland
- Stream/river
- Pond

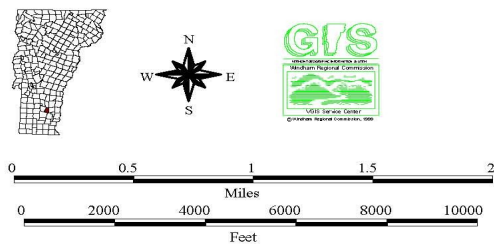
## Sources and data notes:

- Soil data are from VGIS data and are based on the Windham County Soil Survey.
- Forest productivity classes are based on the productivity of the land for forestry. Each class includes a range of potential productivity per acre per year. Site I soils are the most productive at greater than 85 cubic feet per acre per year.
- Important farmland soil delineations are derived from soils data. These soils qualify as Primary Agricultural Soils under Act 250.

March 2006; C:\Towns\Windham\TP\_Earth\_11x17.mxd



# Town of Windham, Vermont Watersheds



Watershed boundary

West River watersheds:

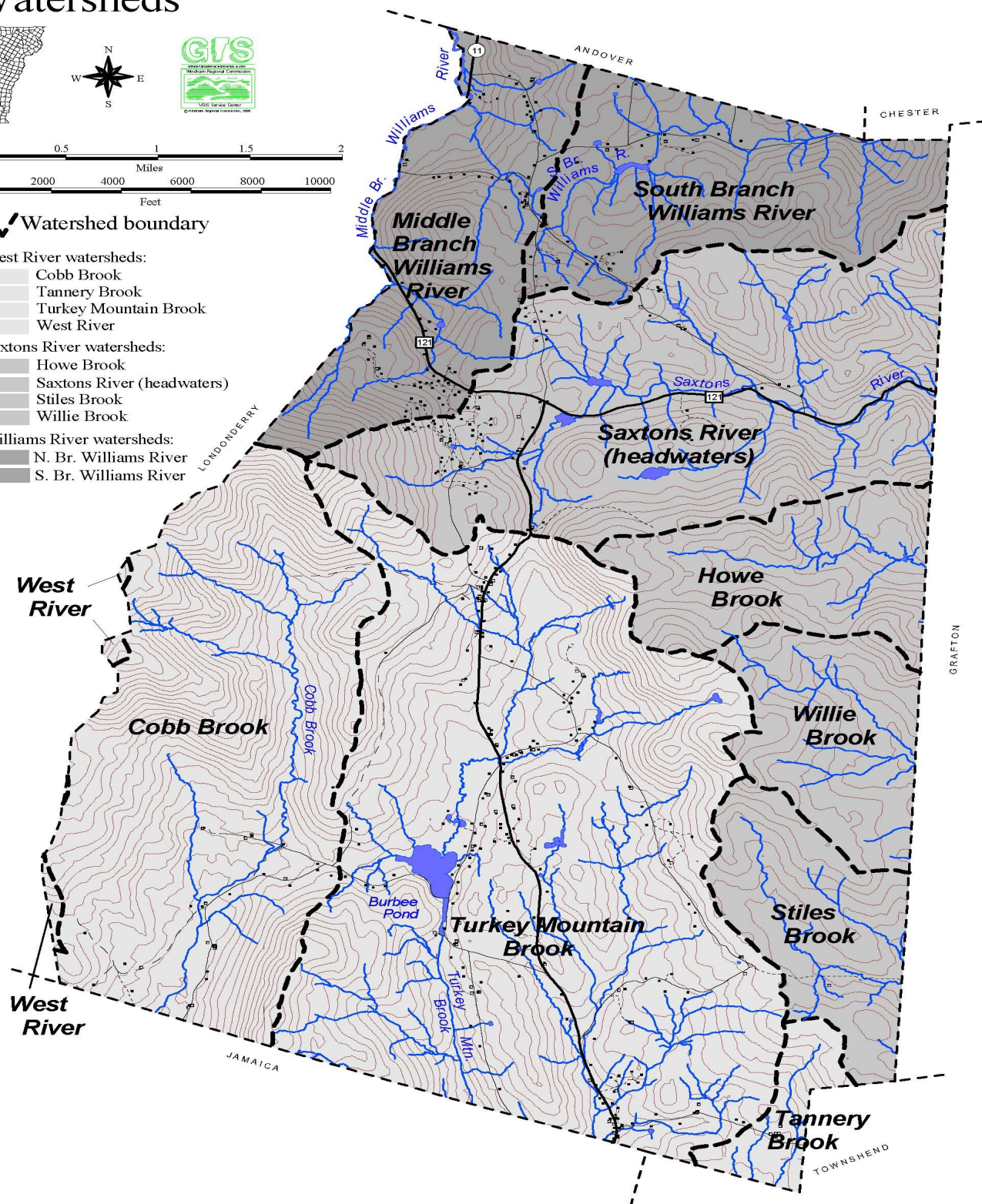
- Cobb Brook
- Tannery Brook
- Turkey Mountain Brook
- West River

Saxtons River watersheds:

- Howe Brook
- Saxtons River (headwaters)
- Stiles Brook
- Willie Brook

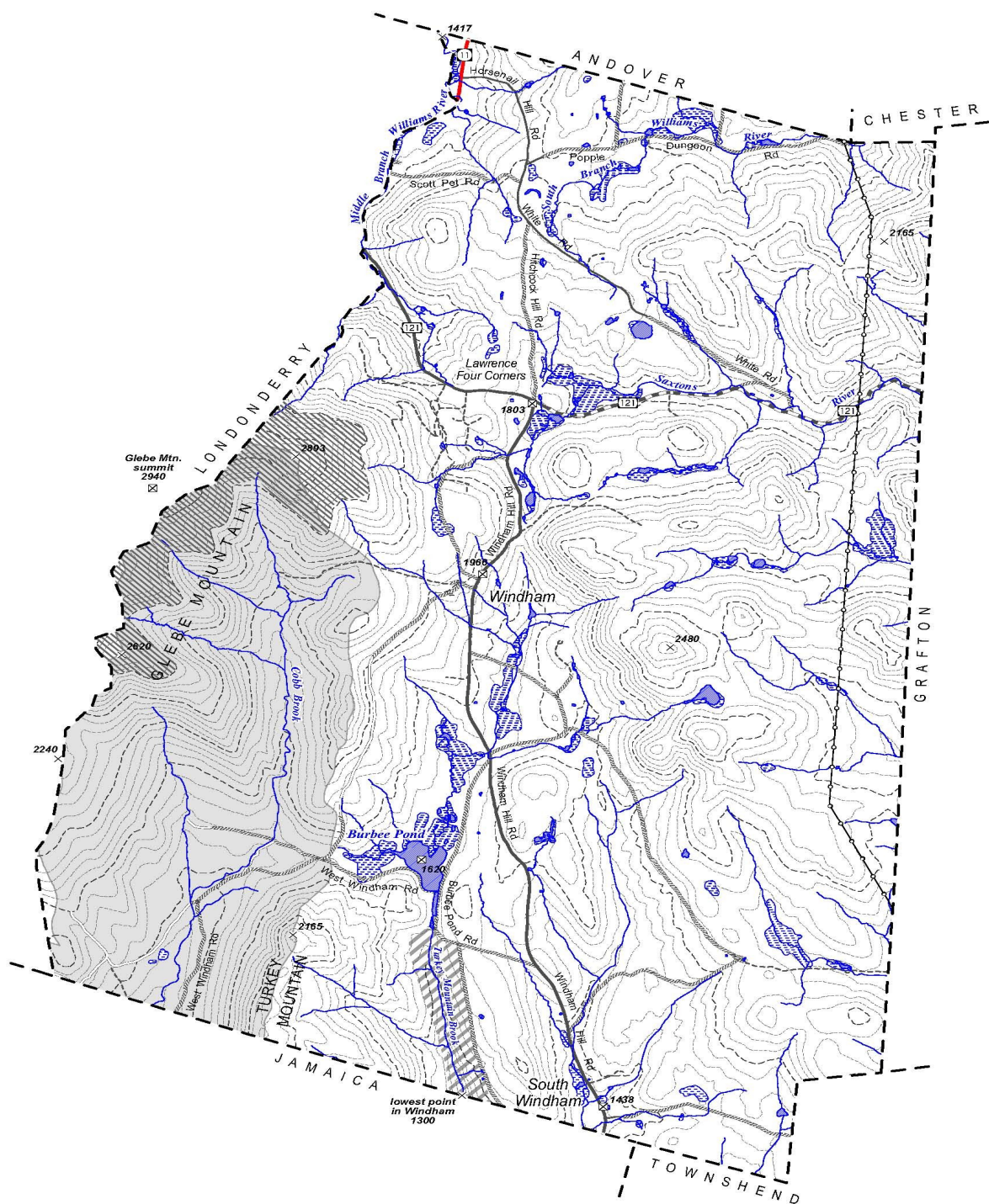
Williams River watersheds:

- N. Br. Williams River
- S. Br. Williams River



January 1999; C:\TOWNS\WINDHAM\WATERSHD.APR: watersheds-11x17 B&W





# Natural Resources Town of Windham, Vt. March 2006

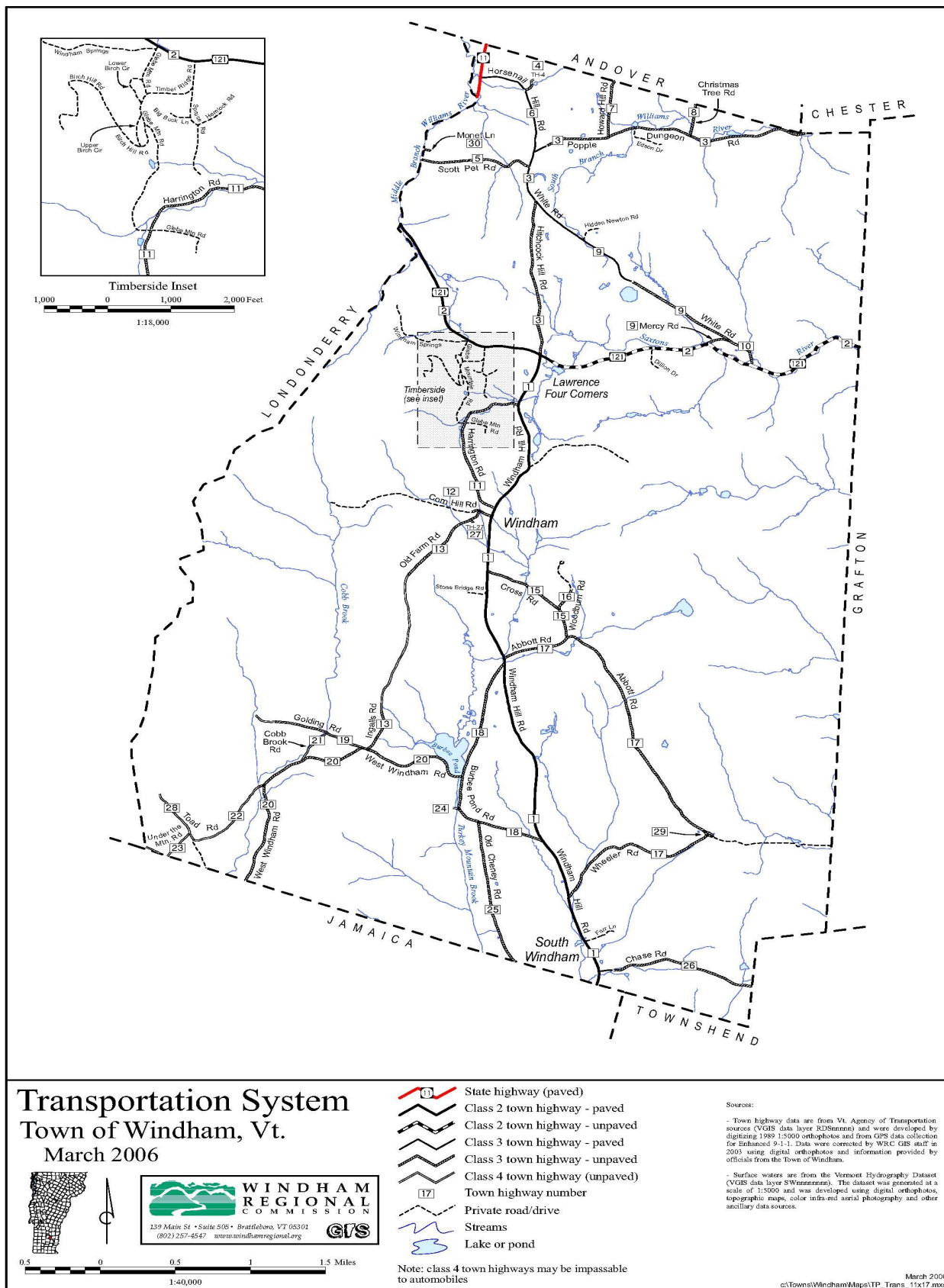


- 1803 Bench mark or spot elevation in feet
- 2480 Elevation in feet, approximate (within 20 feet)
- 50-foot contour (approximate)
- Land over 2500 feet elevation
- Deer wintering area
- Class A(1) watershed (Cobb Brook)
- Wetland
- Stream/river
- Pond

## Sources:

- Surface waters are from the Vermont Hydrography Dataset (VGIS data layer SWnnnnnn).
- The watershed of Cobb Brook is classified as a Class A watershed by VT ANR, Division of Water Quality. The watershed boundary was delineated and digitized by WRC staff using 1:25,000 USGS topographic maps.
- The wetlands shown are those included in the Vermont Significant Wetlands Inventory (VGIS data layer VSWI), which depicts the approximate locations of wetlands that are generally 3 acres or larger in size.
- Deer wintering areas are taken from the VGIS data layer DEERWN released in April 1997.
- Lands over 2500 feet in elevation were digitized by VT ANR from 1:24,000 USGS topographic maps.
- Contour lines were generated from USGS 1:24,000 Digital Elevation Models by WRC. They are intended to portray the general hypsography of the area and should not be used to determine actual elevations.

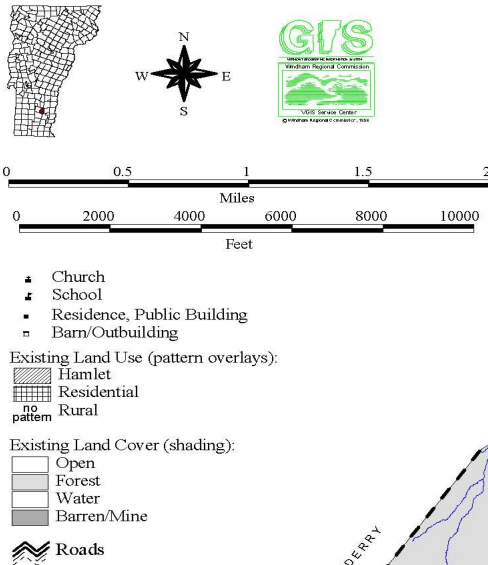
March 2006; C:\Towns\Windham\TP\_NatRes\_11x17.mxd





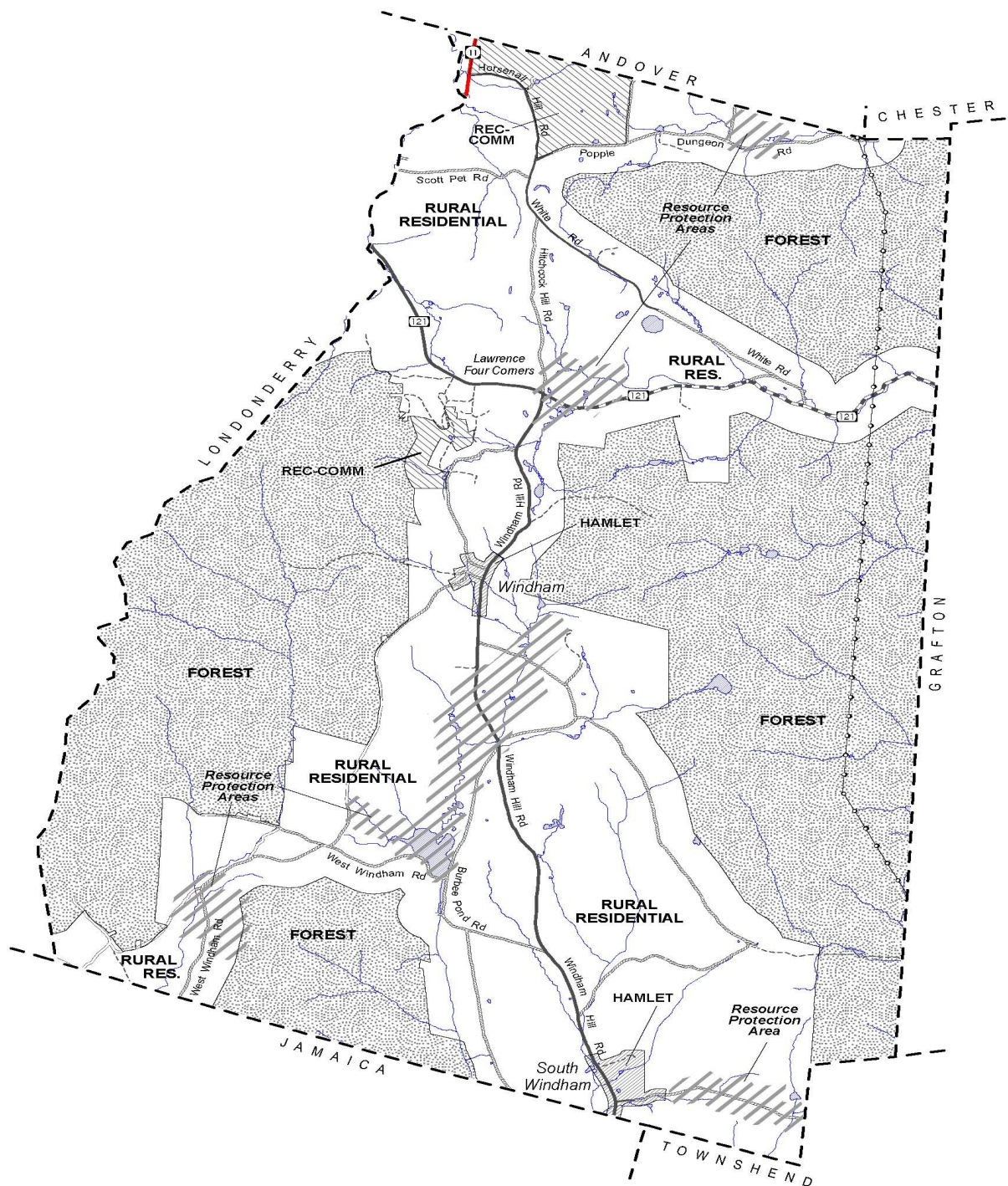
# Existing Land Use/Land Cover Windham, VT

NOTES:  
- This map should be used for planning purposes and general reference only.  
- A large scale color version of this map is available at the Windham Town Office.



SOURCES:  
- Land cover was interpreted from 1991 1:5000 orthophotos and 1992 and 1993 infra-red NAPP stereo aerial photography by WRC GIS staff. Minimum mapping unit is approximately 1 acre. Boundaries were delineated on 1:5000 orthophotos and digitized by WRC staff.  
- Existing land use boundaries were developed by WRC GIS staff and the Windham Planning Commission. The boundaries follow parcel lines or buffered distances from roads.  
- Structures were digitized from 1991 1:5000 orthophotos by WRC GIS staff. Information on structure type was provided by the Town of Windham. Structure location and type was updated by the Windham Planning Commission in 1996. The location of new structures is approximate.

October 1996, LANDUSE.APR



# Future Land Use Areas Town of Windham, Vt. March 2006



- Recreation-Commercial
- Hamlet
- Rural Residential
- Forest
- Resource Protection Area overlay

## Sources:

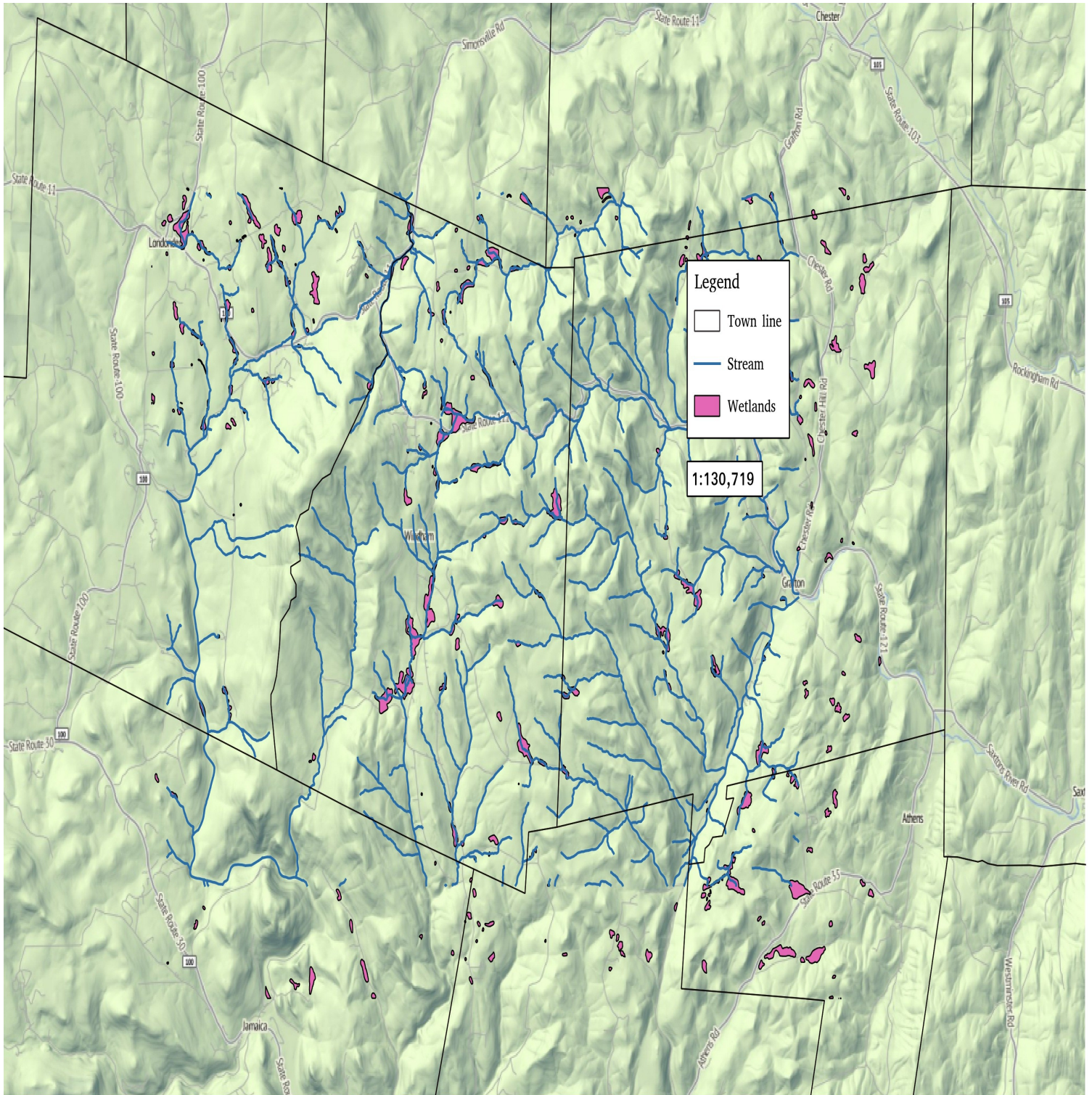
- Future land use areas were designated by the Town of Windham.  
Data were created by WRC using existing roads and parcel data.

0.5 0 0.5 1 1.5 Miles  
1:40,000

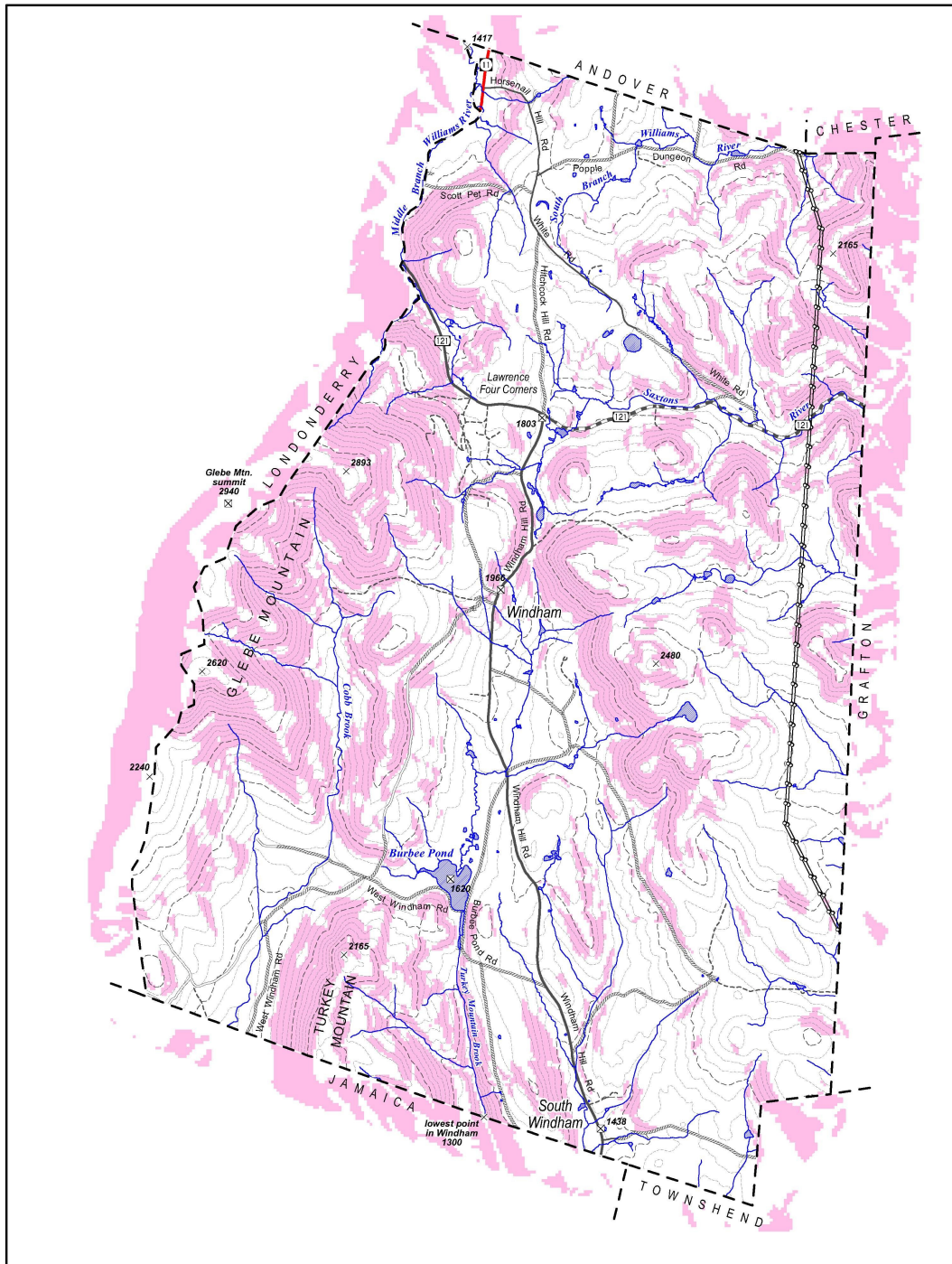
March 2006, C:\Towns\Windham\TP\_FLU\_11x17.mxd



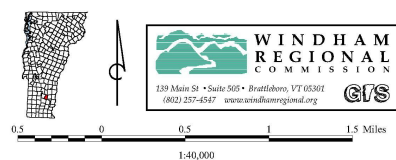
## WINDHAM STREAMS AND WETLANDS







# Steep Slopes Town of Windham, Vt. June 2013



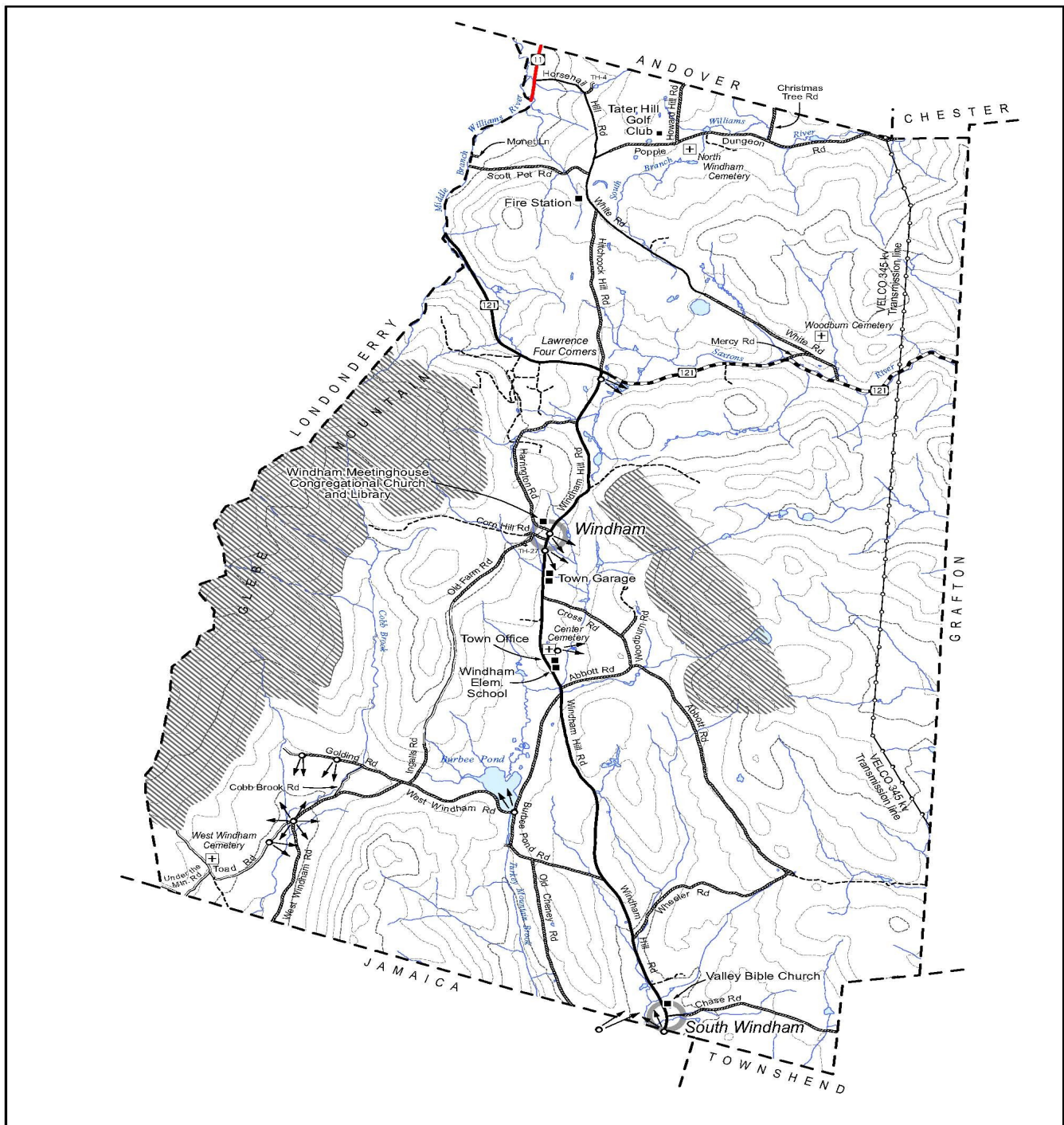
less than 20%  
 20% and greater

1803 Bench mark or spot elevation in feet  
 2480 Elevation in feet, approximate (within 20 feet)  
 50-foot contour (approximate)  
 Stream/river  
 Pond

## SOURCES:

- The source of slopes derived from soils is VGIS soils data based on the NRCS Windham County Soil Survey. Small portions of soil mapping units used to create the slope classes may contain slopes less than, or greater than, the stated slope class.
- The source of slopes derived from elevation data are USGS 1:24000 Digital Elevation Models.
- Contour lines were generated from USGS 1:24000 Digital Elevation Models by WRC. They are intended to portray the general relief of the area and should not be used to determine actual elevations.
- Elevation points were derived from USGS topographic maps.

March 2013; C:\Towns\Windham\Slopes\_11x17.mxd



## Utilities and Community Resources

Town of Windham, Vt.

July 2007



- Cemetery
- National Register Historic District (not actual extent)
- Electric transmission line
- Scenic view
- Prominent ridgeline
- 100-foot contour (approximate)

Sources:

- Community Resources were identified by the Windham Planning Commission and data created by WRC GIS staff using 1:5,000 orthophotos, 1:25,000 USGS topographic maps, and Windham's GIS parcel data.

- Stream
- Lake or pond

July 2007; C:\Towns\Windham\TP\_CommRes.mxd



# WINDHAM SETTLEMENT PATTERNS

