

# Bethel Town Plan

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Adopted September 22, 2014

*Funded in part by a Municipal Planning Grant from the Department of Housing and Community Development. Written with assistance from the Two Rivers-Ottawaquechee Regional Commission.*

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## **I. Introduction**

Bethel has undergone major economic and social changes over the past 50 years, moving away from a traditional base of agriculture and forestry to one of service industry and light manufacturing. Bethel's population increased from 1,356 to 2,030 between 1960 and 2010. However, there are now more Bethel residents who work outside of town than in.

Change stimulates the need for the community to examine its current conditions and to evaluate its prospects for the future. Change can be beneficial or it can be detrimental to the long-term welfare of the community. In order to understand the implications of change, the community must understand the problems and opportunities facing it, and identify goals for the future. Bethel has made a deliberate choice to establish a municipal planning program, to provide for orderly development, to balance its natural and built environments, and to retain its rural landscape.

A grounded Town Plan is the foundation for ensuring appropriate development and conservation of the community's resources. Effective town planning will reduce conflicts arising from change.

### **A. Organization of Town Plan**

- Table of Contents: Listing of topics addressed in the Town Plan sections in the order that they appear.
- Background: Narrative with relevant facts and updated information for each section, which helps give context to the planning process.
- Each chapter is followed by 'Goals,' 'Planning Principles,' and 'Recommendations for Action' appropriate for the ensuing five years:
  - Goals: Broad-based statements setting forth the long-term objectives of the community;
  - Planning Principles [Policies]: Statements and strategies that direct possible courses of action to implement Bethel's goals;
  - Recommendations for Action: Specific activities Bethel could take to implement the Town Plan goals.

### **B. General Purpose and Intent of the Plan**

The Bethel Town Plan is an official statement on the growth and development of the Town. The Plan serves as an expression of values and a vision for growth and management for the next five years. It is not intended to be a static or inflexible document. The Planning Commission will periodically review and update this Plan to reflect new conditions and needs. The public has a responsibility to remain involved in implementing this Plan. Under the provisions of the Vermont Planning and Development (24 V.S.A. §

4302), this Plan is effective for a period of five years from date of adoption or amendment, unless readopted.

The format of this Plan is intended to include all plan elements as required by law and to be consistent with the general purposes and goals of 24 V.S.A. Section 4302. The Bethel Town Plan is compatible with the approved plans of other municipalities in the region and with the Regional Plan. This compatibility ensures a coordinated, comprehensive planning process and policy framework to guide decisions of municipalities, regional planning commissions, and state agencies.

**The general purposes and intent of this Plan are:**

1. To establish land use goals that provide adequate space for needed types of land use, both public and private, in locations that minimize the adverse impact of one land use on another;
2. To facilitate a process that allows for the protection of, and judicious use of, the Town's soils, minerals and stone, forests, agricultural lands, waters, wildlife, and other natural resources;
3. To provide for a healthful distribution of population and structures in the Town, taking into consideration traffic congestion; fire, flooding, and other dangers; reduction of noise, air and water pollution; and protection of access to light and air;
4. To facilitate the adequate and economical provision of transportation, water, sewage disposal, schools, parks, and other public requirements in relation to growth, and to encourage the appropriate and efficient expenditure of public funds and economy in the process of development;
5. To provide an energy plan for Bethel which will analyze the Town's energy resources, needs, scarcities, costs and problems, which will encourage energy conservation; and
6. To conserve the Town's historic sites and districts, which are significant contributors to the Town's essential character and economic vitality. To identify a process for the future preservation of sites and structures and village center that might deserve local, state, or federal designation.

**The specific objectives of this Plan are:**

1. To protect the rural character of the Town;
2. To continue Bethel village as a town center;
3. To protect and restore historical resources;
4. To provide safe, healthy, and affordable housing for all segments of the population;
5. To prevent the creation of traffic hazards and congestion and aesthetically displeasing development on Routes 107 and 12 and within the village center; and

6. To promote environmentally sound development practices.

### **C. History of Town Planning in Bethel**

Bethel's planning history began in 1948 when a Planning Committee was formed, producing "A Twenty Year Plan for Bethel." This Plan provided a review of the community's needs and plans for the future, including community services, taxes, education, and economic development.

Bethel established a formal planning program in the early 1970's when the Selectboard appointed a Planning Commission. One of first tasks of the Commission was to develop a Town Plan. Following completion of the Plan in 1975, the Planning Commission drafted the first comprehensive zoning ordinance that was adopted later that year. This regulation required local approval of land and building development prior to commencing a project. This regulation or amendments to it have been in place since that time. In the late 1980's, the Town adopted subdivision regulations. On October 15, 1996, the Development Review Board (DRB) was created to approve all subdivisions prior to division or sale. In 2005 the Bethel Zoning ordinance and Bethel Subdivision Regulations were updated, revised, and harmonized with the state's revision of the Vermont land use statute, Chapter 117 of the Vermont Statutes Annotated.

This Plan contains all the elements required of a Plan per State law and includes sections pertaining to land use, transportation, natural resources, utilities and facilities, historic and cultural resources, energy, and implementation of the Plan.

### **D. Town History**

Consisting of approximately 29,144 acres, the Town of Bethel is situated near the center of the watershed of the White River. The region is characterized by steep craggy hillsides covered with lush deciduous/coniferous forest and transected by narrow valleys.

The settlement of the town in the late 18th Century transformed the virgin forest into a few hundred small farms and two small villages whose locations were rigidly set by topography. The major routes of travel across east central Vermont were restricted to the narrow valleys of the White River and its branches. This fact, together with the location of the best natural waterpower sites, fixed the location of both villages. Until about 1835, the east village, then called Kinney's Mills, was the larger of the pair. Since that time, the west village, then called Marsh's Mills, has been the largest in town.

In February 2010, the Planning Commission sent a public survey to all registered voters and landowners in Bethel. This survey was similar to a previous one in 2006: six questions were identical; four were "new." Seventeen items of "Desired Atmosphere or Environ" to be rated as very/somewhat/not important were repeated. The intent of the survey was to identify current attitudes, concerns, and priorities regarding town issues and land use/and development for this Town Plan up-date. From labels generated by the Town Listers (landowners) and Town Clerk (registered voters), one thousand hundred ninety-five (1,195) surveys were sent out. Four hundred forty-seven (447) returned surveys were available for a final tally- a high response rate of over thirty-seven per cent (37.4%).

Looking at 'numbers only' for each question, the following sentiments prevailed:

1. Commercial development should be focused in the Village Center (69.1% agreed - 69.5% in 2006).
2. Wind power and scenic views are compatible (75.8% agreed).
3. Bethel's municipal infrastructure should not be extended (55.9% agreed- down from 59.2% in 2006).
4. More development than current zoning permits should be granted on a piece of property if soils and slope allow (50.3% agreed- up from 47.8% in 2006).
5. We should not continue to grow without further limits (56.1% agreed- slightly down from 57.8% in 2006).
6. A slight majority of all respondents (50.6%) are not satisfied with the current structure of Bethel Elementary/Whitcomb Jr-Sr High School: this rises to 60% being not satisfied among Bethel residents specifically.
7. There are areas in Bethel where growth should not occur 48.1% agreed- down from 79.3% in 2006). This was the most significant change for questions included on both the 2006 and 2010 surveys.
8. The town should not pave more dirt roads (67.3% agreed- up from 62.7% in 2006).

Once collated, two to five single-spaced pages of comments accompanied each of these first eight questions on the survey. Comments covered a wide range from opinion to personal experience: many related to or overlapped with other questions, especially education costs, and resulting school tax rate. In general, comments were sincere, thought-provoking, and identified current public sentiment.

9. "How to define rural character as it relates to Bethel" generated four pages of comment. This question was included to assist the Planning Commission inject more specificity into the Zoning Ordinance.
10. The 2006 survey indicated that 73.7% of respondents felt that 'Bethel should try to attract tourist-related businesses and activities to town'. "How could Bethel attract businesses and activities to town" was included in 2010 after discussion with the Bethel Business Association to gather specific suggestions regarding how.
11. "Very important" (>50%) desired atmospheres & environs, in descending order: Clean environment (82.5%); Condition and maintenance of town roads (77.4%); Well-planned development 71.3%); Local Employment opportunities (70.7%); Farms and fields (68.5%); The White River and its branches (66.0%); Sense of community (64.5%); Small town atmosphere (62.4%); Village center (61.1%); Stores and public services (57.7%).
12. "Somewhat important" (>30%) desired atmosphere and environs in descending order: Building regulations (50.3%); Available child care (49.4%); Sidewalks (46.5%); Available housing (43.8%); Affordable housing (42.1%); Zoning and land use (39.2%); Scenic views (38.9%). [These items were also rated by 25 to 47% of respondents as 'Very Important'.]

All materials pertinent to this endeavor (breakdown of landowner and voter numbers, tabulation of responses and all comments – as well as returned surveys) are on file at the Bethel Town Office. Copies of response tallies and all comments have been made available to Town Officials. Pertinent tallies and accompanying comments have been forwarded to: Bethel Business Association (BBA), Bethel School Board members and local school administrators. Each question, comments, tallies, and comparison of the 2006/2010 results have been posted on the BBA web site: [www.bethelvt.org](http://www.bethelvt.org).

Bethel's location at the junction of two major valleys, one of which leads to a practical route over the Green Mountains to the west, makes it a natural crossroads. The advent of the railroad in 1848 highlighted this situation. Since that time, the growth of the west village continued even at times when the population of the town as a whole decreased. By the time of the Civil War, the name Marsh's Mills had been replaced by "Bethel Village". Rural localities grew during this early period—Locust Creek, 'Lympus, Lilliesville, Gilead, Camp Brook, and Christian Hill. Their schools and/or churches functioned as social centers, but none of these localities contributed significantly to the economic development of the town. The 1840 census records 1,886 citizens in the Town of Bethel.

Between 1840 and the 1880s, Bethel experienced a net population decline. The lure of better farmland and employment opportunities in the West combined with declining soil fertility on hill farms encouraged emigration. Where tillage was the poorest, farms were sometimes abandoned. The decline of small hill farm communities continued well into the 20th century. As this shift occurred, hillsides slowly recovered from open pastures to thick, second growth forestland, and some of the more remote roads fell into disuse.

With increased mechanization available toward the end of the 19th century, Bethel Village sustained its "Golden Age" from the late 1880s until the early 1920s and developed an industrial character. The three largest industries of the era—the shoe shop, the tannery, and the white granite quarry and cutting sheds—flourished because of the ease of railroad transportation, the availability of local workers and the influx of European immigrants skilled in granite extraction, cutting, and sculpting. During this period, Bethel proudly enhanced its community with major cultural and civic improvements including the town hall, the first high school and library, electric lighting, new churches, and civic and business organizations. Main street businesses thrived as they supported the many needs of the community. By 1910, the town population grew to 1,953, with nearly 50% of the citizens residing in the Village.

Economic markets shifted, and, by 1922-23, Bethel's leading industries were no longer competitive with larger manufacturing centers. Many of the skilled workers, including recent immigrants, left Bethel in search of work elsewhere. The next 50 years were characterized by only modest employment opportunities in the Village (Fyles & Rice plywood, Bethel Mills, the Creamery, and GW Plastics). With the advent of refrigeration and more farm mechanization around WWI, dairy farming and the export of dairy products sustained the agricultural community. Over the next half-century, market forces gradually affected this economic sector until fewer than five dairy farms remained by 1970. The town recorded a low of 1,347 citizens in the 1970 census.

In 2011, parts of Central and Southern Vermont were severely impacted by Tropical Storm Irene. Bethel was one of a handful of communities in Central Vermont that experienced devastating damage to public and private infrastructure. In addition to experiencing substantial damage to municipal roads, several houses were completely destroyed when Bethel's rivers and streams overflowed their banks and the fast moving waters inundated homes adjacent to them. Recovery from the effects of Tropical Storm Irene remains ongoing.



Population statistics reveal that Bethel’s population in 2010 was 2,030 compared to 1,968 in 2000, an increase of 3.2%. When local populations are small, as in Bethel, land use and economic factors affecting migration rates are far more influential on short-term population changes than the more stable birth and death rates. For example, a single industry, subdivision or trailer park added to or subtracted from our community will more radically change Bethel's short term population than the effect of our natural birth or death rate.

Percent Population Change, 1980-2010				
Town	1980	1990	2000	2010
Barnard	790	872	958	947
	<i>% Change</i>	+10.38%	+9.86%	-1.14%
<b>Bethel</b>	<b>1715</b>	<b>1866</b>	<b>1968</b>	<b>2030</b>
	<i>% Change</i>	+8.8%	+5.46%	+3.15%
Randolph	4689	4764	4853	4778
	<i>% Change</i>	+1.59%	+1.86%	+1.54%
Rochester	1054	1181	1171	1139
	<i>% Change</i>	+12%	-.84%	-2.73%
Royalton	2100	2389	2603	2773
	<i>% Change</i>	+13.76%	+8.95%	+6.53%
Stockbridge	508	618	674	736
	<i>% Change</i>	+21.65%	+9.06%	+9.19%
Windsor County	51030	54055	57418	56670
		+8.8%	+5.46%	+3.15%

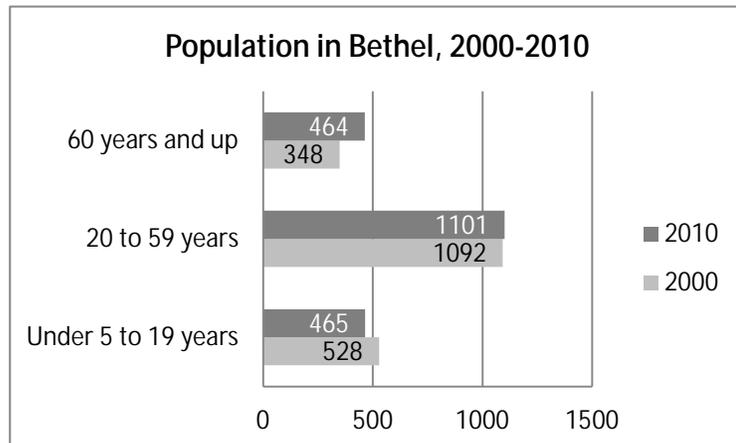
2 – Percent population change, 1890-2010 (Source: U.S. Census)

Such an event, however, cannot be forecast in the standard demographic analysis, which is why population projections can only serve as a planning guide. Bethel’s population change over time is reflective of many communities in Vermont. During the mid to late 1800s many Vermont towns reached their peak population. A mass exodus as citizens moved south caused a steep drop that finally stopped during the 1970s. During the twenty year period from 1970-1990, Vermont saw population increases in most communities. As a result of this trend, projections indicated a continued rise in population growth. However, between 1990 and 2010, real changes in population have not matched projected increases, with many towns losing population. Unlike neighboring communities, Bethel’s population has continued to grow, although this growth has slowed incrementally over the past thirty years.

Population density (persons per square mile of land area) in Bethel continues to increase at a slow, but steady rate. Population density was 41.19 in 1990, 43.44 in 2000, and 44.71 in 2010.

### B. Age of Population

In general, the age of Bethel’s population is similar to that of Vermont as a whole, with a majority of the population over the age of 35 (60%). While Bethel’s population has continued to grow, the decade from 2000 to 2010 shows that there has been outmigration and in-migration of differing age groups. In 2000, there were 179 children aged 10-14, a decade later, the number of children



3 - Population by age group, 2000-2010 (Source: U.S. Census)

aged 15-19 was only 104, indicating that more children left the community rather than stayed for the decade. Unlike many communities in Vermont, however, Bethel appears to be keeping its population of young adults (20-24 years of age). In fact, population data indicates that between 2000-2010 Bethel not only kept (or at least replaced) the young adults, it gained additional moving from 81 ages 20-24 to 217 ages 25-34.

The loss of young adults (generally between the ages of 25-35) has been a concern throughout Vermont during the past decade. Often referred to as a “brain drain,” the out-migration of young adults raises concerns on both economic and social levels. Without a talented and well-educated pool of young workers, there are worries that the state will find it increasingly difficult to attract and retain well-paid jobs, which in turn can have serious repercussions for the state’s capacity to raise tax revenues and pay for essential services. Young adults who leave their rural communities often do so because communities lack the resources commonly sought after by people of their age group, such as reliable high speed internet access, clear cell phone reception and opportunities for social interaction with others of their age group. Fortunately for Bethel, the trends indicated by the 2010 census imply that younger residents are staying in the community.

In another trend that mirrors statewide trends, Bethel has an aging population. In 2010, 15% of the population was over 65 years of age, which is lower than Windsor County (18%), but slightly higher than the State of Vermont (14.6%). Vermont also has the lowest birth rate in the nation (10.4 births per 1,000 of population, compared with 14.2 for the U.S ) which, when coupled with immigration of residents over 55, results in an aging population that will need services that are not readily available in a town like Bethel.

### III. Economic Development

#### A. Economic Statistics

##### Employment Patterns

The number of Bethel residents in the labor force has decreased slightly since 2011. Unemployment is slightly higher than in 2008, but the rate indicates a reduction in unemployment when compared to 2009 and 2010 when much of the US was grappling with a recession. In 2012, Bethel’s unemployment rate of 6.4% was higher than either Windsor County (4.5%) or Vermont (5%).

Labor Statistics, Town of Bethel (2008-2012)				
Year	Labor Force	Employment	Unemployment	Unemployment Rate
2008	1030	970	60	5.7%
2009	1060	960	110	9.9%
2010	1100	1010	90	8.5%
2011	1110	1020	80	5.0%
2012	1070	1000	70	6.4%

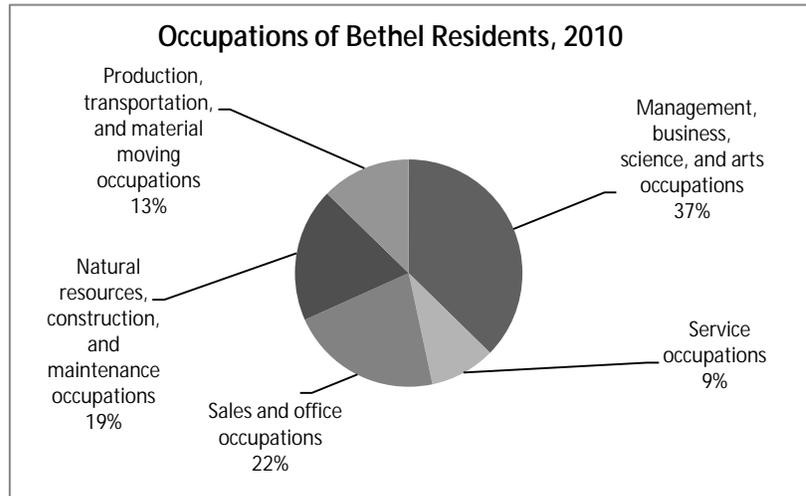
4 – Labor Statistics, Town of Bethel (Source: Vermont Department of Labor)

##### Occupations

Management, business, science and arts occupations make up the highest percentage (37%) of occupations held by Bethel residents; followed by sales and office occupations (21.6%); and natural resources, construction, and maintenance occupations (19%).

The private sector continues as the largest employer for Bethel residents in the labor force: 69%.

Another 16% work for government, and 15% are self-employed (Source: U.S. ACS 2008-2012).



5 – Occupations of Bethel Residents (Source: U.S. Census 2010)

## Wages and Income

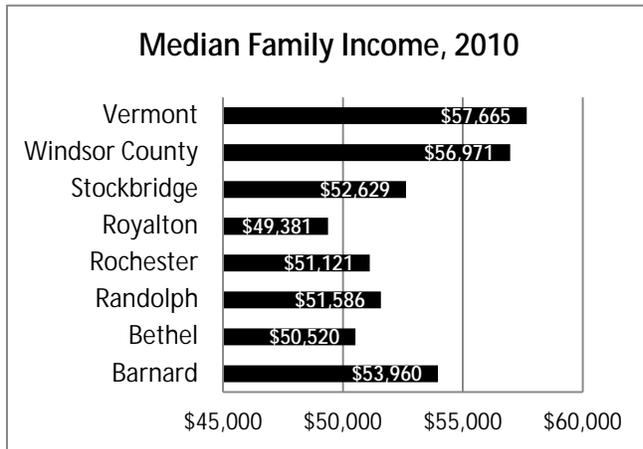
Wages are most commonly influenced by pressures outside of the community. Since 2008 some of the selected professions have seen an increase in average wages while others have seen a decrease or remained flat.

When compared to Windsor County and the State of Vermont, the pattern of change in Bethel’s average annual wage was clearly influenced

heavily by the national recession. Bethel’s average annual wage between 2000 and 2012 peaked in 2008, dropping quickly in 2009. It has slowly been rising since 2009.

Annual Average Wage by Profession (2008-2012)			
	2008	2010	2012
Natural Resources and Mining	\$44,861	\$46,776	\$46,531
Construction	<i>no data</i>	\$45,380	\$29,652
Manufacturing	\$46,014	\$42,754	\$43,607
Trade, Transportation, and Utilities	\$32,735	\$29,981	\$27,822
Financial Activities	\$37,210	\$38,404	\$42,368
Professional and Business Services	\$35,468	\$40,515	\$46,807
Education and Health Services	\$28,946	\$30,269	\$28,763
Leisure and Hospitality	\$10,498	\$11,227	\$11,380
Public administration (local)	\$28,400	\$24,582	\$26,336

6 – Average Annual Wage by Profession (Source: VT Dept. of Labor)



7 – Median Family Income, 2010 (Source: VT Dept of Taxes)

In 2010, the US Census reported Bethel’s median family income at \$50,520. This figure is consistent with several of Bethel’s neighboring communities, but lower than Windsor County and Vermont as a whole. A family’s income level has a direct relationship to the affordability of housing in a community.

### Travel to work

Many communities in Windsor County, including Bethel, are considered “bedroom communities” because a substantial portion of the workforce works outside of the community.

A higher percentage of residents in Bethel (25%) work in town than many other nearby towns. Seventy-three per cent commute 30 minutes or less, indicating that they are employed in neighboring communities like Randolph, Royalton, Stockbridge, or Woodstock.

## B. Locations of Economic Activity

Despite the number of Bethel residents who work outside of town, Bethel also serves as a center of employment for adjacent communities in the Upper White River Valley, including Royalton, Stockbridge, Barnard, and Rochester. Basic retail services are available in the Village Center, as well as a building materials supplier, banking services, and automobile sales and

### Commute to Work Time, 2010

Less than 10	32%
11-20	29%
21-30	18%
31-40	14%
41-50	3%
51-60	1%
More than 60	2%

8 – Commute to Work Time, 2010 (Source: U.S. Census 2010)

service.

I-89 and Routes 107 and 12 serve as primary transportation links to Bethel. The village area serves as the primary concentration point for services and retail businesses; however, Routes 107 and 12 have seen considerable development in recent years. Major employers in Bethel are Vermont Castings, a multi-line stove/fireplace manufacturer; GW Plastics, an injection molding manufacturer; the Bethel School District; Bethel Mills, a building materials supplier; Ultramotive, a container dispensing business.

Economic activity in Bethel has seen moderate growth since the early 1990s, largely in manufacturing and service-oriented sectors. For major retail, trade, and health care, Bethel residents utilize the Tri-Town Area (White River Junction, Hanover, and Lebanon), Rutland, the Barre-Montpelier Area, and, to a limited extent, Randolph.

### C. Future Economic Development

To encourage continued economic growth, small communities like Bethel must take advantage of local resources, such as their location, physical setting, and citizens. Bethel is fortunate to have close access to Vermont's Interstate Highway system as well as the railroad. In order to further growth, the community must determine how to leverage the town's assets. To do so, a comprehensive planning effort must be implemented to guide growth and improve the community.

Bethel strives to have its local economy grow at a pace that benefits the community, but does not put strain on municipal services. To encourage new growth and to improve the vitality of the Village Center Area, Bethel has been part of the Vermont Downtown Program's Village Center Designation. Businesses within the area identified by the Vermont Downtown Program as a Village Center are eligible for various tax credits, and the municipality is given priority for specific state and federal grant programs (see sidebar).

While there are opportunities for infill development within the Village Center Area, Bethel's topography makes continued growth within the village a challenge. Steep slopes on the north side of Main St. coupled with the White River and Flood Hazard Area to the south limit areas for expanded growth. During the severe flooding from Tropical Storm Irene in 2011, a number of the businesses located immediately adjacent to the Village Center Area were

#### Village Designation Benefits

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

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

inundated with water.

In order to ensure that areas for commercial development (including primary retail) can exist outside of the villages in a pattern that is consistent with State Planning Goals, the Planning Commission has proposed two hamlets. These Hamlet Areas are proposed in locations that already have a mix of uses (including all types of commercial development) and are compact enough to avoid strip development or urban sprawl. These areas are identified in the Land Use chapter of this Plan.

Leadership is essential to this process as economic development cannot be willed. Only through a consensus can the town form a coordinated economic development effort. This is, of course, where the citizens of Bethel have the most to offer. Key figures in the community, including small business owners, representatives of town government, and realtors can join forces with active citizens to help create a vision for the economic future of Bethel. But, because economic development takes time, all who participate in the process must be committed to a common vision of what the town wants to be. In order to begin the process of economic development planning, citizens will have to determine what and who the town's assets are. Likewise, it will need to identify what the key needs in town are and whether or not they can be realistically offered locally. Using this information, the town should develop a mission that will help guide those involved toward the ultimate goal of encouraging economic development in Bethel.

A 2012 study by the Urban Land Institute indicated that on a national level, businesses are making their location decisions based substantially on sense of place. Likewise, young adults have indicated that their primary motivation for moving to Vermont is the lifestyle associated with the working landscape. A small community's best method of encouraging new business is to recognize its best assets, protect those assets, and support any efforts to promote those assets. It is Bethel's rural, natural, and historic resources that are its greatest assets. As such, these assets should be prudently managed.

## **D. Goals, Planning Principles, and Recommendations**

### **Goals**

1. To encourage a strong and diverse local economy that provides satisfying and rewarding employment opportunities for residents while maintaining the community's rural character.
2. To strengthen and maintain the town's agricultural, forest, and recreational economies and to ensure continuance of small-town village and rural character.

### **Planning Principles**

1. It is the policy of the Town to cooperate with neighboring towns, regional planning commissions, and economic development groups to plan for and maintain a balance between the type and number of jobs created and natural population growth in the area.
2. It is the policy of the Town to support the development of local enterprises that create markets for locally produced goods and services.
3. It is the policy of the Town to encourage new business development in appropriate locations where services such as roads, fire protection, and power supply are available or planned.

4. It is the policy of the Town to support creation of regional economies that do not place unreasonable financial burdens on the taxpayers of Bethel to support those economies.
5. It is the policy of the Town to attract diverse and sustainable businesses in Bethel, which create jobs and contribute to the small-town quality of life.
6. It is the policy of the Town to provide for reasonable zoning standards enabling home occupations and home businesses to be developed or to continue.
7. It is the policy of the Town that primary retail development shall be located in designated Village Center areas.
8. It is the policy of the Town to prohibit development that has the effect of creating sprawl, while allowing for commercial development outside of the Village Center Area in those areas designated as Hamlets.
9. It is the policy of the town to continue to participate in the Village Designation program in order to enable local businesses to take advantage of the program's benefits.

### **Recommendations**

1. The Development Review Board should review applications for industrial development with careful attention to environmental and fiscal impacts.
2. The Town should encourage and support the responsible development of information technology and communication infrastructure necessary for new economic growth.

## IV. Housing

A key element in the character of the Town is its housing—the quality, availability and variety of places for its residents to live. Housing has a large influence on the rate and direction of business and commercial growth.

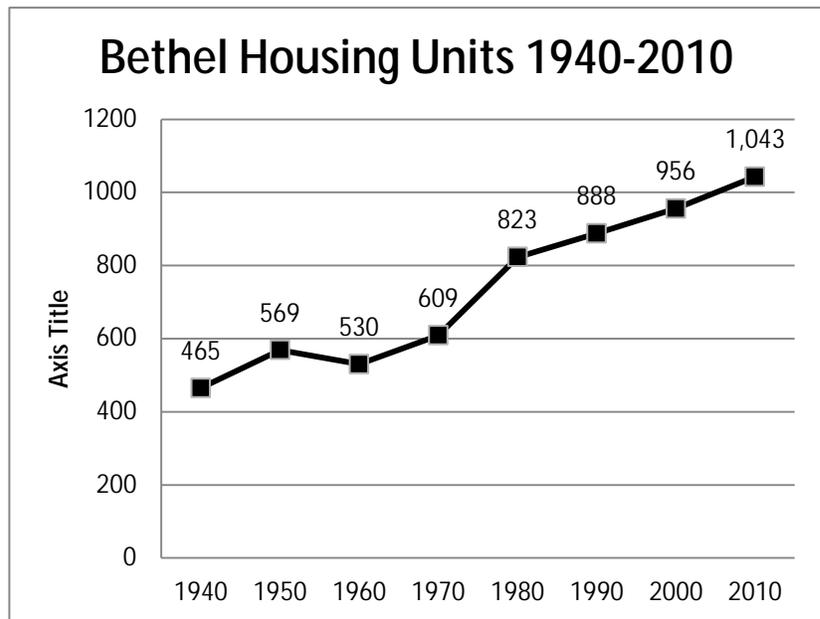
A major goal of this plan is to encourage planning that meets two important community objectives:

1. To encourage safe and affordable shelter for present and future populations; and
2. To encourage a density and distribution of housing throughout the town that protects the working landscape.

Although the provision and maintenance of a town's housing stock is primarily a private sector activity, the growth and development of housing affects the character of the town and the facilities and services it provides or will provide. Housing constructed in the absence of adequate planning for public facilities can overburden schools, roads, and other municipal services. Poorly located housing can pollute a water supply or destroy an important wildlife habitat. Housing that is inadequate to meet the demand in a town or region can strain adjacent towns and make it challenging to find homes in close proximity to locations of employment.

### A. Housing Profile

According to the 2010 U.S. Census, there were 1043 housing units in Bethel (see figure 9). In 2000, there were 956 housing units. This amounted to an increase of 87 units or 9% over the ten-year period or an average of roughly 9 units per year. A housing unit, as defined by the U.S. Census, includes houses, apartments, mobile homes, and rooms for occupancy. As is the case for most Vermont towns, the bulk of Bethel's housing units are single-family homes (84%).



9 - Bethel Housing Units, 1940-2010 (Source: U. S. Census)

When compared to its neighboring towns and Windsor County as a whole, Bethel has the highest percentage of owner-occupied homes (64%). The percentage of second homes (11%) in Bethel is lower than many of its immediate neighbors (except Randolph and Royalton). When a town has a large number of homes that are not occupied year-round, it can have unforeseen impacts on town resources. For example, communities that have volunteer fire departments depend on full-time residents to staff their fire departments and a lack of full-time residents can make acquiring staff difficult because the pool of candidates is reduced. Fortunately, this is not an issue for Bethel.

<b>2010 Housing Occupancy, Bethel &amp; Surrounding Area</b>			
	owner occupied	vacation	renter occupied
Barnard	47%	37%	10%
Bethel	64%	11%	22%
Randolph	62%	5%	26%
Rochester	48%	28%	16%
Royalton	49%	7%	38%
Stockbridge	51%	35%	10%
Windsor County	52%	22%	20%

10 - 2010 Housing Occupancy, Bethel & Surrounding Area (Source: U.S. Census)

## B. Rental Housing

Bethel’s percentage of renter-occupied housing (22%) is slightly higher than that of Windsor County. But the tight housing market statewide and lack of unoccupied apartments (only 2% of Bethel’s apartments are unoccupied) continues to drive up rental costs. The low percentage of homes that were unoccupied indicates that, in 2010, Bethel was experiencing a shortage of available rental housing stock. Anything below 3% is functionally considered a zero. This low percentage of housing stock is very consistent from town to town throughout Vermont.

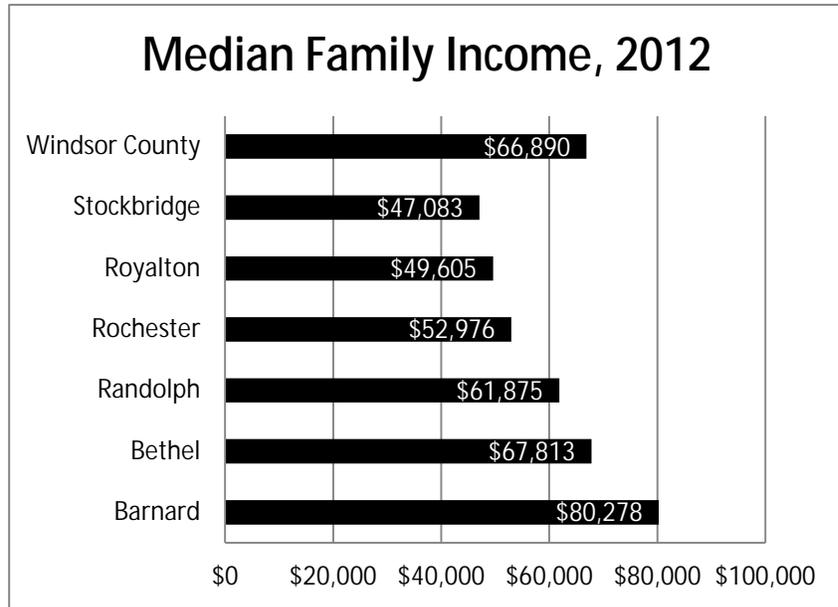
## C. Affordability

Affordable housing is defined to be that which does not consume more than 30% of household income for housing costs. For homeowners, housing costs include payments for principal and interest on mortgage, taxes, etc. For renters, housing costs include rent and utilities.

In 2000 the US Agency of Housing and Urban Development (HUD) calculated the fair market rent for a modest two bedroom apartment in Bethel at \$630 per month; in 2013 that cost had risen nearly 62% to \$1024 per month. In order for a renter in Bethel to afford rent for a two-bedroom apartment at this rate, in 2013 he/she would have needed a household income of roughly \$40,960 annually. Given that 59% of Bethel’s households filed tax returns valued at less than 40,000 in 2012, it is likely that renters in the community find it difficult to afford rental housing in Bethel.

Between 2000 and 2010, home prices throughout Vermont rose dramatically. The collapse of the US housing market during the Great Recession (2007-2009) slowed the rise in home prices in many locations. Between 2010 and 2012 Bethel’s average equalized home value decreased by roughly 4%. When compared to neighboring communities in 2012, Bethel had the lowest average equalized residential home value (\$195,000). It should be noted that average equalized residential home value data is not an exceptional indicator, as it can be skewed by a particularly expensive home and is subject to the local formula used for assessments. A better indicator of cost of housing in Bethel may be the average sale price reported for Bethel in 2012 by the Northern New England Real Estate Network, which was \$156,382.

The lack of consistent available housing data makes it challenging to track trends in housing values over time. The Vermont Housing Finance Agency (VHFA), in its 2013 “Housing Needs Assessment in East Central Vermont,” indicated that the median income household in Windsor County (\$66,890) could likely afford the median home price of \$173,000. Bethel’s median household income is slightly higher than the county median (\$67,813)<sup>1</sup>. But, the VHFA also reports that 33.5% of Bethel’s residents are spending more than 30% of their income for housing. This is slightly higher than the Windsor County percentage.



11 - Median Family Income, 2012 (Source: American Community Survey)

Bethel, like many communities, has experienced a trend toward fewer home occupants. This trend is unlikely to be reversed. The trend results in an increased demand for housing. The elderly, single households and other special populations are oftentimes in need of special types of housing including that which is affordable and readily accessible.

Another barrier to affordable housing is the age of homes in Bethel. Vermont’s housing stock is among the oldest in the United States. Forty-seven percent (47%) of the homes in Windsor County were built before 1970, before newer energy efficiency technology was available, housing codes were more lax and the use of lead-based paint was widespread. These factors impact the cost of operating housing, assuring the health and safety of all residents, and providing access to Vermonters with different abilities.

The location of housing plays an important factor in housing affordability. Living near employment or other daily destinations can reduce costs substantially. The VHFA suggests that for a household 10 miles from locations of employment, driving is likely to cost \$122 less per month than a household 25 miles away. A reduction in an expense of this nature would allow a household to better afford rent or a mortgage. In addition, a household with a shorter commute is likely to have a more stable future because it is less vulnerable to increases in vehicle fuel prices. In order to ensure the availability of affordable housing in Bethel, the community encourages multi-family housing to be developed within or adjacent to the village center in areas served by infrastructure.

<sup>1</sup> This figure differs from the Median Household Income indicated in Chapter II, Economic Development. A household is defined as any individuals living in a house, regardless of relationship. A family must be related by marriage or blood.

## D. Elderly Housing

Section B of Chapter 1 discussed Bethel’s trend toward an aging population. “Baby Boomers,” people born between 1946 and 1964, are beginning to retire, and the oldest ones will be 84 in 2030. This shift in demographics will put added pressure on an already tight housing market. Expanding healthcare costs may leave seniors with even less money to spend on housing.

<b>Nursing and Residential Care Beds 2012</b>			
	<b>Nursing Care (II)</b>	<b>Residential Care (III)</b>	<b>Residential Care (IV)</b>
Barnard	0	0	0
Bethel	0	0	0
Randolph	30	17	0
Rochester	0	0	0
Stockbridge	0	0	0

12 - Nursing and Residential Care Beds , 2012 (Source: VT DAIL)

As the elderly (citizens aged 65 or older) become less comfortable with the tasks involved in managing their own home, they often turn to some sort of elder housing. If health is an issue and some form of constant care is required, seniors will need to enter a nursing home or a residential care facility. Figure 12 indicates that there are no options in Bethel and very few in the surrounding area for this type of care. Elderly Bethel residents in need of full-time care are forced to move away from their community. This is a statewide problem, not just a local issue.

Within Vermont there are several types of elder-care facilities which are subject to state regulation: nursing homes and residential care facilities. Nursing homes provide nursing care and related services for people who need nursing, medical, rehabilitation, or other special services. They are licensed by the state and may be certified to participate in the Medicaid and/or Medicare programs. Certain nursing homes may also meet specific standards for subacute care or dementia care. Residential care homes are state licensed group living arrangements designed to meet the needs of people who cannot live independently and usually do not require the type of care provided in a nursing home. When needed, help is provided with daily activities such as eating, walking, toileting, bathing, and dressing. Residential care homes may provide nursing home level of care to residents under certain conditions. Daily rates at residential care homes are usually less than rates at nursing homes.

## E. Goals, Policies and Recommendations

### Goals

1. To promote sufficient safe and affordable housing for Bethel residents.
2. To encourage innovative planning, design, and construction of residential housing that minimizes the cost, energy consumption, and environmental impacts of housing.
3. To encourage the preservation of historic structures in ways that serve housing needs.

**Policies**

1. It is the policy of the Town to allow for growth of housing for all income levels and at a rate consistent with the community's ability to provide services in a fiscally sound manner and consistent with the other goals and policies expressed in this Plan.
2. It is the policy of the Town that public funds in the form of subsidies may be necessary to preserve maintenance of or access to affordable housing. Where such projects involve public funds, they should only be encouraged when these investments result in developments which are affordable on a long-term basis and when a clear public benefit to the community can be demonstrated.
3. It is the policy of the Town that priority should be given to the preservation and improvement of housing already in existence.
4. It is the policy of the Town that multi-family housing should be encouraged within or adjacent to existing Village Center or Hamlet areas where municipal services are available.
5. It is the policy of the Town to encourage the development of mixed-income housing.

**Recommendations**

1. Community leaders should work with state housing agencies, non-profit organizations, and lending institutions to ensure the availability of loan or grant funds for Bethel residents to acquire or improve their primary homes.
2. The Town should work with the Two Rivers-Ottawaquechee Regional Commission to evaluate Bethel's role in supplying the region's housing stock by assessing its capacity for growth.

## V. Education

### A. Educational Facilities

The Bethel School District covers Kindergarten through grade twelve. The schools are situated on a 38-acre parcel, one-half mile northwest of the village center. One building houses both the elementary school and the high school. The elementary school and the high school are physically separated within the building, but share use of some facilities, including school nurse, custodial services, gymnasium, cafeteria, and music room.

Whitcomb Jr.-Sr. High School (grades 7-12) was constructed in 1957. In 1972, two science rooms and library/media center were added, increasing the total floor area of the high school to 30,000 square feet. The high school houses fifteen classrooms, including an art room and computer labs. The portion of the facility used for the Bethel Elementary School (grades K-6) was constructed in 1971. This brick structure is 25,000 square feet in area, houses ten classrooms, and a large resources area which includes a library.

The Bethel School District is currently a member of the Windsor Northwest Supervisory Union. Windsor Northwest serves the communities of Bethel, Rochester, Stockbridge, Pittsfield, Hancock, and Granville.

Since the 1995 facilities study, the School board has been diligently working through the priority list of projects. The following have been completed:

- A new roof was put on the Elementary School in 1999; A new roof was installed on the high school and gymnasium in 2004;
- The fuel storage tank was replaced in 1996 with a 10,000 gallon tank;
- The air exchange system was replaced on the High School roof top in 2002;
- An Inter-Com system was installed in 2008;
- Electrical system is continuously updated on an annual basis. In 2013, occupancy sensors were wired into each room (lighting will now automatically go off if no movement is recognized after a set period of time). When high school was built in 1957 and the elementary school in the 1970's, each classroom was equipped with one designated circuit. Increased demands for and of technology in classrooms exceeds this capacity and rooms are gradually being updated. These upgrades will accommodate current equipment that is now standard such as laminators, copiers, computers, microwaves, etc.;
- A storage building was constructed behind the school in 1997;
- Interior and exterior painting is on-going each year;

- The gymnasium floor was renovated in 2004, replacing linoleum tile with wood, and is refinished yearly;
- A new sidewalk canopy was done in 2012. All walkways have been resurfaced;
- Issues with the heating system; School is gradually shifting from Arc Mechanical to Alliance Mechanical for preventive maintenance of the heating system. Staff are finding that this change has fostered an improved working relationship and includes a far greater willingness to ‘teach’ staff about the system to handle minor problems; and
- The parking lot was repaved in 2013.

## B. Student Enrollment

Enrollment of Bethel students in the Bethel School System are reported annually to the Vermont Department of Education. Annual student resident counts from the Department show average daily membership (ADM) at the school for grades (K-12) over the past decade has been as seen in Figure 13.

Bethel Elementary has maintained a reasonably stable school population for the past decade. The largest change in number of students occurred in the 2012-2013 year when the Elementary School population reached 175 students. Whitcomb Jr.-Sr. High School, however, has seen consistently declining enrollments. This indicates that students are either opting to attend other schools after elementary school, switching to home schooling or their families are leaving Bethel altogether. Over the past three school years, the number of home schooled students has remained fairly flat.

School Year	Elementary	Whitcomb Jr-Sr High
2012-2013	175	124
2011-2012	138	129
2010-2011	151	117
2009-2010	143	134
2008-2009	146	127
2007-2008	146	122
2006-2007	149	134
2005-2006	148	157
2004-2005	151	163
2003-2004	143	178

13: Average Daily Membership  
(Source: VT Dept. of Education)

	Elementary	Jr-Sr High
2011-2012	11	10
2012-2013	11	11
2013-2014	7	15

14 - Number of Homeschooled Students in Bethel  
(Source: VT. Dept. of Education)

Declining enrollments are a state-wide trend. An aging building, increasing diversity in the needs and interests of students and their families, and higher expectations for public education, are all contributing to larger conversations about how Bethel can best educate its children while managing the costs associated with education.

## C. Cost of Education

Education costs are generally the second-largest expense paid by the taxpayers (transportation is the

largest) each year. The Bethel School Board has attempted to act conservatively with regard to budgeting, cutting costs by cutting staff. However, despite these efforts, a comparison of 30 school districts that operate K-through Grade 12 systems indicates that in FY 2014 Bethel’s homestead tax rate (the educational portion of the actual tax rate) was the 5<sup>th</sup> highest. Over the past decade, residents have indicated growing concern over the rising cost of education.

In the 2010 public survey conducted by the Planning Commission, 60% of survey responses by Bethel residents (landowners and registered voters) indicated dissatisfaction with the current structure of the Bethel School District. Financial shortfalls at the Supervisory Union level whereby allocated funds were not used as anticipated or large debts were not paid after tax collection complicated any discussion

	Equalized Pupils	FY 2014 Education Spending/Equalized Pupil	FY 2014 Homestead Tax Rate
Craftsbury	153.06	\$17,389	\$1.8855
Northfield	620.37	\$13,012	\$1.5363
Poultney	403.91	\$14,258	\$1.5355
Cabot	196.52	\$13,978	\$1.5126
<b>Bethel</b>	<b>267.3</b>	<b>\$15,088</b>	<b>\$1.4967</b>
Concord	199.07	\$14,678	\$1.4874
Chelsea	152.78	\$13,968	\$1.4813
Stowe	649.7	\$13,852	\$1.4762
Arlington	301.7	\$14,459	\$1.4498
Williamstown	533.97	\$12,628	\$1.4479
Montpelier	971.32	\$13,895	\$1.4343
Richford	454.93	\$10,508	\$1.4062
West Rutland	336.24	\$13,948	\$1.4028
Windsor	494.69	\$13,938	\$1.3910
Rochester	159.79	\$14,085	\$1.3826
Danville	336.59	\$13,770	\$1.3749
Proctor	319.16	\$14,139	\$1.3158
Morristown	820.39	\$12,531	\$1.2840
Enosburgh	534.34	\$12,248	\$1.1957
Canaan	192.28	\$9,922	\$0.9967

15 - Homestead Tax Rates in K-12 Communities (Source: VT Dept. of Taxes)

regarding school district costs. Concerns about the bureaucracy and expense created by Vermont’s system of supervisory unions have grown statewide. In 2014, Vermont’s legislature began a process to analyze Vermont’s educational structure in an effort to reduce inefficiencies and save costs. It is unknown if this initiative will come to fruition, or if it will be effective if implemented. Regardless, tension remains regarding the cost of education, leading Bethel’s citizens to consider the future of the Bethel School System.

Several communities near Bethel (Hancock & Granville) have chosen to close their small elementary schools due to declining enrollment and the increasing costs of education. The closing of a local school can be a difficult decision for a community as the local school often acts as a community center. Over the past decade, the Bethel has investigated the possible impacts of a decision to close or merge the Junior and Senior High School with another community with no final plan to do so forthcoming. It is recognized that any decision to close down the school should be preceded by an extensive process of public discussion and outreach, and should only be considered if the school is no longer sustainable.

## D. Childcare

An inventory of registered childcare facilities reveals that Bethel has a very limited amount of childcare available to the community. The State of Vermont has two classifications of regulated childcare:

- **Registered Family Child Care Home:** A child care program approved only in the provider's residence, which is limited to a small number of children based on specific criteria.
- **Licensed Program:** A child care program providing care to children in any approved location. The number and ages of children served are based on available approved space and staffing qualifications, as well as play and learning equipment. A Licensed program must

Childcare Providers by Town (2013)		
	Registered	Licensed
Bethel	4	2
Randolph	6	6
Rochester	0	2
Royalton	1	3
Stockbridge	2	2

16: Childcare providers by type, by town 2013  
(Source: VT Bright Futures)

be inspected by the Department of Labor and Industry's Fire Safety Inspectors and must obtain a Water and Wastewater Disposal Permit from the Agency of Environmental Conservation. A Licensed program is considered a public building under Vermont Law. Types of licensed programs include: early childhood programs, school-age care, family homes and non-recurring care programs.

There are currently only two licensed childcare services in Bethel (WNWSU Early Ed Program-Bethel & Ex.C.E.L. Bethel) and four registered childcare providers. Most residents currently arrange for care with relatives or take their children to childcare facilities beyond the borders of Bethel to neighboring towns like Randolph or Royalton.

## E. Adult Education

Bethel has a fairly limited amount of adult education opportunities. Most adults take advantage of the opportunities that are available in Randolph as an alternative. These include:

- Vermont Technical College (VTC) - Vermont Technical College is located in Randolph Center. VTC is part of the Vermont State College system and offers full and part time educational opportunities that range from computer technology, to agriculture, to health services. Attendees may choose a two-year program that leads to an Associate's Degree, a four-year program that

leads to a Bachelor's Degree, or the college's one-year program that leads to a Practical Nursing certificate.

- Randolph Technical Career Center (RTCC) – Located in Randolph village, the RTCC is part of Randolph Union High School. RTCC offers adult education courses that range from the traditional tech center focuses of mechanical and woodworking, to computer technology, small business management, bookkeeping, as well as arts, crafts, and languages. RTCC's adult education classes are open to all for a fee.

Other, more extensive, opportunities are available in Rutland and the Upper Valley as well.

## **F. Goals, Policies and Recommendations**

### **Goals**

1. To encourage the creation of affordable childcare facilities that meet the established needs of residents in Bethel.
2. To provide a safe and secure learning environment where quality educational opportunities are provided to all students.
3. To enable the best opportunity to educate our students at the most equitable cost to the Town's taxpayers.

### **Policies**

1. It is the policy of the Town to support the private development of additional facilities to meet the childcare needs of its residents and may assist with seeking funding to develop these facilities.
2. It is the policy of the Town to support private sector efforts to seek funding to assist with the development of childcare infrastructure and to ensure that no barriers to increasing childcare capacity are created by future changes in zoning regulations.
3. It is the policy of the Town that land development which is likely to result in large numbers of school children be phased or planned to avoid placing an undue financial burden on the capacity of the Town to provide educational services.

## **VI. Utilities and Facilities**

The provision of services and maintenance of facilities is one of the key roles of any municipal government. The cost of services and public facility maintenance can represent a substantial amount of a municipality's yearly budget (not including transportation, which is generally the largest portion).

### **A. Capital Budgeting & Planning**

State statutes enable communities to create a Capital Budget and Program (CP&B) for the purposes of planning and investing in long-range capital planning. Although most communities have some form of capital account where they save money, many do not have a Capital Budget and Program as described in state statute (24 V.S.A §4443). A capital budget outlines the capital projects that are planned to be undertaken in the coming fiscal years over a five year period. It includes estimated costs and a proposed method of financing those costs. Also outlined in the Program is an indication of priority of need and the order in which these investments will be made. Any Capital Budget and Program must be consistent with the Town Plan and shall include an analysis of what effect capital investments might have on the operating costs of the community. An adopted Capital Budget and Program must be drafted with assistance from the Planning Commission to ensure consistency with the Town Plan. While the Planning Commission is designated in statute as the "preparer" of the Capital Budget and Program, it is essential that members of the Selectboard and budget committee (if one exists) are part of the team that develops the CB&P. The Selectboard has the ultimate decision as to whether or not such a budget and program is adopted.

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

At present, the town of Bethel has not adopted a formal Capital Budget and Program (as described in §4443) to help guide investments in community infrastructure and equipment. The Planning Commission may make recommendations to the Selectboard with regard to what capital investments should be considered annually.

### **B. Town Buildings**

#### **Bethel Town Office**

The Town Offices are located in the former Creamery Building on South Main Street in the village. Space in the building is used for the Town Clerk, Town Manager, and other town officers. Accessibility modification renovations in 2009 brought the building into compliance with the American Disabilities Act. The useable area of the building was extended, adding a large conference room and accessible bathroom. These improvements made the facility adequate for current needs, however, the vault where

town records are secured will be inadequate within the next five years. Some re-arrangement of contents can accommodate additional documents; however, this will not be adequate to meet long term demand. Off-street parking is very limited. In addition, the Town Office has not had significant energy efficiency improvements, resulting in high heating costs during the winter, but efforts are being made to improve the building's efficiency. The town is investigating ways to address the limited space, including costs and potential locations to expand in the future.

### **Town Garage**

The Bethel Town Garage, located just outside of the village on Sand Hill Road, houses the equipment and does not meet current needs: the building is obsolete, too small, and code-deficient. Deficiencies are significant, and modifications utilizing FEMA "Alternate Project" program funds are being considered.

A separate salt-storage shed is located on this site as well. In recent years, the Town has replaced its fuel storage tanks to come into compliance with State laws. While these facilities (salt-storage shed and fuel tanks) are adequate for the present level of service, an increase in town highway maintenance duties would more than likely require additional equipment and workers.

### **Town Hall**

The Bethel Town Hall, built in 1892, was completely renovated in 2010. In addition to providing a location for town functions such as town meeting and elections, the facility is available to rent for community private activities, town & state board hearings, and other uses authorized by the Selectboard.

The recent renovations to the Town Hall make it unlikely that additional improvements will be needed in the foreseeable future.

## **C. Privately Owned Community Buildings**

### **Bethel Public Library**

Located at 106 Main Street, the Bethel Public Library is owned and operated by the Bethel Library Association. The Association is administered by a Board of Trustees. The Association is a non-profit corporation and receives funding from endowments and individuals. In addition, the Town appropriates funds in order for the Library to be a public library and to enable the Association to receive grants and other benefits. The Library employs a part-time librarian and offers several programs for the community, including free Wi-Fi and three computers for public use. The State of Vermont has determined that the library does not currently meet the Principles and Minimum Standards for VT Public Library Service; however, it presently serves the immediate needs of the community.

## **D. Municipal Services**

## **Public Water**

The Bethel Village area is served by a municipally owned water supply system. Groundwater serves as the source of supply from two gravel packed wells. They have a combined yield of 420 gallons per minute and 604,000 gallons per day. Water is stored in two 250,000 gallon reservoirs. One is located east of the village and was constructed in 1957; this was mostly recently rehabilitated in 1999, with a new structural dome installed. Another, constructed in 1988, is a two-celled unit and is located on a hill near Valley Motors and G-W Plastics. This construction project included installation of new water mains connecting the reservoir to the well located across the road from the school. Storage tanks were inspected by divers to verify the structural integrity of the concrete construction shortly before August of 2011 and were found to be in good condition.

In 1982, water recharge areas surrounding the two gravel packed wells were mapped by the Vermont Agency of Natural Resources. These are referred to as Aquifer Protection Areas or underground regions determined to encompass water recharge or primary sources of groundwater to the wells. Town officials have developed a Source Protection Plan for the water supply system. Such a plan is required by the State Water Supply Rules and consists of an inventory and assessment of potential sources or threatening activities in the recharge area and a plan for minimizing existing or future sources of contamination. This Plan has been submitted to the State and adopted by the Town as its official protection plan. It was most recently updated in 2011 and is due again in March of 2015. Land use activities within the Protection Areas are carefully evaluated and controlled to minimize the potential threat to our water supply. A map delineating the Wellhead Protection Overlay is included as part of this Plan in the Land Use Map.

The water distribution system serves the village center and areas adjoining the village. The Town has continued to upgrade old and inadequate portions of the water system, to the point that much of the system is fairly up-to-date. Eventually, the Town will need to replace the main service line on Main Street with new facilities that are designed to make certain there are no cross-connections and provide adequately for all customers and fire protection. The estimated cost of the Main Street improvements would be roughly \$750,000. This funding would be acquired either through bonding or possibly with assistance from the USDA.

In 1999, the Town upgraded approximately 3600 feet of distribution line to an eight-inch diameter ductile iron pipe along Church Street and north along Route 12 to the Fire Station. In 2009, a new water main was installed to replace the old main suspended from the River Street Bridge. A 12" ductile iron pipe was connected to the discharge end of the chlorine contact chamber on the southerly side of the river, converting to a 14" HDPE pipe beneath the river. The 14" HDPE was placed with remote boring equipment, and transitioned on the northerly side of the river to 8" ductile iron pipe which was then connected back into the existing main on Peavine Boulevard. Other sections of the distribution system need replacement, the most urgent need being the mechanically jointed cast iron main serving the immediate downtown area. Many of the historic downtown structures have not had sprinkler systems installed, and future rehabilitation efforts will need appropriately sized and accessible mains. Vermont's Village Designation Program, which Bethel's Village Center is a part of, offers tax credits to developers implementing code improvements including the installation of sprinkler systems.

Total average daily use is 203,761 gallons per day. Approximately 315 Households are connected to the system and use 126,332 gallons per day or 62% of the total flow. The remainder is industrial or commercial users. A replacement meter was installed for well #2 in year 2008, and a meter was installed in well #1 in 2005, thus making it possible for the usage to be monitored much more accurately. Reports are mailed to all system users at least yearly regarding results and significance of monthly testing, more often if indicated. Subsequent to emergency repairs following tropical storm Irene in August of 2011, in the summer of 2013 both pump houses were waterproofed with a rubber membrane encasing the buildings and doors with water-tight seals installed.

While the Town's wells are metered for monitoring water quality, individual system users are not metered. In order to better track usage and to charge equitable rates, the town should consider investigating the cost of installing meters for system users.

The Town's water system permit to operate has been renewed. This does not expire. Water supply in areas not served by the municipal water system is from individual wells or springs.

### **Wastewater Treatment**

The Town owns and operates a wastewater treatment plant with a collection system. This system became operational in 1988 and is overseen by certified plant operators employed by the Town. The system consists of a secondary level treatment plant employing oxidation canals and ultra-violet disinfection systems. The plant is complemented by four pumping stations located along the collection system. The service area for the system is within the built-up area of the village and immediately adjoining residential areas except the westerly side of the main branch of the White River (River Street). Three pumps were destroyed by Tropical Storm Irene in 2011 and all mechanical, electrical and relay components have been replaced.

Design capacity of the plant is 115,000 gallons per day. Reserve capacity of the plant is approximately 50,000 gallons per day. Bethel's wastewater treatment facilities are managed by the Board of Sewer Commissioners (Selectboard) who have the responsibility of allocating sewer reserves on a case-by-case basis. Reserve capacity allocation priorities and principles are set forth in the Wastewater Reserve Capacity Allocation Ordinance. Town of Bethel wastewater treatment facilities are adequate for the current and planned needs of the community. No major capital expansions or extensions of the system are planned. A 20-year evaluation was recently completed by a certified engineer and no significant capital expenditures at the treatment plant were identified.

Septic lines in the Bicentennial Lane development were connected to town mains when installed in 1987 at the request of the developer, however, no easements were obtained from homeowners and maintenance of lines on the Lane continues to be the responsibility of homeowners.

Bio-solids resulting from the facility are managed according to the Town's permit issued by the State. It is the practice of the Selectboard to manage the treatment and disposal of bio-solids using the best available technology. The Town has recently learned that its bio-solids land application site, owned by the US Fish & Wildlife Service, may not be available for biosolids disposal in the near future due to

alternative uses the Department has in mind. This poses an urgent need for the Town to locate an alternate site.

Privately owned on-site, underground septic systems serve the remaining areas outside the sewer service area. The State of Vermont regulates the design and location of these systems and requires a permit prior to construction of any disposal facility. All facilities must be designed by a certified Site Technician or Professional Engineer and approved by the District 3 Department of Environmental Conservation.

## **Solid Waste Management**

The Towns of Bethel and Royalton have jointly owned and operated a solid waste facility off Waterman Road in Royalton since 1970. Situated on a 22-acre parcel, it served as a landfill until closed in 1993 and capped in accordance with State closure and monitoring standards. The current landfill certification is updated through 2016 and this enables monitoring for any residual effects.

In 1993, the two towns designed and constructed a new facility for this site which is in operation today. This consists of a single-stream recycling building and a sheltered transfer station for receiving and loading residual wastes. The Transfer Station was re-certified in 2009 for another five year period. Most recent improvements in the physical plant are: upgraded septic system, installation of a potable water supply, paving the lot and access roads, and replacement of the former truck scale to a longer, hydraulic model. In conjunction with neighboring towns comprising the White River Solid Waste Alliance, Bethel/Royalton hosts a household hazardous waste program twice yearly and other special collection events as necessary. The Town of Bethel does not provide curbside pickup. Collection services are handled by the private sector.

Prior to 2013, the Solid Waste Facility was managed by the Town of Bethel with joint oversight by the Select Boards of Bethel and Royalton. Oversight was recently reorganized and a joint Board of Directors appointed from interested residents of Bethel and Royalton. This Board will report to the Selectboards of the governing towns, and have responsibility for managing personnel, operations, certifications, grant applications and management, and accounting. Recent State regulations will require the facility to take a more aggressive role in management of organic wastes through composting. Current solid waste management facilities are adequate for the immediate needs of the community. A Solid Waste Implementation Plan (SWIP) was approved in May and adopted in all 2008.

## **E. Cemeteries**

The Town owns and maintains five public cemeteries: Cherry Hill on Christian Hill, East Bethel on Route 14, Fairview off Route 12, Bethel-Gilead, and Lympus. Lots are available in the Cherry Hill and Fairview Cemeteries. Expansion of the other cemeteries is limited. The Town annually appropriates funds for maintenance, including mowing and trimming. The cemeteries are overseen by the Selectboard appoints a Cemetery Commissioner. Although there are no immediate plans for improvements in other cemeteries, a new traffic routing was designed for the newest section of Fairview Cemetery to provide

some additional saleable lots. An improved record-keeping/management system has been developed. The Selectboard recognizes the need for acquisition of land for additional cemetery space, and several options are being pursued. This effort must be followed through to completion.

## **F. Other Facilities**

The U.S. Fish and Wildlife Service operates the White River National Fish Hatchery on the White River westerly of the village area off Route 107. Extensive damage to this facility during tropical storm Irene in August of 2011 has resulted in plans to change the purpose of its operation from salmon reclamation to trout activities.

Additionally, the Vermont Agency of Natural Resources owns and maintains Ansel Pond, located at the intersection of Christian Hill Road and Sanders Road. There are no immediate plans for expansion of either of these facilities.

## **G. Communication Facilities**

### **Telephone**

- Landline Communications - Most of the telephone related services in Bethel are still offered via the traditional telephone lines and poles (landline). Coverage over landlines in Bethel is currently provided exclusively by Fairpoint Communications, Inc.
- Cellular Communications - Cell coverage in Bethel is mixed depending on location. A new tower was built near the Village Center, giving residents who use ATT as their carrier excellent coverage within range of the tower. Until Verizon co-locates a transmitter on the new tower, Verizon users will have limited coverage throughout town. The more rural areas of Bethel are not as well served by any cellular communications. Bethel has a cell tower ordinance that guides the design of any towers that might be developed; however, any cellular provider who is creating a network of cell towers is exempt from local land use regulations under V.S.A Title 30, Chapter 5, §248a. While these facilities are exempt from local regulations, due consideration to the municipal plan is supposed to occur as part of the permitting process.

### **Internet**

There are presently six ways to access the internet in Bethel, they are: landline, DSL, cable, satellite, cellular internet, wireless internet, and fiber optic.

- Dial-up - Dial-up access is the most commonly available service to residents, but speeds over a telephone modem are very slow, and given the ever increasing need for bandwidth in day-to-day

use of the internet, it is not practical for more than checking email. The faster and more stable options available to some residents are via cable, satellite, DSL and cellular services.

- Satellite Internet - Provided by companies such as Dish Network, Direcway and Wildblue, satellite internet is an option for residents who are unable to access the internet via cable or DSL provided they have a clear view of the southern sky from their location. Although bandwidth over satellite is on average three to five times faster than a dial-up connection, it is more expensive than other methods of access and it can be affected by heavy weather such as torrential rains and blizzards.
- DSL (Digital Subscriber Line) - DSL (provided by Fairpoint Communications) is very similar to cable in speed. It is less subject to decreases in speed caused by heavy internet traffic because a certain amount of bandwidth is dedicated for each user. DSL is provided to those within range of a switching station. Fairpoint has a switching station in Bethel Village, which gives DSL access to residents on Routes 12 and 107 within three miles of the station.
- Cable Internet – Comcast offers internet through their existing cable TV system. Speeds are generally considered good for home users, and businesses can acquire higher speeds through business specific packages. Home cable internet can be subject to slow-downs at peak hours when many users are accessing the internet at the same time. Cable is available in areas adjacent to the major routes in Bethel (12 and 107).
- Cellular Internet – With the growing amount of bandwidth available to smartphone users via cellular phone networks, cellular providers are offering the ability to utilize their network for internet access. The nature of cellular connections is such that they are less susceptible to disruption from weather conditions as is the case with satellite internet. However, a clear and strong connection to a cellular tower is required in order to utilize this service. The State of Vermont has put a substantial amount of support behind the notion of providing internet access via this medium to those areas that are currently underserved.
- Wireless Internet - In 2013 a new free and public Wi-Fi zone, called the Bethel Connection, was installed in Bethel Village through the Vermont Digital Economy Project, a part of the Vermont Council on Rural Development. The project was funded by a federal grant from the Economic Development Administration, along with substantial in-kind support from IBM, Microsoft and other partners.
- Fiber-to-the-Home - In the past three years, East Central Vermont Community Fiber (EC Fiber) Network has approached towns in the Upper Valley and surrounding areas including Bethel. This organization has developed a long-term plan to extend fiber optic cable throughout the region. Fiber optic cables offer the fastest connection speed available. When asked to become an active participant in the EC Fiber project, the Town of Bethel accepted and has a representative on the EC Fiber board. EC Fiber is available to some residents in Bethel between EC Fiber's central office (located on Waterman Hill Rd.) along Routes 107 and 12 to the Barnard border.

It is likely that as many as three-quarters of the households in Bethel have access to the internet only via landline or satellite modem. Because of the difficulties in convincing cable and DSL providers to extend their coverage areas, other towns have considered alternatives to those listed above. In some cases, wireless internet providers have placed towers in towns that provide wireless broadband access to those within line-of-sight.

## **H. Goals, Policies and Recommendations**

### **Goal**

To provide quality public services and public facilities that meet the needs of the community without creating an undue burden on taxpayers.

### **Policies**

1. It is the policy of the Town to provide residents with safe, effective, responsive and affordable municipal infrastructure, facilities and services consistent with other town goals and whenever possible, to encourage and work with other public and private utility or service providers to do the same.
2. It is the policy of the Town that municipal officials will participate in the Public Service Board's review of new and expanded telecommunications facilities to ensure that the goals and policies of this plan are considered in future development.
3. It is the policy of the Town to effectively plan for future investments and upkeep of community facilities so as to avoid overburdening taxpayers due to unexpected maintenance costs.

### **Recommendations**

1. The Selectboard should work with the Planning Commission to create a Capital Budget and Program to guide future investments in infrastructure.
2. The Selectboard should work with the Planning Commission to find ways to enhance cellular coverage in Town.
3. The Selectboard should continue to support efforts to increase internet coverage within Bethel, such as the East Central Vermont Fiber Project.
4. The Town should continue to utilize the municipal web site to improve communication and provide residents with access to municipal data.
5. The Town should make meeting the requirements of state solid waste regulations a priority, focusing on cost-effective methods of compliance.

6. The Town should continue to participate in the Vermont Village Designation Program to allow local business owners the ability to access tax credits for substantial improvement and code improvements to structures in the Village.
7. The Town should investigate alternative ways of disposing of biosolids from the municipal wastewater system if the U.S. Fish and Wildlife Service property is unavailable.

## **VII. Health and Emergency Services**

### **A. Health Care Facilities**

Health care facilities are essential in the prevention, treatment, and management of illness, and in the preservation of mental and physical well-being through the services that they offer. Rural locations such as Bethel are served by small facilities that can assist residents with general health care needs but are not suited for more complex acute care services that require specialized services and equipment.

Bethel is fortunate to have a health center (Gifford Family Health Center) located in the neighboring town of Royalton less than five miles from Bethel's Village. For more extensive care, Gifford Medical Center in Randolph is available. Gifford Medical Center offers a wide range of services to serve most medical needs. There are also community hospitals in Rutland and Berlin, and tertiary care facility in Lebanon, NH.

Gifford Medical Center is developing an assisted living facility in nearby Randolph Center. This the only medical facility within or near Bethel that is planned for development in the next five years.

### **B. Fire Protection Services**

The Town is served by a single volunteer fire department that responds to fires and other emergencies in Bethel and neighboring towns. Firemen respond to about sixty calls each year, of which less than 30% are Bethel fires. Neighboring communities' departments are called in on large fires requiring outside resources per mutual agreements.

The Bethel Fire Department is operated exclusively by volunteers. While coverage is adequate there is always a need for additional volunteers to serve as firefighters, to help raise money, and to help care for the equipment. Because a majority of Bethel's employed work outside of the community, and because of the added challenge of the many State and Federal requirements for training, it can be challenging to find volunteers. Gaps in coverage during the daytime are compensated for by having firefighters from other communities who work in Bethel actively respond to calls while they are in town. Bethel recently initiated participation in a Cadet Program for youth ages 16 through 18. Presently, the program allows for a maximum of two participants at any given time.

#### **Fire Station**

The Bethel Fire Department is located in a station house on Pleasant Street (VT 12) near the school. The station was built in the 1990's and its available space should be sufficient for the foreseeable future. No upgrades to the Bethel Fire Station are anticipated in the next five to ten years.

## **Equipment**

Emergency vehicles consist of a 2001 E-1 Pumper, 2000 F-550 First Response Truck, a 2013 Kenworth pumper/tanker, and a 1986 Kenworth Pumper/Tanker. They have a mini-pumper/tanker that is owned by and jointly used with the Barnard Fire Department. Some Fire Department Personnel Protective Equipment [PPE] needs to be replaced. The Department has developed a five-year capital budget that addresses the need to up-grade equipment.

## **C. Police Protection Services**

The Town of Bethel does not need a full time police force. Appointed constables provide limited police security, speed enforcement, and traffic control services when needed. The police vehicle, a 1997 Tahoe, is housed at the Fire Department. This vehicle is adequate at present; however, it has a limited life expectancy. The town will need to plan for its replacement in the near future.

Constables also function as Animal Control Officers, working with the Randolph Animal Hospital. All other police functions are performed by the Windsor County Sheriff or Vermont State Police, Troop "E" which is located off Route 107 south of the Bethel/Royalton Town Line in Royalton.

It is important that the 1st and 2nd Constable positions always be filled in order to provide adequate coverage within the community. The extensive training and expensive certification, as well as liability coverage, are becoming a concern for recruitment and retention of individuals willing to serve in this capacity.

## **D. Emergency Medical Services**

Emergency medical services in Bethel are provided by White River Valley Ambulance, Inc. (WRVA). WRVA is a not-for-profit emergency ambulance and rescue service composed of paid full-time, part-time and volunteer staff. Emergency medical service is provided to a geographical area encompassing 280 square miles and approximately 10,000 residents. In addition to Bethel, WRVA covers Barnard, Braintree, Brookfield, Granville, East Granville, Randolph, Rochester and Stockbridge. WRVA is paid for its services through taxes which are assessed on a per capita basis. It should be noted that those who use the ambulance will be charged on an individual basis in addition to the fees paid by the town.

## **Dartmouth-Hitchcock Advanced Response Team (DHART)**

The Dartmouth-Hitchcock Advanced Response Team is based in Lebanon, NH at Dartmouth-Hitchcock Medical Center. DHART crews provide air medical transportation services to the medical communities of Northern New England. In addition, DHART flight crews respond to public safety agency requests for medical evacuation of trauma patients from scenes of injury, and will transport to the closest Trauma Center in the region's five states. Operating 24 hours a day and seven days a week, DHART Crews transport adult, pediatric and neonatal patients to ANY appropriate medical facility in New England. DHART landings within Bethel are generally coordinated by the Bethel Fire Department.

## E. Emergency Management Planning

The impact of expected, but unpredictable natural and human-caused events to the region can be reduced through proper emergency management. Emergency management is generally broken down into four areas: preparedness, response, recovery and mitigation.

- Preparedness includes emergency personnel acquiring suitable equipment, and conducting training and exercises. Preparedness is also a responsibility of residents, business and government. Simple preparedness measures, like having disaster supplies on hand, installing smoke detectors and generators, having emergency fuel for generators and vehicles and knowing basic first aid will all help to lessen the impact of a disaster. Preparing emergency plans is also a preparedness activity.
- Response is the initial emergency response to save life and property during and immediately after the disaster, and is initiated by local emergency crews and then followed up by outside forces if necessary. Response operations are greatly enhanced by proper preparedness. Most emergencies of any scale will require towns to work together, and often to work with state or federal agencies. Practicing with all of these partners before an actual emergency is critical to smooth emergency operations.
- Recovery is the more long-term process of putting life back to normal, and includes many state and federal agencies, especially the Federal Emergency Management Agency (FEMA) in large disasters. As events like Tropical Storm Irene showed, recovery can take a long time and is hindered if a disaster is severe or widespread. Bethel's experience with Tropical Storm Irene showed that there is less state and federal assistance than was expected, and what assistance is available requires a substantial effort at the municipal level.
- Hazard mitigation means any sustained action that reduces or eliminates long-term risk to people and property from natural or human-caused hazards and their effects. Mitigation planning begins with an assessment of likely hazards, and then targets activities to reduce the effects of these hazards. Given that the largest threat in Vermont is flood related, good mitigation measures include proper road and drainage construction, as well as limiting development in flood prone areas.

### Basic Emergency Operations Plan

Bethel, like every town in Vermont, maintains a Local Emergency Operations Plan (LEOP). This plan contact information that is available to authorized users, but is not available to the public. The Selectboard should continue to keep the LEOP up-to-date and ensure that all parts of municipal government that are active during a hazard event are aware of what is in it. This includes the Selectboard, Fire and Rescue, Road Crew and Shelter coordinators.

The LEOP covers the procedures for Bethel's response to a disaster. In the event of a disaster, the Selectboard will formally declare a state of emergency if the Board feels it exceeds the Town's emergency management capacity. This declaration will be faxed to Vermont Emergency Management and a local emergency operation center will be set up in the Town Office and/or Bethel Fire Station. The Town Office is equipped with backup power so that it can function during an emergency. The Town Manager is the Town's Emergency Management Coordinator and would be assisted by several people

who have been identified in the LEOP in coordinating the Town's response to a disaster. This plan is updated on a continual consistent basis to assure ensure that personnel and roles remain accurate.

In the event that emergency shelter is needed, the High School building has been certified by the Red Cross. In September of 2013 a generator was installed in the high school that is capable of operating the entire building. The need for a shelter on the easterly side of town could be met by outfitting the Town Hall on Main Street in this capacity. However, at this time the priority is to complete development and details for the high school location. Should easterly locations be necessary, alternate locations such as the Grange Hall in East Bethel or shelters in nearby communities [e.g., South Royalton or Randolph] would be utilized via existing mutual aid agreements.

In order to avoid disasters as much as possible, the Local Emergency Planning Committee and the Regional Planning Commission have developed an all-hazards plan which addresses mitigation and education needs.

Citizen Plus (C+), an independent citizens group, became active after Hurricane Irene. C+ has three primary purposes: public education, local self-help and emergency management augmentation. As part of their efforts, the group has identified a point person in each of the nine neighborhood districts. This organization might assist the local Incident Command System in case of an emergency.

### **Hazard Mitigation Plan**

Disaster mitigation covers actions done to reduce the effects of a disaster. For Bethel, the primary hazard is flooding, with a variety of other lesser hazards. All hazards have been reviewed in the town's Mitigation Plan. There are many ways that the town can reduce damages, and since a disaster does not always result in state or federal assistance, the town should take sensible steps that can reduce disaster costs, damage to property and loss of life.

### **Emergency Access**

Any new property development in Bethel should be designed to allow safe access for emergency services. Poorly designed driveways that are too steep or too narrow can limit access, particularly in the winter, and may represent a safety hazard for the emergency responder. The Bethel Zoning Ordinance contains provisions to ensure that land development shall be designed to ensure adequate provision of facilities necessary for emergency services.

In new subdivisions, the design of such drives or similar facilities should be done in consultation with the Bethel Fire Department. On major subdivisions, the Development Review Board could require the provision of storage ponds and dry hydrants necessary for adequate fire protection.

## **F. Goals, Policies and Recommendations**

### **Goals**

1. High quality medical care should be available to all Bethel residents.
2. To ensure the protection and safety of the citizens of Bethel against crime and violations of law.
3. To maintain appropriate fire and ambulance service.

### **Policies**

1. It is the policy of the Town to support and encourage the development of local health care facilities and counseling services to help residents obtain health care as close to home as possible.
2. It is the policy of the Town to support programs that improve medical services for Bethel residents.
3. It is the policy of the Town to support the development of assisted living or other facilities or services dedicated to supporting the elderly in Bethel.
4. It is the policy of the Town to support efforts to provide residents with access to high quality physical and mental health care through local providers.
5. It is the policy of the Town to support efforts to decrease response times for emergency services.
6. It is the policy of the Town that road and driveway access to proposed developments for fire trucks and other emergency vehicles be evaluated as part of the permit review process.
7. It is the policy of the Town to maintain its relationship with White River Valley Ambulance.
8. It is the policy of the Town that the Selectboard maintain an up-to-date Emergency Operations Plan.
9. It is the policy of the Town to work with the Two Rivers-Ottauquechee Regional Commission to properly plan for hazard events.

### **Recommendations**

1. The Selectboard should update the Local Emergency Operations Plan at least once a year or when key emergency management personnel change.

2. The Selectboard should adopt a Hazard Mitigation Plan with assistance from the Two Rivers-Ottawaquechee Regional Commission
3. The Selectboard should have a clear plan for use of the emergency shelter. This plan should include written guidelines with regard to staffing and operation.
4. Town officials who are part of Bethel's emergency management team should receive adequate training in the Incident Command System (ICS).

## VIII. Energy

### A. Background

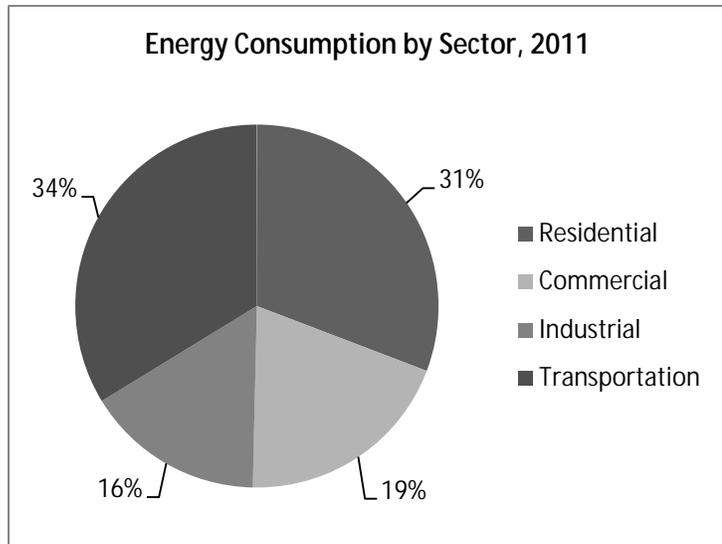
Concern about the sustainability of our nation’s dependence on oil produced in foreign countries has grown greatly since the oil crisis of the mid 1970s. As prices of fossil fuels continue to rise, everyday activities such as home heating and travel by car become increasingly burdensome for the average Bethel resident.

While the Planning Commission recognizes that energy supply and demand are directed largely by economic forces at the state, federal, and international levels, the manner in which Bethel plans for future growth can have an impact on how much energy is needed and used in this community. For example, a highly dispersed and unplanned pattern of land use can waste both land and energy resources. By planning the location of jobs, public services and housing in close proximity to growth centers, the consumption of fuel and the need for additional roads can be reduced. The siting and design of buildings and the selection of energy systems can influence efficient use and conservation of energy.

Theories such as the Hubbert Peak Theory (a.k.a. Peak Oil), suggest that at some point – perhaps sooner than later – the worldwide consumption of oil will outpace the existing supply. Although new technologies may enable energy providers to extract oil from locations that were previously impossible to reach, there is most likely a finite amount of oil, which means that Bethel, like the rest of the world, should prepare for a much less oil-dependent future.

### B. Energy Demands

According to the 2011 Vermont Comprehensive Energy Plan (CEP), energy demand grew at 1.8% from 1990 to 1999, but has been close to 0% for the past 10 years. The combination of state energy efficiency programs and the 2007–2009 recession probably helped to reduce energy demand across most end-use sectors in Vermont. The 2010 American Community Survey indicates that the major heating fuels consumed in Vermont are oil (47%), electric (5%), wood (15%), and LPG and gas (30%).

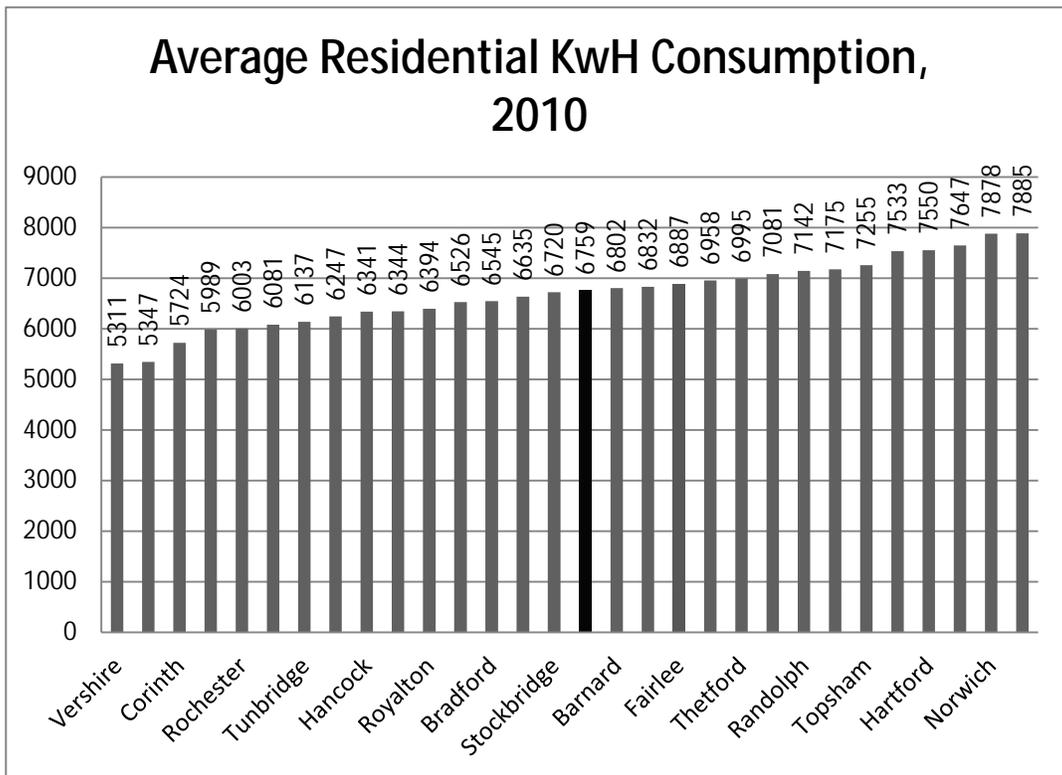


17 Energy Consumption by Sector, 2011  
(Source - US Energy Information Administration)

In terms of per capita energy consumption for residential and transportation purposes, the northeast is about the same as the rest of the U.S. In Vermont, almost 80% of residential energy is dedicated to space heating and domestic hot water, while approximately 34% of the state’s total energy usage goes toward transportation.

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

According to data collected by Efficiency Vermont in 2010, the town of Bethel is 16th out of 30 towns in terms of average annual energy use levels in the TRORC region. In 2010, this data (limited only to residential energy use) determined that Bethel used 6759 kWh of energy, roughly more than 1/2 of the towns in the Two Rivers-Ottawaquechee Region. When compared to other communities of similar size such as Bradford and Royalton, this level of residential energy use seems high.

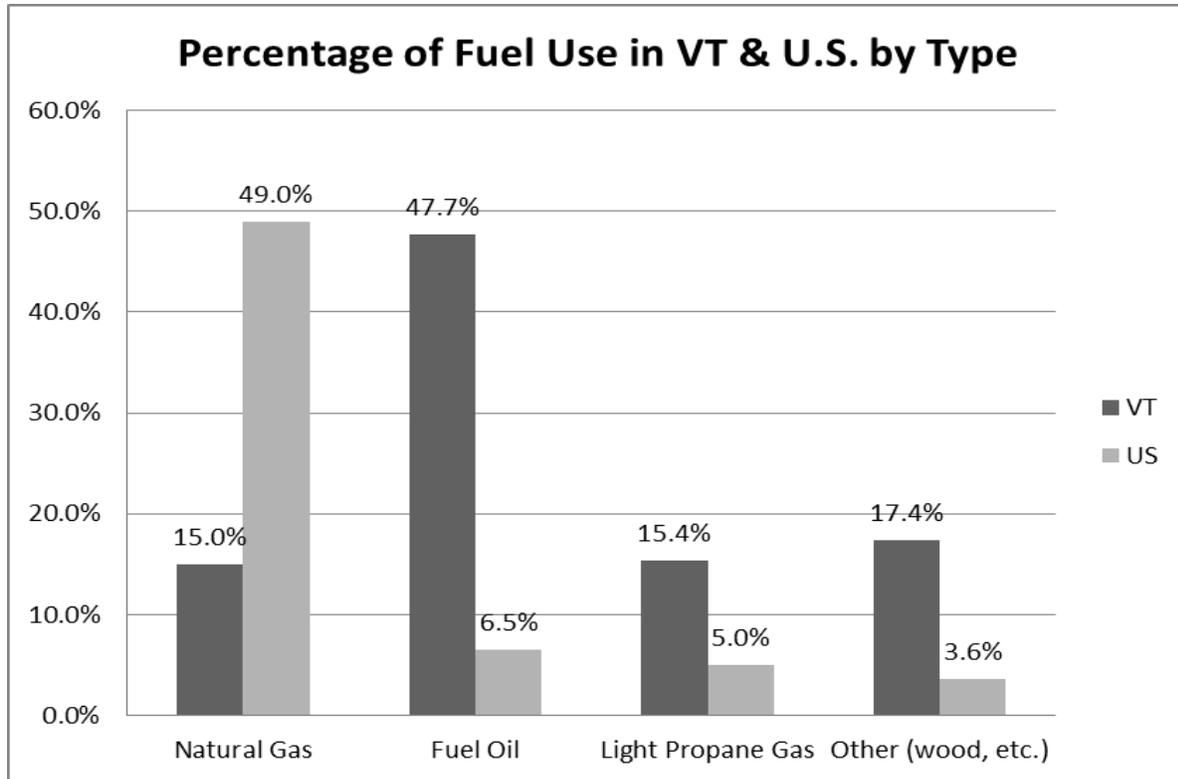


18 – Average Residential Kwh Consumption  
 (Source: Vermont Energy Atlas and Efficiency Vermont, 2010)

### C. Current Energy Sources

#### Fossil Fuels

Bethel, like most other towns in Vermont, depends primarily on fossil fuels for heating and transportation. As shown in the chart above, fossil fuels account for more than 50% of all energy consumed in Vermont, much of which is used in transportation, but a substantial portion of non-transportation-related fossil fuel use is devoted to heating.



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

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

### Nuclear Energy

Vermont Yankee Nuclear Power Station has been generating electricity since 1971, but is scheduled to close in 2014. The power from Vermont Yankee accounted for about three-fourths of the electricity generated within Vermont in 2011, a higher share than any other State. The loss of this power producer, however beneficial from an environmental standpoint, puts the state in the position to find other sources of local production or buy additional energy on the open market, which can be expensive.

## **Renewable Energy**

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

### **D. Renewable Energy Resources**

The 2012 Vermont Comprehensive Energy Plan has set the goal for Vermont to utilize 90% renewables by 2050. This is a lofty goal, but one that will benefit all Vermonters if achieved. For the municipality, individual or small group of homeowners, the key to sustainable energy production will be renewable sources of energy. The term "renewable energy" refers to the production of electricity and fuels from energy sources that are naturally and continually replenished, such as wind, solar power, geothermal (using the earth's heat to create power), hydropower, and various forms of biomass (trees, crops, manure, etc.).

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

The types of renewable energy found in Vermont are:

#### **Solar Energy**

Solar energy has potential for providing clean, reliable, and safe energy, even in Vermont's climate. Most areas in Vermont have the potential for some solar energy production, at least at the residential scale. The Vermont Energy Atlas identifies 1003 viable locations in the town of Bethel to develop roof-top solar energy production. If these opportunities were taken advantage of, the town could theoretically generate 1,372,033 kWh of power.

**Passive Heating and Lighting** – Good building and site design are essential to taking advantage of the sun's energy through passive methods. Bethel could encourage use of solar in this fashion by drafting language for zoning bylaws and subdivision regulations that require the appropriate placement of buildings, landscaping and building design.

**Water Heating** – Solar water heating is the most common form of residential-scale solar use in Vermont. Solar systems are not regulated at the state level and are subject to local regulations. State statute forbids the creation of land use regulations that prohibit renewable energy generation.

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

There are no commercial-scale solar electricity generation facilities in Bethel. Because of the nature of solar arrays, they are in some ways more desirable than wind towers. This is primarily due to the fact that they do not need to be located on high ground and are therefore less visually prominent. In addition, these facilities can be located in areas that are less rural in nature, requiring fewer access roads and reducing adverse impacts on wild lands.

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

**Wind Energy**

Power generated from wind is done through a wind turbine, which is installed on top of a tall tower, where it collects and converts wind into electricity. Towers for home use are generally 80-100 feet in height and are far less obtrusive than larger, commercial “wind farms” that have become a subject of great debate throughout Vermont.

Potential Wind Development Areas (Acres)							
	Class 1 (10-11 mph)	Class 2 (12-13 mph)	Class 3 (13-14 mph)	Class 4 (15-16 mph)	Class 5 (16-17 mph)	Class 6 (17-18 mph)	Class 7 (19-25 mph)
Residential (30-meter)	5745	656	181	9	0	0	0
Small Commercial (50-meter)	0	968	432	182	126	56	0
Large Commercial (70-meter)	0	0	0	287	90	174	0

Figure 20: Potential Wind Development Areas in Bethel (Source: Vermont Energy Atlas)

Similar to solar, wind energy is an intermittent resource and its generation fluctuates in response to environmental conditions. The amount of energy produced by a specific wind tower can depend greatly on location, height of the tower and proximity to other obstructions. Nevertheless, most modern wind

turbines (when properly sited) are able to generate electricity 95% of the time.

There are multiple levels of potential wind energy generation, ranging from Class 1 (10-11 mph) to Class 7 (19-25 mph). In some areas, Bethel does have adequate topography to generate wind energy at a commercial level – particularly in the higher areas around Mt. Lympus. While the potential for commercial scale wind energy generation exists, it should be recognized that the areas with the most potential are also some of Bethel’s best wildlife habitat.

### **Biomass & Biogas Energy Generation**

The term ‘biomass’ refers to biologically-based feedstocks (that is, algae, food or vegetable wastes, grass, wood, methane, and more). Biomass can be converted into an energy source to fuel vehicles (e.g. biodiesel), heat homes, or even generate electricity. According to the 2011 Vermont Comprehensive Energy Plan, those using wood for primary heating consumed about 5.4 cords in 2007–2008, while those using wood as a supplementary source used 2.25 cords. In that same year, Vermont households burned about 20,155 tons of wood pellets, with primary-heat-source consumers burning 3.8 tons and supplementary-heat-source consumers burning 1.2 tons for the season. Much of Bethel is wooded, and therefore offers some potential of sustainably harvested woody biomass, but harvesting of these materials must be properly managed to ensure that the community’s natural resources are not negatively impacted.

There are no biomass energy generation facilities in Bethel. Community-scale biomass has the potential to offer cost-effective heating in small, clustered areas. Some towns have implemented combined heat and power systems that run on biomass to heat multiple municipal buildings.

Commercial biomass energy generation facilities should be located close to available biofuels to reduce transportation impacts and costs. A biomass power plant would require a great deal of space to accommodate the various stages of collection and conversion of the mass into fuel before burning it to produce electricity. Water can also pose a problem as biomass facilities require large quantities to handle the recycling process of waste materials. Materials would have to be transported to and from the facility, so truck traffic should be a consideration in selecting a site. Additionally, before a biomass energy generation facility is located in Bethel, developers should prove that their proposed project will not negatively impact the rural character of the community or the local road system.

### **Biofuels**

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

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

Bethel does have roughly 1100 acres of land that would be suitable to growing the types of crops

(sunflower, canola and soybean) that can be used to generate bio fuels. Growing biomass to use in biofuels may be a viable way to encourage farming in Bethel as well; however, balance should be sought between growing for energy demands and for human and animal consumption.

## **Agriculture**

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

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

## **Hydropower**

Many locations in Vermont, including Bethel, once depended on hydropower to grind grain, run mills and even supply electricity to homes. But, with the onset of centralized power, most of these small-scale power generation facilities have been replaced by massive hydro facilities such as Hydro Quebec.

There are two main forms of hydropower: run-of-river, which uses the natural flow of water to generate power and facilities that store water behind an impoundment. Run-of-river systems rely on seasonal rainfall and runoff to produce power, resulting in periods of low production. Impounding water behind a dam allows for control of the water flow, resulting in consistent electric production.

Bethel has one active hydro generation facility, located on the White River and owned by Bethel Mills. This facility produces roughly 1200 MWh annually. In addition, there is one site in Bethel that is considered “in-service,” meaning that they are not actively producing power, but have the basic infrastructure to do so. It is located on Ansel Pond and has the potential to generate 1kW of power. Many of these sites are existing dams. Retrofitting these existing sites presents the most effective means of adding potential hydropower while keeping environmental impacts low.

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

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

hydro projects warrant significant consideration. Any hydropower development proposed in Bethel shall not result in an undue adverse impact to riverine ecosystems and water quality.

## E. Permitting Considerations

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

### Section 248

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

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

1. **Preferred Locations:** New generation and transmission facilities shall be sited in locations that reinforce Bethel's traditional patterns of growth, of compact village centers surrounded by a rural countryside, including farm and forest land.
2. **Prohibited Locations:** Because of their distinctive natural, historic or scenic value, energy facility development shall be excluded from the following areas:
  - Floodways shown on FEMA Flood Insurance Rate Maps (except as required for hydro facilities)
  - Fluvial erosion hazard areas shown on Fluvial Erosion Hazard Area maps (except as required for hydro facilities)
  - Wetlands as indicated on Vermont State Wetlands Inventory maps or identified through site analysis.
  - Rare, threatened or endangered species habitat or communities.
3. **Significant Areas:** All new generation, transmission, and distribution facilities shall be sited and designed to avoid or, if no other reasonable alternative exists, to otherwise minimize and mitigate adverse impacts to the following:
  - Historic districts, landmarks, sites and structures listed, or eligible for listing, on state or national registers.
  - Public parks and recreation areas, including state and municipal parks, forests and trail networks.

- Municipally designated scenic roads and viewsheds.
  - Special flood hazard areas identified by National Flood Insurance Program maps (except as required for hydro facilities)
  - Public and private drinking water supplies, including mapped source protection areas.
  - Primary agricultural soils mapped by the U.S. Natural Resources Conservation Service.
  - Necessary wildlife habitat identified by the state or through analysis, including core habitat areas, migration and travel corridors.
- 4. Natural Resource Protection:** New generation and transmission facilities must be sited to avoid the fragmentation of, and undue adverse impacts to the town's working landscape, including large tracts of undeveloped forestland and core forest habitat areas, open farm land, and primary agricultural soils mapped by the U.S. Natural Resource Conservation Service.
- 5. Protection of Wildlife:** Designers must gather information about natural and wildlife habitats that exist in the project area and take measures to avoid any undue adverse impact on the resource. Consideration shall be given to the effects of the project on: natural communities, wildlife residing in the area and their migratory routes; the impacts of human activities at or near habitat areas; and any loss of vegetative cover or food sources for critical habitats.
- 6. Site Selection:** Site selection should not be limited to generation facilities alone; other elements of the facility need to be considered as well. These include access roads, site clearing, onsite power lines, substations, lighting, and off-site power lines. Development of these elements shall be done in such a way as to minimize any negative impacts. Unnecessary site clearing and highly visible roadways can have greater visual impacts than the energy generation facility itself. In planning for facilities, designers should take steps to mitigate their impact on natural, scenic and historic resources and improve the harmony with their surroundings.

## F. Residential Energy Efficiency

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

### Decreasing Energy Use by Changing Behavior

Raising awareness to replace wasteful energy behaviors with energy saving ones can reduce the strain on existing energy resources, and help residents and businesses save money, making the town a more affordable place to live with a higher quality of life.

Examples include:

- Turning off lights when you leave a room.

- Using a programmable thermostat.
- Use a laundry line.
- Use a cold-water laundry wash.
- Don't make multiple car trips for errands.

### **Decreasing Energy Use by Implementing Energy Efficiency**

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

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

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

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

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

## **G. Municipal Role in Energy Efficiency**

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

### **Energy Committee**

Bethel does not have an energy committee, but towns are statutorily enabled to create one. An energy committee (EC) is a volunteer group that is formed for the purpose of establishing and implementing the town's energy goals; the group can act independently or can be formally appointed by the Selectboard. The work that can be done by an EC includes conducting energy audits on municipal buildings, tracking energy use for these buildings, providing outreach to homeowners on energy efficiency and renewable energy generation and working with the Planning Commission on the Energy Plan. Most importantly, an active EC can help the town and residents save money while saving energy.

### **Auditing Municipally Owned Buildings**

Many towns in Vermont own buildings that are old and inefficient in many respects. For instance, older buildings often have insufficient insulation, wasteful heating and cooling systems, and out-of-date lighting. These kinds of infrastructure problems result in higher energy use with the resulting cost passed onto taxpayers. The Bethel Town Office has been audited, as has the Bethel Town Hall and has led to cost-saving improvements.

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

### **Property Assessed Clean Energy (PACE)**

Vermont enacted legislation in May 2009 (Act 45) that authorizes local governments to create Clean Energy Assessment districts. Once created, municipalities can offer financing to property owners for renewable energy and energy-efficiency projects. Eligible projects include the installation of solar water and space heating, photovoltaic panels (PV), and biomass heating, small wind, and micro-hydroelectric systems. Property-Assessed Clean Energy (PACE) financing effectively allows property owners to borrow money to pay for energy improvements. The amount borrowed is typically repaid via a special assessment on the property over a period of up to 20 years; if the property owner wishes to sell the parcel before fully repaying the obligation, then the obligation is transferred to the new property owner at the time of sale. Bethel is not currently part of the PACE program.

### **Capital Budget Planning**

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

will be made. Any Capital Budget and Program must be consistent with the Town Plan and shall include an analysis of what effect capital investments might have on the operating costs of the community.

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

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

### **Policy Making for Change**

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

Energy Efficient Purchasing policy – A policy of this nature would require energy efficiency to be considered when purchasing or planning for other town investments. For example, purchasing Energy Star rated equipment is a well-documented way to increase energy efficiency. Devices carrying the Energy Star logo, such as computer products and peripherals, kitchen appliances, buildings and other products, generally use 20%–30% less energy than required by federal standards.

Staff Policies - Towns can also implement policies that are designed to reduce wasteful energy practices. Through policy making, local government can set a clear example for townspeople and encourage sustainable behavior that will ultimately result in both energy and financial savings.

## **H. Energy and Land Use Policy**

The Vermont Municipal and Regional Planning and Development Act (24 V.S.A. Chapter 117) does not allow communities to impose land use regulations that prohibit or has the effect of prohibiting the installation of solar collectors or other renewable energy devices. However, statute does enable Vermont's municipalities to adopt regulatory bylaws (such as zoning and subdivision ordinances) to implement the energy provisions contained in their town plan.

Zoning bylaws control the type and density of development. It is important to acknowledge connection between land use, transportation and energy and seek to create zoning ordinances and subdivision regulations that encourage energy efficiency and conservation. Encouraging high density and diverse uses in and around existing built-up areas will lead to more compact settlement patterns, thereby minimizing travel requirements. At the same time, zoning bylaws must be flexible enough to recognize and allow for the emergence of technological advancements which encourage decreased energy consumption, such as increased use of solar and wind power.

Bethel's zoning bylaws contain provisions for planned unit developments (PUDs). PUDs are a grouping of mixed use or residential structures, pre-planned and developed on a single parcel of land. The setback frontage and density requirements of the zoning district may be varied, to allow creative and energy efficient design (i.e. east-west orientation of roads to encourage southern exposure of structures, solar access protection, use of land forms or vegetation for wind breaks, and attached structures), and to encourage the construction of energy efficient buildings.

Subdivision regulations are one of the most effective tools for encouraging energy efficiency and conservation. Subdivision regulations, like PUDs, involve town review (through the DRB) in the design process. Because subdivision regulations govern the creation of new building lots, as well as the provision of access and other facilities and services to those lots, a community can impose requirements that a developer site their building to maximize solar gain. Likewise, subdivision can require that landscaping be utilized to reduce thermal loss.

## **I. Energy and Transportation Policy**

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

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

## **J. Goals, Policies and Recommendations**

### **Goals**

1. To ensure the long-term availability of safe, reliable and affordable energy supplies, to increase energy efficiency, and to promote the development of renewable energy resources and facilities in the Town of Bethel to meet the energy needs of the community and region.
2. To reduce energy costs, the community's reliance on fossil fuels and foreign oil supplies, and greenhouse gas emissions that contribute to climate change.
3. To encourage a continued pattern of settlement and land use that is energy efficient.
4. To promote the construction of energy efficient residential and commercial buildings and increase awareness and use of energy conservation practices through educational outreach to the public.

5. To increase public transportation opportunities throughout the community, including park-and-ride access, bus service, biking paths, and sidewalks.
6. To promote greater use of existing public transportation services by community members.

## **Policies**

1. It is the policy of the Town that municipal officials should participate in the Public Service Board's review of new and expanded generation and transmission facilities in Bethel to ensure that local energy, resource conservation and development objectives are identified and considered in future utility development.
2. It is the policy of the Town that any commercial energy generation facility proposed in Bethel must be developed so as to avoid negative impacts on the rural character of the surrounding area. Developers should make all possible efforts to minimize damage to important natural areas as identified in the Natural Resource section of this Town Plan. Additionally, such facilities should be located as close to existing roads as possible to avoid any increase in the services provided by the town.
3. It is the policy of the Town to support the development and use of renewable energy resources – including but not limited to wind, solar, biomass, micro-hydro and cogeneration – at a scale that is sustainable, that enhances energy system capacity and security, that promotes cleaner, more affordable energy technologies, that increases the energy options available locally, and that avoids undue adverse impacts of energy development on the local community and environment.
4. It is the policy of the Town that power generation, transmission, and distribution facilities or service areas should be encouraged only when they complement the recommended land use patterns set forth in this plan.
5. It is the policy of the Town that new significant public investments (including schools, public recreational areas, municipal facilities, and major commercial or residential developments) must be located within or in close proximity to the village and shall utilize existing roads whenever possible.
6. It is the policy of the Town to encourage the extension of broadband services to all residences, and support energy-efficient, small-scale home businesses.
7. It is the policy of the Town to promote energy-efficient travel by residents by encouraging carpooling, increased use of public transportation, telecommuting, home businesses, and safe bike routes.

## **Recommendations**

1. Town officials and volunteers should work to increase public awareness and use of energy conservation practices, energy-efficient products and efficiency and weatherization programs through educational efforts aimed at local residents and businesses.
2. The Town should consider municipal or community-based renewable energy generation, to include municipal or district biomass heating systems, and the installation of individual or group

net metered generation facilities on town buildings and property to serve town facilities. Sources of funding for municipal power generation could include third-party financing, municipal funds, bonds, grants, and available government incentive programs.

3. The Planning Commission should identify areas in town that are appropriate for large scale energy production such as wind and solar.
4. The Selectboard should formally create an Energy Committee as a Town committee so that they may develop an Energy Action Plan as a supplement to the municipal plan and to find opportunities to reduce municipal expenses through energy efficiency and energy conservation.
5. The Town should implement energy efficiency measures recommended by the Energy Audits and (if formed) an Energy Committee for existing and future facilities as opportunities arise, and incorporate priority efficiency improvements (e.g., facility retrofits, renovations, and equipment upgrades) in the town's capital budget and program.
6. The Town, with help from the Energy Committee (if formed), should develop municipal procurement and purchasing that emphasize products that are energy efficient (e.g., Energy Star® rated).
7. The Town should develop facility maintenance and operation policies that maximize energy efficiency while maintaining comfort levels for employees and visitors.
8. The Town should consider the benefits and/or drawbacks of using regionally available alternative-fuels, such as biodiesel, in municipal vehicles.
9. The Selectboard should discuss PACE at a future meeting and decide whether the program should be placed on the ballot for Town Meeting.

## **IX. Natural, Scenic and Cultural Resources**

### **A. Background**

Bethel's forested, farmed, and open land resources as well as its water and wildlife resources are key elements in defining rural character. Bethel residents value open, working lands that are hospitable to both recreation and outdoor work. The quality and quantity of Bethel's natural resources and the character of place they create are important ingredients in maintaining our health and economic welfare.

It is the fundamental goal of this Plan to sustain and enhance the integrity and diversity of the natural resource system within Bethel. Therefore it is the policy of the Town to develop and implement practices that conserve natural resources and to insure that future land use activities are not detrimental to the environment.

#### **Goals**

1. To protect the natural, scenic, and historic character of Bethel.
2. To maintain the quality of the landscape for the future and to protect the natural world while allowing the land to be worked safely.
3. To enhance and maintain Bethel's outdoor environment for both active and passive recreational uses including hiking, fishing, boating, camping, hunting, music, and the arts.

#### **Policy**

It is the policy of the Town to protect the natural, scenic and historic character of Bethel's working landscape.

### **B. Water Resources**

Water resources include aquifers (the supply of fresh water beneath the ground) and surface waters (includes rivers, streams, ponds and lakes). Sustainable yields of quality water are necessary for the lives and livelihood of citizens of Bethel. Bethel has no mapped groundwater information beyond what relates to the municipal water system. The municipal water system is protected from contamination by a Wellhead Protection Overlay District.

The health of Bethel's surface waters is essential to maintaining quality groundwater, as well as an important element for outdoor recreation and natural beauty. Vermont law declares that the lakes and ponds of the state and the lands lying underneath them are held in trust by the state for the benefit of all Vermonters. The state, as trustee, cannot sell or give away these public resources to individuals or corporations for purely private purposes. A permitting program for large groundwater withdrawals was implemented by the state in 2011. Those seeking permits will have to show that their withdrawals will not have an adverse impact on water resources and will be consistent with local and Regional Plans.

A resource for Bethel and its citizens is the White River Partnership, whose mission is to help local communities balance the long-term cultural, economic, and environmental health of the White River watershed through active citizen participation, including monitoring the river.

Now that wastewater treatment facilities have been constructed to treat point pollution sources, non-point pollution sources represent the remaining primary pollution sources in the White River. Sources of non-point pollution are agricultural runoff, streambank erosion, removal of riparian vegetation, upstream impoundments, land development, and highway runoff. Future land use decisions should evaluate the probable water quality impacts associated with each development proposal, and should be consistent with the water standards promulgated by the State of Vermont.

Stream instability can lead to excessive flooding and other types of damage due to increased flow velocity. Riparian buffers are strips of bankside vegetation along waterways that provide a transition zone between water and land use. Construction or development along shorelines, or removal or disruption of vegetation within these areas can create increased water pollution, higher water temperatures, destabilization of banks, higher soil erosion rates and loss of fish or wildlife habitats. There are a number of state and federal programs that help fund stream-management projects, such as the Conservation Reserve Enhancement Program (CREP). CREP provides funds to farmers for the purpose of preserving lands once used for agriculture, with the goal of introducing and encouraging plant life to prevent erosion and provide habitat.

This Plan suggests the creation of a policy which will maintain that no new structures shall be allowed within 35-50 feet of the top of the bank of designated permanent streams, except those that by their nature must be located near streams (hydro facilities, for example). Additionally, no ground disturbance should be allowed within 35 feet, with the exception of bridge or culvert construction, or bank stabilization as is necessary for hazard mitigation purposes. Damages from Tropical Storm Irene have indicated a need for stream buffers, particularly in areas outside of the Flood Hazard Area.

Replacing deficient culverts and bridges also helps protect water quality – installing appropriately scaled and designed structures that can handle flood events, stormwater runoff, promote fish passage, and minimize the discharge of road sediment.

## **Goals**

1. To maintain or enhance the quality of drinking-quality resources.
2. To allow use of groundwater resources by new development in such a manner to protect the public right to adequate quality and quantity of the resource.
3. To consider surface water and groundwater impacts and effects related to proposed or existing uses of land.
4. To maintain or improve surface water quality.

## **Policies**

1. It is the policy of the Town that land-use activities which potentially threaten groundwater quality must be carefully reviewed to prevent undue loss of groundwater quality.
2. It is the policy of the Town that the maintenance or enhancement of water resources for recreation, fisheries, necessary wildlife habitats and quality aesthetics be high priorities.
3. It is the policy of the Town that preservation of the natural state of streams should be encouraged by:
  - Protection of adjacent wetlands;
  - Maintenance of existing stream bank and buffer vegetation including trees, together with wildlife habitat.
4. It is the policy of the Town that no new structures shall be allowed within 35-50 feet of the top of the bank of designated permanent streams, except those that by their nature must be located near streams. No ground disturbance should be allowed within 35 feet, excepting that incidental to bridge or culvert construction, or permitted bank stabilization.
5. It is the policy of the Town that development in Bethel shall be permitted only if it does not cause any significant environmental degradation and does not result in an adverse impact on ground or surface waters.
6. It is the policy of the Town that all proposed development must be reviewed for appropriate location away from brooks, streams, tributaries and wellhead recharge areas
7. It is the policy of the Town that all large water withdrawals in the regional area that have a potential to affect the private water sources of Bethel residents should maintain a monitoring plan that is enforced at the state level.
8. It is the policy of the Town that any newly permitted commercial water withdrawal facility in Bethel provide some level of remuneration to the community in return for utilizing a public asset.

## **Recommendation**

The Town should develop a reliable and up-to-date inventory of existing culverts and structures, coupled with a short- and long-range plan for replacement and upsizing.

## **C. Wetlands**

The State of Vermont defines wetlands as areas inundated by surface or ground water with a frequency sufficient to support significant vegetation or aquatic life that depend on saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands are ecologically fragile areas and how these lands are managed have a direct bearing on the quality and quantity of water resources. The Vermont Water

Resources Board estimates that wetlands comprise less than 5 percent of the surface area of Vermont. In addition to being Vermont's most productive ecosystem, wetlands serve a wide variety of functions beneficial to the health, safety and welfare of the general public, including the following:

- Retaining storm water run-off, reducing flood peaks and thereby reducing flooding;
- Improving surface water quality through storage of organic materials, chemical decomposition and filtration of sediments and other matter from surface water;
- Providing spawning, feeding and general habitat for fish;
- Providing habitat for a wide diversity of wildlife and rare, threatened or endangered plants; and
- Contributing to the open space character and the overall beauty of the rural landscape.

In 1986, Vermont adopted legislation for the protection and management of wetlands [10 V.S.A., Chapter 37]. Determination of whether a wetland merits protection is based on an evaluation of the extent to which it serves the general functions outlined in the bulleted list above.

Under the Vermont's Wetland Rules, if land development can be expected to impact a protected wetland, such activity cannot commence unless the Vermont Agency of Natural Resources first grants a Conditional Use Determination (CUD). A CUD will be granted when the proposed use will not have an undue adverse impact on the function of the wetland. In many cases, such approvals are granted with conditions to mitigate impacts and to more readily protect wetlands.

For Bethel, as well as the State, the most significant wetlands have been mapped. These wetlands have been delineated on USGS topographic maps, and by reference are made a part of this Plan (see Map 5, Natural Resources). Other smaller wetlands often do not show on these maps, so a field determination by a qualified biologist is needed for most activities that involve state permits. There are approximately 169 acres of mapped wetlands in Bethel.

In those towns such as Bethel, that have zoning or subdivision regulations, final approvals cannot be granted for projects involving wetlands unless the Agency of Natural Resources has first had an opportunity to evaluate the effect of the project on the wetland [24 V.S.A., Section 4409]. It is important to note that future investigations of wetlands within Bethel may result in additional areas being determined as significant or important for conservation. Setback requirements for wetlands vary as required by ANR staff, but communities are allowed to set more stringent requirements. Some communities have opted to create a standardized buffer around wetlands of up to 100 feet.

### **Goal**

1. To identify and encourage land use development practices that avoid or mitigate adverse impacts on significant wetlands.

### **Policies**

1. It is the policy of the Town to abide and adhere to state wetlands regulations.

2. It is the policy of the Town that structural development or intensive land uses shall not be located in mapped wetlands or within buffer zones to significant wetlands.
3. It is the policy of the Town that development adjacent to mapped wetlands should be planned so as not to result in undue disturbance to wetland areas or their function. Mitigating measures to protect the function of a wetland are an acceptable measure.

### **Recommendations**

1. The Planning Commission should recommend buffer rules for mapped wetlands.

### **D. Flood plains**

Floods are inevitable and uncontrollable natural events which occur sporadically and affect lands adjacent to watercourses. It is therefore in the public interest to plan for floods, and to implement land use strategies which will protect these areas and minimize the risks to public health, safety, and property.

Floodplains, lands adjacent to watercourses (rivers, streams and brooks), are periodically inundated by heavy rains or during spring thaws. They are porous and can absorb considerable water before reaching flood stage. Floodplains make excellent agricultural land but are poorly suited for development, both because of their propensity for flooding and because of their proximity to watercourses, which creates the potential for pollution. Approximately 667 acres in Bethel are within the mapped flood hazard area, which is 2% of the total land in the community.

Vermont has experienced more than twenty statewide and regional floods since 1973. All but one of these were declared federal disasters, and economic losses were significant. Damage was not limited to designated floodplains, but often occurred along unstable river systems and steep streams, and in areas where stream debris was excessive. In some cases, recovery costs to the Town of Bethel alone amounted to several million dollars per flooding event. Public interest dictates that every reasonable attempt should be made to avoid or reduce such exposure to flood damage.

#### **National Flood Insurance Program (NFIP)**

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

FEMA has prepared a Flood Hazard Boundary Map for the Town of Bethel, which includes flood hazard areas for the White River and for major streams and ponds. This map is on file at the Town Office and at the Two Rivers-Ottawaquechee Regional Commission. The Flood Hazard Area is indicated in Map #2, Future Land Use. If in doubt when developing, contact the Bethel Zoning Administrator.

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

Two Rivers-Ottawaquechee Regional Commission has determined that approximately 26 buildings (including 20 residences and 6 commercial buildings) have been identified as being located within the mapped flood hazard areas. Mortgage lending institutions require as a prerequisite to financing that flood insurance be purchased on property subject to flooding. Because of the potential for severe damage to public health and safety, Bethel should consider altering the flood hazard bylaw so that no new primary structures should be developed in the FEMA Floodplain. Other structures, such as accessory structures, could be allowed but only if they are properly flood-proofed and do not raise the existing flood level more than one foot.

### **Fluvial Erosion Hazards**

Much flood damage in Vermont is associated with stream channel instability, also known as the fluvial erosion hazard (FEH), as opposed to inundation related losses. This is a reflection of Vermont's natural geography and its man-made landscape consisting of steep, relatively narrow valleys with agricultural land uses, highway infrastructure, private residences and commercial properties located in close proximity to stream channels. River channels that are undergoing an adjustment process as a result of historic channel management activities or floodplain encroachments oftentimes respond catastrophically during large storm events.

Historically, landowners and local government have relied on the standards and the flood hazard boundary maps provided by FEMA through the National Flood Insurance Program (NFIP) to determine areas within river corridors susceptible to flood damage. The maps are also used to delineate the allowable (floodway) limits of river corridor encroachments and human land use investments. However, the NFIP maps address only inundation issues by applying a water surface elevation based standard. For this reason the NFIP maps are often inadequate as an indicator of flood hazards, especially erosion. The NFIP standards do not recognize the danger present in unstable channels which may be undergoing a physical adjustment process. The stream bed may be eroding or it may be actively aggrading due to erosion occurring upstream.

The NFIP standards often allow for significant encroachment within floodplain areas and river corridors that may prevent the stream from ever reestablishing its stability. Special mapping and geomorphic assessments can identify FEH areas along rivers, more comprehensively defining high-hazard areas. Parts of the White River have mapped fluvial erosion hazard (also called River Corridor Area) data. This area is not subject to specific regulatory conditions in the Bethel Zoning bylaws, but the Planning Commission may adopt new language that protects development against fluvial erosion hazards.

## **Severe Flooding Events**

In 2011, Vermont was struck by Tropical Storm Irene, which inundated the region with heavy rains and severe flooding. Regional damage was severe enough to warrant a federal disaster declaration. In Bethel, significant impacts were felt throughout town, including 8 businesses, 75 private dwellings, and 9 mobile homes.

Surprisingly, a significant portion of the impact of Irene's damage was not in the area mapped by FEMA as flood plain or fluvial erosion hazard areas. Instead, the flood waters did substantial damage along nearly every brook in Bethel, in some instances completely destroying entire stretches of town road. Stream valleys are common locations for rural roads, and as such, much of the damage that occurred in Bethel was to roads. Two of the four properties that were considered a total loss by FEMA were located outside of the mapped floodplain. Inundation and flood damage caused along the White River was also quite severe.

The impact of Irene on Bethel has brought to light the need to consider more substantial and stringent regulation on development within the Flood Hazard Area. The devastation caused by Irene within the Flood Hazard Area (FHA) and outside the FHA in fluvial erosion hazard areas has made it clear that development in these areas carries high risk.

## **Goals**

1. To enhance and maintain use of flood hazard areas as open space, greenways, non-commercial recreation and/or agricultural land.
2. To ensure no net loss of flood storage capacity in an effort to minimize potential negative impacts. These impacts include the loss of life and property, disruption of commerce, and demand for extraordinary public services and expenditures that result from flood damage.

## **Policies**

1. It is the policy of the Town that the preferred uses for flood hazard areas should be for open space, greenbelts, pastureland, recreational and agricultural uses.
2. It is the policy of the Town that any land use activity (filling, or removal of earth or rock) within flood hazard areas which would result in net loss of flood storage or increased or diverted flood levels or increased risk to adjacent areas should be discouraged
3. It is the policy of the Town that new utilities or new facilities serving existing development (e.g. water lines, electrical service, waste disposal systems, roads, and bridges) may be located within these areas only when off-site options are not feasible and provided that these utilities or facilities meet the flood-proofing requirements in Bethel's Zoning Bylaws.
4. It is the policy of the Town to maintain its membership in the National Flood Insurance Program.

## **Recommendations**

1. The Planning Commission should update the Bethel Zoning bylaw to ensure that it meets the standards required by the Federal Emergency Management Agency so that Bethel may continue to participate in the NFIP.
2. The Planning Commission should revise the Bethel Zoning bylaw to limit new development within the floodplain to include only renewable energy generation facilities, recreational and agricultural uses.
3. FEMA shall maintain maps that reflect as accurately as possible the flood hazard areas to assist in appropriate land use decisions.

## **E. Flora, Fauna and Natural Communities**

In Bethel, there are a broad range of communities that exist in the older forests, early successional forests, open fields and valley floors. The breadth and diversity of wildlife and plant communities indicate a healthy, thriving ecosystem. Yet, natural communities are usually strongly affected by the surrounding environment. Plants respond to soil structure and chemistry, hydrology, and climate. The effects of unmanaged development can have a negative impact on plant communities, which in turn will harm the overall ecosystem in the area affected. Good management practices, such as requiring developers to locate their projects in less sensitive areas, maintain buffer areas and protect against silt runoff from excavating, are a few of the ways that these communities can be maintained.

Bethel's fields, forests, marshes, wetlands, riverbanks, ponds, and streams provide habitat to a diversity of flora and fauna. Although nearly all undeveloped land in the town provides habitat for these plants and animals, there are some areas which provide critical habitat that should remain intact. These areas include wetlands, vernal pools, and deer-wintering areas and ecotome (the edge transition zone between two cover types, such as field and forest). Development or logging in or adjacent to these areas should consider wildlife implications during the planning process. Wildlife is one of the primary attractions to the area and provides many citizens of Bethel with direct and indirect livelihoods from sports, tourism and direct harvest of wildlife.

The array of wildlife habitats in Bethel are home to a wide variety of animals, insects, and plants. There are areas in Bethel which provide critical habitats for certain animals, including white tailed deer, birds, black bear, and bobcat. Every new development in town results in an incremental loss or change to wildlife habitats. Sensitive land use planning can lessen or mitigate the impact on wildlife habitats. For example, housing development or excessive logging can have detrimental effects on deer wintering areas. If an area proposed for development encompasses a deeryard, utilizing certain planning strategies can lessen the impact on the area. Should the entire area be winter cover, clustering of homes within an area of the project site will still enable deer to retain most of their habitat. State biologists are available to work

with landowners and developers interested in planning projects in ways that reduce the impact on critical wildlife habitats, rare and endangered species, and other critical natural communities.

Wintering areas are an important habitat requirement for deer during the critical winter months when snow depth and climate are limiting factors to survival. Typically these areas consist of mature softwood stands, at low elevations or along stream beds, which provide cover and limit snow depths. Southerly facing slopes are also beneficial due to good sun exposure and may be utilized even in areas of limited softwood cover. More specific factors, such as percent canopy closure, species of softwoods, and stand age, also figure into the quality of the wintering area. Bethel has approximately of 3490 acres (12% of Bethel's total acreage) of mapped deer wintering yards.

Wildlife management requires management of human activities around animals as much as management of animals around human activities. Managing for specific species is not as desirable as managing for the entire ecosystem supporting the species. Parochial wildlife management programs usually manage for one species at the expense of others, while a more ecological approach is to ensure healthy habitat for all components of the ecosystem. The Vermont Non-Game and Natural Heritage Program has identified several sites in Bethel that are habitats for rare, threatened or endangered species. Large tracts of forest land, riverines, floodplains, and cliffs are natural communities for many habitats.

There comes a point where a species cannot use seemingly adequate habitat because of adjacent development. While certain strategies may lessen the impact on habitat, planners and developers should keep in mind that almost every development will affect the ecological balance. It should be noted, however, that high density or intensive land uses are more likely to have a negative impact on the quality of wildlife habitats.

Most important when considering development and its impact on wildlife is the concept of habitat fragmentation. Forests provide habitat to a diverse population of wildlife, which are negatively impacted when forested land is fragmented through development. Forest fragmentation affects water quality and quantity, fish and wildlife populations, and the biological health and diversity of the forest itself. When many small habitat losses occur over time, the combined effect may be as dramatic as one large loss. Forest fragmentation can disrupt animal travel corridors, increase flooding, promote the invasion of exotic vegetation, expose forest interiors, and create conflicts between people and wildlife. Habitat loss reduces the number of many wildlife species and totally eliminates others.

To help mitigate the effects of human population growth and land consumption, many scientists and conservationists urge governments to establish protected corridors, which connect patches of important wildlife habitat. These corridors, if planned correctly, allow wildlife to move between habitats and allow individual animals to move between groups, helping to restore or maintain genetic diversity that is essential both to the long-term viability of populations and to the restoration of functional ecosystems. Because of its generally low density, Bethel maintains a substantial amount of good quality wildlife habitat.

## **Goals**

1. To sustain the natural diversity of flora and fauna found in Bethel.

2. To maintain or improve the natural diversity, populations, and migratory routes of wildlife.
3. To encourage sport and subsistence hunting and fishing in accordance with seasons and bag limits determined by the State Department of Fish and Wildlife.

## **Policies**

1. It is the policy of the Town that native wildlife populations and natural diversity should be sustained and enhanced.
2. It is the policy of the Town that long-term protection of critical habitats through conservation easements, land purchases, leases and other incentives be encouraged.
3. It is the policy of the Town that development, other than isolated houses and camps, should be designed to preserve continuous areas of wildlife habitat, such as deer wintering areas, whenever possible. Fragmentation of habitat is discouraged. Efforts should be made to maintain connecting links between such areas.
4. It is the policy of the Town that preference shall be given to development that utilizes existing roads and whenever possible preserves existing agricultural use.

## **F. Invasive Species**

Invasive non-native species are a growing problem throughout Vermont. Invasive plants are defined as those exotic species that typically spread from disturbed areas into natural communities, but many of these species are also impacting yards, agricultural fields, and working forests. In Bethel the spread of invasives is negatively impacting the rural character of the town, reducing native plant populations and consequently affecting wildlife populations; creating economic impacts by dominating other plants in agricultural fields and inhibiting reproduction of trees in sugarbush areas and other forests; destroying the scenic quality of roadsides; reducing property values; and potentially posing health risks. At the present time, the greatest threats are posed by wild chervil (fields, roadsides and recently logged areas), Japanese knotweed (streams, rivers, roadsides, yards), and Japanese barberry and buckthorns (forests), but there are increasing threats throughout the region from garlic mustard, giant hogweed, and other invasives.

Some of these invasives, especially wild chervil and knotweed, have proliferated to such an extent that eradication from many sites is impossible, but there are still portions of the town that have not been infested. Diligence is necessary from town residents and employees to prevent the further spread of these species, and the introduction of new species that could pose more serious threats. For example, giant hogweed has been identified from several towns in Central Vermont. This Federally listed noxious weed

produces a sap that, in combination with moisture and sunlight, can cause severe skin and eye irritation, painful blistering, permanent scarring and blindness.

One of the more common ways in which invasive species spread to new locations is when seeds or root segments are transported on vehicles, especially construction and logging machinery, mowers, etc. Best management practices have been identified for reducing the accidental spread of invasives including avoiding using fill from invaded sites, washing of equipment before leaving infected sites, stabilization of disturbed sites, timing of mowing, etc.

### **Goal**

Reduce the impact of invasive species on agricultural and forest native ecosystems.

### **Policy**

It is the policy of the Town that new occurrences of invasive species should be controlled to prevent further infestations.

### **Recommendations**

1. Town employees and contractors should become familiar with the best management practices to prevent the accidental spread of invasives.
2. The Town should time roadside mowing to minimize and reduce the spread of invasive species.

## **G. Mineral Resources**

The use and management of Bethel's earth and mineral resources are matters of public interest. Maintenance of quantities of gravel, sand, crushed rock, and other materials are essential for business development, as well as state and local highways. In spite of this, public and private interests are oftentimes in conflict over use of the resource. It is in the interest of the Bethel business owners and residents to enable utilization of these resources when such uses do not significantly inhibit or conflict with other existing or planned land uses, or are in conflict with other stated goals in this Plan.

Issues incidental to mineral extraction include creation of excessive dust and noise, increased truck traffic through residential neighborhoods, surface and groundwater contamination, degradation of the site or wildlife habitat, loss of scenic character in the immediate area, and undue deterioration on state and town roads.

### **Goal**

To support extraction and processing of mineral resources only where such activities are appropriately sited (taking into account aesthetics and compatibility with this Plan), managed, and the public interest is clearly benefited. Any support shall be balanced against the need to maintain the rural character valued by the citizens of Bethel.

## Policies

1. It is the policy of the Town to consider pollution, noise and vehicle traffic as part of the decision making process when reviewing proposed gravel extraction projects.
2. It is the policy of the Town that existing and proposed mineral extraction and processing facilities shall be planned, constructed, and managed:
  - So as not to adversely impact existing or planned uses within the vicinity of the project site.
  - To not significantly interfere with the function and safety of existing road systems serving the project site.
  - To minimize any adverse effects on water quality, fish and wildlife habitats, viewsheds and adjacent land uses.
  - To reclaim and re-vegetate sites following extraction.
  - To minimize noise impacts on adjacent uses including residential areas.
  - To maintain the rural character of the Town.

## H. Significant Natural and Historic Areas

While Bethel residents would agree that the entirety of the community is significant for its beauty and its rural landscape, there are several areas that represent the most significant places in town. These lands are what most residents agree make Bethel the place it is today. These areas include:

- **Lake Ansell** – Located on Christian Hill rd. Lake Ansell is a popular location for fishing and other outdoor recreation activities. The lake is owned by the State of Vermont.
- **Gilead Brook Area** – Gilead was at one time a thriving hamlet. Today several significant buildings remain including the Gilead Methodist Church. The area contains a Civil War monument to General Thomas.
- **Bethel Town Hall** – The Bethel Town Hall was built in 1892 and once housed the Bethel Volunteer Fire Department. The building was completely renovated in 2010, and now provides a location for town functions such as town meeting and elections, the facility is available to rent for community private activities, town & state board hearings, and other uses authorized by the Selectboard.
- **Bethel's Villages and Hamlets** – Bethel's historic villages and hamlets each have their own architectural and historic significance.
- **Rock of Ages Quarry** – This privately owned quarry produces the whitest granite in the world. Although it is not open to the public, it has had an active role in Bethel's history. At one point, it was Bethel's largest employer. Most recently, the quarry provided waste stone to the State of Vermont during the massive Irene recovery effort.

## I. Conservation Commission

Vermont statute enables communities to create a Conservation Commission (CC), a volunteer board that focuses specifically on the natural, scenic, and cultural resources within a community. A CC may

conduct inventories of natural resources, recommend the purchase of or the receipt of gifts of land to the Selectboard, assist the Planning Commission with natural resource planning and maintain a conservation fund.

The CC, at the discretion of the Town, can manage a fund which is to be used to assist with the purchase or conservation of property with the intention of protecting natural resources and implementing the town plan. Any use of such a fund requires support from the Selectboard. Bethel has recently re-formed their Conservation Commission.

The Conservation Commission is creating a plan for the properties the town has recently acquired as a result of the FEMA buyout process.

## **J. Land Protection Strategies**

Methods of protecting lands are varied. In general, there are two ways to encourage the preservation of culturally and naturally significant areas: voluntary and regulatory. Voluntary methods allow landowners to:

- Preserve land by placing restrictions on its use, through such tools as conservation easements or mutual covenants.
- Transfer land to a conservation organization (such as the Vermont Land Trust) through donation.
- Sell or donate land with conditions attached, like deed restrictions or conditional transfers.

Bethel could become an active participant in land conservation through the creation of a conservation fund. This fund, which is generally funded by taxes on a yearly basis, would contain funds that a Conservation Commission could use to purchase land outright, or to assist a land conservation organization with the purchase of a conservation easement. It is safe to assume that there will never be sufficient funding for land protection strategies to acquire conservation easements or ownership for all of the unprotected areas of value.

Regulatory methods use zoning and/or subdivision rules to regulate the location, density and design of development within selected areas to minimize harmful impacts while allowing for a reasonable level of development. Regulatory methods include:

- **Overlay Districts** - The creation of overlay districts is the most common method of regulating specific areas for the purpose of protecting wildlife and other natural resources. Overlay districts can be used to exclude development on or to impose resource protection or conservation standards within overlay areas. These districts can be used to protect many types of resources.

- **Resource Protection Districts** - protect wildlife resources and open space areas or resource-based uses such as farming, forestry, recreation from incompatible development.
- **Large Lot Zoning** - Large lot zoning refers to the designation of a very large minimum lot size within certain zoning districts to accommodate resource-based uses, such as farming or forestry, or to require a pattern of very scattered, low-density development to limit, for example, impervious surfaces and protect surface and groundwater quality.
- **Fixed Area & Sliding Scale** - Fixed area and sliding scale zoning are two zoning techniques (typically applied in association with subdivision regulations) that are used to differentiate allowed densities of development from district lot size requirements.
- **Conservation (Open Space) Subdivision Design** - Conservation or open space subdivision design is a subdivision design process wherein subdivisions are intentionally designed to protect rural character and open space.

Each of these methods has its own set of benefits and pitfalls and all of them should be thoroughly evaluated before they are implemented. However, there are many examples of successful regulatory land protection strategies in Vermont. The key to success is to ensure that the community on a whole supports the regulations.

## K. Goals, Polices and Recommendations

### Goals

1. To identify and protect those natural and historic resources that are unique to Bethel and make it special.
2. To preserve and protect Bethel's important cultural and natural resources for future generations.
3. To allow for compatible development without sacrificing important cultural and natural resources.

### Policies

1. It is the policy of the Town to ensure careful review of all development projects to minimize the impact on Bethel's natural and cultural resources.
2. It is the policy of the Town to protect unique resources through careful planning.

## **Recommendations**

1. The Conservation Commission should study how the use land that the Town owns as a part of the FEMA Tropical Storm Irene mitigation buyout program, and how to link those properties with existing municipal lands.
2. The Town should consider creating a conservation fund to be administered by the Conservation Commission for the purposes of natural resource protection and land preservation.

## **X. Agriculture and Forestry**

### **A. Background**

Agriculture and forestry define the character of Vermont and in the past have been major industries in the region. Changes in these industries have led to instability. The shape of Vermont agriculture and forestry are changing and the pressures for change come from both inside and outside the state. These changes pose difficult challenges, not just for landowners, but for all who desire a rural lifestyle and working landscape. And yet, opportunities for new and innovative farm and forestry businesses are on the rise. How we maintain the working landscape and support the agriculture and forest industries will have a long term impact on our landscape and our local economy.

### **B. Farm and Forest Land Issues**

#### **Land and Taxation**

An economic restructuring or a shift away from agriculture to the service and tourism industries has placed economic pressure on farm owners. The higher cost of owning land makes it difficult to rationalize conventional farming. Owners of forestland most often are faced with a tax bill on land that exceeds its economic value for timber production. This coupled with a need for house lots or development land in general, has prompted landowners to place their land on the market for these purposes.

#### **Current Use Taxation**

For farmland and forestland conservation to be successful, the pressures posed by the market value approach to taxation must be solved for both the landowner and municipality. One means to address this issue has been the Vermont Current Use Program administered by the State which sets the valuations on farm and forest land based on their productivity values rather than their development values. There are

6483.66 acres of land in Bethel enrolled in the Current Use Program, this amounts to nearly 48% of all lands in Bethel.

### C. Agricultural Trends

An analysis of the United States Census of Agriculture data between 2002 and 2007 (2007 being the most recent period of data collected) shows that farming in Vermont is slowly shifting away from the larger scale farm that developed as a result of trends toward consolidation. Between 2002 and 2007, the number of farms in Vermont increased by 6%. The average size of farms decreased from 189 acres to 177 acres between ag censuses. This is most likely due to the fact that 37% of Vermont's farms in 2007 were considered "small-scale" farms that sell under \$2,500 in agricultural products per year. While the number of small-scale farms continues to grow, these farms only produce slightly less than 3% of Vermont's agricultural income.

Despite this decrease in farm size, over the past 10 years a growing movement in sustainable agriculture—involving increased local food production and consumption, value-added processing, and diversified farms—has taken off. In 2009, the State of Vermont passed legislation that created the Farm to Plate Investment program, part of which included the creation of the Farm to Plate Strategic Plan. In 2007, USDA data indicated the estimated agricultural revenue in Vermont to be \$673 million per year. That number increased to \$2.7 billion when food product output is also considered.

Many other businesses in Vermont depend on the "farm economy." According to the Vermont Farm to Plate Strategic Plan (F2PSP), which was released in 2011, Vermont has at least 457 food processing establishments that employ at least 4,356 people and is the second-largest manufacturing sector employer in the state, behind computer and electronic products. In addition, Vermont has at least 263 wholesale distribution establishments that collectively employ at least 2,288 people. The farm-related food industry is clearly connected to the farm economy.

In Bethel, as in the rest of Vermont, the scale and style of farming has changed. The most recent Census of Agriculture (2007) reports that there are 20 part-time and 17 full-time farm operations in Bethel. About 80% of these operations utilize more than 50 acres of land. Products grown or produced on farms in Bethel include hay, corn, maple syrup, fruit, Christmas trees, cattle, horses, chickens, pigs, and sheep.

*For census purposes, a farm is defined as "a place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year."*

The distinctiveness of the working landscape gives Vermont its beauty. Farms provide open space for wildlife habitat, scenic views and a connection to the land that is hard to find in other places. They also help our towns avoid sprawl and maintain small town and village settlement patterns. As such, to continue to receive the benefits farming has to offer, a community must encourage farming.

## **D. Forestry Trends**

Three primary trends have affected the region's forestland and its productivity. First, forests and farms have been subdivided into small lots which threaten the economic viability of forestry. Development pressure in the region has relaxed since the early 1990s, but the economy is predicted to rebound and the trend of land moving out of forest use to other uses will continue, particularly in those areas where access and development conditions are suitable.

Funding of the Current Use Program has been identified by the Northern Forest Lands Council as vital to landowners keeping their patience, not over-harvesting the forests or opting for liquidation cutting of tracts. High taxes contribute to a low rate of return on timber sales, and have prompted some conversion to non-forest uses. Second, markets for timber and wood have been responsive to a glut of some products affecting prices, at least in the short run. While the numbers of mills in the region have declined, there has been a move to new markets, one being an export demand for hardwood logs and another being a demand for pulpwood and other specialty types. For a state mostly known for hardwood, the demand for pulp has led to better managed forests because it is generally the lower grades or poorer cuts that are being used. Third, federal and state estate and inheritance tax laws have placed family landowners into financial predicaments where they need to subdivide or develop forest land in order to cover taxes. Current tax law bases estate values on the market value of land rather than at use value. By allowing land to be assessed on the basis of current use, family landowners are able to realize a more reasonable return on investment for long-term timber management.

Forest products continue to be a significant share of the region's manufacturing sector, although the way statistics are kept makes it hard to quantify. Overall, according to the Vermont Department of Employment and Training, jobs in the lumber and wood products industries have increased statewide. In looking at the Vermont forest products industry, it is worth noting that the industry, like agriculture, has virtually no impact in setting trends as it is a relatively small national producer.

A major long-term issue for the Vermont forest products industry is how to keep it from drifting further into the position of selling wood as a raw material without benefiting from the higher paying jobs that come from value-added wood products.

## **E. Sustaining Agriculture and Forestry**

Planning policy and implementation efforts should be directed at sustaining agriculture and forestry pursuits and not just conservation of the resource. This is not only because it is the best way to keep the land open, but also because agriculture and forestry are critical industries in the Town and region.

Just as there are a variety of interests, there are a variety of tools than can be used to conserve these resources. Some are directed primarily at sustaining agriculture, others forestry, some are regulatory in nature, others are compensatory, and others voluntary. It is in the public interest to encourage conservation groups, landowners, local officials, and policymakers to utilize all of these tools.

## **Conservation Easements**

Conservation easements are a common method used to ensure that the working landscape gets preserved. The Vermont Land Trust (VLT), Vermont's largest non-profit conservation organization, has conserved more than 590 parcels of land in agricultural use throughout the state, totaling 145,109 acres. As of 2014, VLT reported that they have conserved 1133.8 acres in Bethel. Most land purchased with the intent of applying a conservation easement to it is funded, at least in part, by some form of grant from either state or private sources. The use of conservation easements has both pros and cons for municipalities, they include:

### Pros

- Easements are flexible; they can be written to achieve specific goals of the town involved.
- They are perpetual, and restrictions put on the conserved lands will remain in force even when the property is sold to a new party.
- They conserve scenic beauty and environmentally sensitive areas.
- Eased property remains on the tax rolls.

### Cons

- Establishing an easement involves up-front costs, such as paying for legal counsel, biological analysis, etc.
- There are long-term expenses involved with monitoring the easement.
- The easement holder is responsible for ensuring that the restrictions placed on the easement are followed.

The Bethel Planning Commission acknowledges that conservation easements are one potential solution to preserving the working landscape. Other strategies for preserving the working landscape can be found in Section J of chapter IX, Natural Resources.

## **F. Farming, Forestry and the Economy**

In addition to preserving Bethel's working landscape and maintaining the community's aesthetic beauty, farming and forestry can have an economic impact. Vermont is within easy reach of millions of people in cities like Boston and New York City. Additionally, Vermonters are increasingly seeking locally-sourced, sustainably-produced farm and forest products. Rising fuel prices have led to an increased interest in food and energy security. Vermont is a national leader in innovative education programs based on local food, agriculture, and healthy eating. It is also widely recognized for its strong network of land trusts and other nonprofits that are models for conserving farm and forest lands.

There is already a growing mix of emerging entrepreneurs and long-time land-based businesses that are constantly evolving to stay competitive. They're producing biofuels, artisan cheese, specialty wood products, produce, breads, and other value-added items. It is in the best interest of Bethel to encourage the continued development of these industries and to foster local interest in these products. One way

Bethel works to keep these businesses prosperous is to host a weekly farmer's market during the summer. The Bethel Farmer's Market provides opportunities for local farmers and craftspeople to sell their products and connect with local clientele.

## **G. Goals, Policies and Recommendations**

### **Goals**

1. Encourage the conservation, wise use, and management of the town's agricultural and forestry resources, to maintain its environmental integrity, and to protect its unique and fragile natural features.
2. Protect the Town's rural agricultural character, scenic landscape, and recreational resources.
3. To encourage the economic growth of agricultural and forest operations at a scale that is appropriate for Bethel.

### **Policies**

1. It is the policy of the Town that where contiguous areas of high-value farming or forestry exist, or have significant potential to exist, fragmentation of these areas into uses other than those incidental to agriculture or forestry should be discouraged.
2. It is the policy of the Town that where high value agricultural and forested land are identified, clustered or peripheral development is especially encouraged to protect such resources and prevent fragmentation and sprawling settlement patterns.
3. It is the policy of the Town that contiguous forest and significant agricultural areas should remain largely in non-intensive uses unless no reasonable alternative exists to provide essential residential, commercial and industrial activities for the Town's inhabitants.
4. It is the policy of the Town that the construction of utilities, roads or other physical modifications should skirt tracts of productive agricultural land rather than divide them.
5. It is the policy of the Town that farmers, loggers, and foresters should use Accepted Management Practices (AMP) and are encouraged to implement Best Management Practices (BMP) in their operations and to minimize point and non-point source pollution.
6. It is the policy of the Town to support the development of value-added farm and forestry products.
7. It is the policy of the Town to preserve recreational and scenic access by ensuring that at the completion of logging projects all roads are restored to their previous condition.
8. It is the policy of the Town to continue to support the Bethel Farmer's Market.

### **Recommendation for Action**

To promote a better understanding of the farming and forestry practices, and natural resource management in general; the industry, conservation organizations, public schools and the tourism and recreation industries should sponsor continuing educational opportunities to the public.

## XI. Recreation

The Town of Bethel provides a number of recreational opportunities to the community with a diverse range of facilities and properties.

### A. Public Recreational Facilities

**Pleasant Street Recreation Park** - This facility is situated on an eleven-acre parcel within the village limits and within walking distance of the school. Swimming, tennis, hiking, parking and picnic facilities are available. It is not compatible with the Americans with Disabilities Act. The bath house is obsolete and both the pumping and circulation system for the pool will need to be improved and repaired before the 2014 season. A Master Plan is being developed for lay-out and components of the space. Addition of a basketball court is possible. The estimated cost of implementing the master plan is roughly \$1.5 million. Partial funding for this project is anticipated to be secured through FEMA alternate project monies.

**Church Street Common** - The Town owns a small park on the south side of Church Street in the village. This one-and-one-quarter acre lot serves as a “town common” and is built around the original Whitcomb School foundation. Facilities consist of benches, a water fountain, night lighting, perennial flowerbeds, and a band shell. A portion of the parking lot provides space for Ride Share parking, it also being a Stagecoach bus stop for commuters to the Upper Valley area. This "Common" is used for summer concerts organized by the Bethel Council on the Arts and for other open-air gatherings. The local Farmer’s Market is held there each Monday afternoon, May – October. This site is also a relay point for the public Wi-Fi zone.

**Peavine Park** - This 3.5 acre Park is located at the confluence of the Third and Main Branches of the White River. Facilities include a riverside picnic area, a small gazebo, water, electricity, and parking. Peavine Park is open to the public and is frequently used by civic organizations for events. Direct access to the river is provided at two locations, one of which is a boat launch. A well building for the Town’s water supply is also located at the Park. The park and the Town well were overwhelmingly devastated by Tropical Storm Irene, which left two feet of silt over the entire area. It has been reclaimed and rebuilt via volunteer, Town, and FEMA labor and funds.

**River Street Bridge Access West** - Directly opposite Peavine Park and across the Main Branch of the White River is a 1.8 acre parcel owned by the Town. Access to this parcel is from River Street on the westerly end of the Bridge. This site fronts on the River and is used for fishing and canoe access.

**River Street Bridge Access East** – A new set of concrete stairs was constructed as part of the new bridge project, just completed this current year. The stairs provide access to Bridge Street, access having been cut off by construction of the bridge built in 1928. This Town right-of-way provides access to Town-owned property along the White River, and several historic housing sites which were occupied by Italian immigrants who worked at the granite sheds then located just southerly along the river. The homes were destroyed by the Flood of 1927. Much information about this parcel of Town land has been secured through the studies done a number of years ago by the Department of Transportation while researching possibilities for a by-pass of the River Street Bridge connecting Routes 107 and 12.

## **B. Municipal Properties**

In addition to the above recreational facilities, the Town owns three municipal forests. These are: a 230-acre tract in the Camp Brook area, a 160-acre parcel near Lilliesville, and the Branliere Forest, a 70-acre tract east of Bethel Village. These forests are frequently used by the public for hiking, hunting, and similar uses. The Town periodically conducts timber harvesting in consultation with the Windsor County Forester.

In addition to the municipal forests, the town acquired four lots that were severely impacted by Tropical Storm Irene and “bought out” by the Federal Emergency Management Agency. Several of these lots are located within the village and have the potential to offer additional recreational uses to the community. As of 2013, the Bethel Conservation Commission has been tasked with developing proposals for the best and most productive use of these properties.

## **C. Recreation Facilities Planning**

Because Bethel has such a wide range of recreational facilities and properties, it is important for the community to look at the long range potential of these assets to determine what the cost of their upkeep will be and how they would best be utilized by the community. The fact that a number of these properties are within close proximity to each other makes the possibility of linking these properties a worthwhile consideration. When adjacent parcels become available for purchase or are offered to the town for conservation purposes, they should be considered in the context of a long range recreation plan.

In addition to recreation, many of Bethel’s public properties have the potential to provide educational opportunities for the school and the community at large.

## **D. Recreation and the Bethel Economy**

Outdoor recreation is a key element of Vermont’s economy, generating roughly \$2.5 billion a year in retail sales and services throughout the state. Recreation-seeking tourists spend money. In *National Survey of the Vermont Visitor*, the University of Vermont business school determined that visiting hunters and fishermen spend more than \$2000 per trip. Hikers and campers spend \$440 per trip.

The Outdoor Industry Foundation reports that Vermont’s population regularly participates in outdoor recreation. These include:

- Wildlife viewing: 54%
- Hiking: 33%
- Biking: 29%
- Skiing, snowboarding and snowshoeing: 25%
- Camping: 21%
- Fishing: 18%
- Hunting: 14%

In addition to hiking, hunting and other recreation, there is a network of trails in Bethel that are utilized by All-Terrain Vehicles. This system is maintained by the Quad-runners, a local chapter of Vermont All-terrain Vehicle Sportsman's Association. During the winter, additional trails are utilized by snowmobilers. These trails are maintained by the White River Valley Ramblers, the local club of the Vermont Association of Snow Travelers.

These recreational pursuits have the potential to provide Bethel with additional inputs into the local economic system. Additionally, the White River in Bethel offers excellent recreational opportunities.

The way land is used in the community has an influence on recreation. Bethel should continue to maintain a pattern of development in the more rural areas of town that is low density, allowing for larger amounts of open land and reducing the possibility of having large land areas broken up for development. This Plan specifically encourages outdoor recreation as a valuable commercial use in Bethel and seeks to maintain and enhance recreational opportunities for residents and tourists alike.

## **E. Goals, Policies and Recommendations**

### **Goal**

To maintain, enhance and expand recreational opportunities in Bethel.

### **Policies**

1. It is the policy of the Town to encourage the development of outdoor recreational businesses.
2. It is the policy of the Town to encourage patterns of land use that maintain and enhance the opportunity for outdoor recreation.

### **Recommendations**

1. The Town should consider creating a long range recreation plan that utilizes citizen input and good planning practices.
2. The Conservation Commission should develop proposals for the best and most productive use of municipal properties.

## **XII. Land Use**

### **A. Introduction**

Bethel's rural character is strongly influenced by its pattern of land development, building design, its relationship to the landscape, and the sense of community that comes from people living and working here.

This section of the Plan describes Bethel's current land use and sets a framework on how land should be utilized in the future. Although growth in the White River Valley has slowed in the past decade, this Plan recognizes that in order to remain a vital and thriving community, Bethel must continue to grow. It is hoped that future growth will result in new and expanded job opportunities, more income, and increased social and cultural diversity. Overall, past growth has been positive and has benefited the Town. In spite of this, the changes that result from growth underscore the need to identify and to develop effective growth and land use principles that will serve the long-term future interests of the community.

### **B. Overall Land Use Goals**

In formulating a future land use pattern, consideration needs to be given to the existing settlement pattern, maintenance of the Village Center, the surrounding low density rural and agricultural areas, and its large open spaces and forests. Additionally, consideration must be given to the State of Vermont's Planning goals (24 V.S.A. §4302). A key element of the State's goals is to maintain the traditional pattern of development most common to Vermont – densely populated village and urban centers surrounded by open countryside.

Accordingly, the following are recognized as key factors for determining the type, scale and intensity of future land use:

- land topography, soils, water, and other natural resources characteristics;
- relative ease of access to roads and other transportation facilities;
- availability to public services, including water and sewer facilities;
- desirability of avoiding land use conflicts; and
- the needs of the citizens of Bethel.

The overall land use goals for Bethel are listed below:

1. Encourage the full use of existing or designated growth centers or areas;
2. Promote the economic viability and revitalization of the village center;
3. Conserve the natural environment by judicious use of natural resources;
4. Protect the character of rural areas and their natural resources by avoiding scattered development and incompatible land uses;
5. Channel public investments into existing or planned settlement areas to avoid sprawl; and
6. Protect wetlands and aquifers from incompatible development.

## C. Current Land Use

The Town of Bethel has many of the characteristics of a traditional Vermont community, in that it has a single village that is the primary location for civic and commercial uses, with the remainder of town being generally rural in nature. Unlike many Vermont communities, Bethel has access to two of Vermont's primary transportation corridors: Interstate 89 (with an interchange located in nearby Royalton) and the railroad. This access to transportation infrastructure positions Bethel to be a good place for industrial development. However, the topography of the community is such that developable areas near the village and with good access to transportation corridors are limited.

As of 2013, Bethel's zoning ordinance had ten distinct land use areas which guided development. They were:

- Bethel Village Zone
  - Village Residential Zone
  - Village Business Zone
  - Village Commercial Zone
  - Village Industrial Zone
- East Bethel Rural Village Zone
- Highway Zone
- Medium Residential Zone
- Rural Residential Zone
- Resource Conservation Zone and
- Flood Hazard Overlay.

The Planning Commission determined that the broad range of zones created redundancy and additional permitting requirements that were unnecessary, particularly in the village. Additionally, during an enhanced consultation with the Two Rivers-Ottawaquechee Regional Commission, the Highway Zone was identified as in conflict with the Regional Plan and the goals of §4302 because of allowed uses and their potential to encourage sprawl in rural areas. Considering these issues, the Planning Commission is proposing an update to the pattern of future land use development that will continue to maintain the rural character of the community while simplifying land use regulations and achieving consistency with TRORC and the goals of §4302.

## D. Future Land Use

The primary goal of the Bethel Town Plan is to allow for sustainable growth and the creation of jobs while protecting the rural character of the community. To encourage growth in a manner that does not overburden the town's ability to provide services or negatively impact the vitality of the village center, the Planning Commission is creating the following Land Use Areas:

- Village Area
- Hamlet Area
- Medium Density Residential Area
- Rural Development Area

- Resource Conservation Area
- Flood Hazard Area

Each land use area is intended to further the Overall Land Use Goals of this chapter as outlined in section B.

### **Village Area**

The Village Area is intended to be the cohesive core of Bethel's community. Its purpose is to support and maintain the role of the Village as the focus of many social and economic activities in the community and provide for residential, commercial, industrial, municipal, and other compatible development that serves the needs of the Town as a whole.

Because the Village Area has access to sewer and water, density should be highest here. It would be appropriate for developments that are on town sewer and water to be as dense as under ¼ acre (10,000sqft). High-density multi-family residential development that is in character with the village should be encouraged to locate in this area. Development should remain mixed use, with appropriately scaled commercial (including primary retail) and civic uses existing with residential. Light and heavy industrial are also appropriate for the village area provided that they are able to fit into the village in such a fashion that they do not have an undue impact on the surrounding neighborhood.

### **Goals**

1. To encourage the growth of Bethel's Village Center in keeping with the rural character of the community.
2. To provide a location for higher density residential and commercial development at a scale that does not negatively impact Bethel's ability to provide services or the rural and natural character of the area.

### **Policies**

1. It is the policy of the Town that the establishment of commercial uses and higher density multi-family housing in the Village Center be encouraged.
2. It is the policy of the Town that all development within the village areas must be consistent with the existing character of the neighborhood.
3. It is the policy of the Town that primary retail establishments (excluding those retail establishments that require substantial area for storage of materials, such as lumberyards and nurseries) must be located within the Village Center Area or Hamlet Areas.

### **Recommendation**

The Planning Commission should amend the Bethel Zoning bylaw to merge the multiple sub-sets of the Bethel Village Zone (Village Residential, Village Business, Village Commercial and Village Industrial) into a single, high density village zone with clearly defined permitted and conditional uses.

## Hamlet Area

Bethel has two hamlet areas, each of which have at one point in time served as the location for single family homes, with a few stores and businesses that are supported primarily by local residents. The purpose of this land use area is to continue to support the current pattern of development by providing a small, clustered location where a mix of residential, civic and commercial uses that include properly scaled primary retail can interact with existing businesses and/or a civic center (such as the East Bethel Library or Grange) in a manner that encourages mixed-use growth. Density in these areas should be no smaller than one acre.

### Goal

To provide a location for residential development to exist in harmony with neighborhood scale civic and commercial development.

### Policies

1. It is the policy of the Town that the Hamlet Area should support a mix of single and multi-family housing.
2. It is the policy of the Town that all commercial development within the Hamlet Areas must be at a scale and intensity that is consistent with the existing character of the neighborhood.
3. It is the policy of the Town that primary retail establishments in the Hamlet Areas can include those retail establishments that require substantial area for storage of materials, such as lumberyards and nurseries.

### Recommendation

The Planning Commission should amend the Bethel Zoning bylaw to include Hamlet areas located in East Bethel and at Locust Creek (at the junction of Routes 107 and 12).

## Medium Density Residential Area

The Purpose of the medium density residential area is to allow additional residential development, including multi-family residential, in areas of the community that are outside of the Village Center Area

### Primary vs. Secondary Retail

Because of the potential for poorly planned and located retail development to negatively impact the health of the village and to create strip development, this Plan seeks to allow certain types of retail only within the village. Therefore two intensities of retail development are defined for the purposes of this plan:

**Primary retail** - Primary retail establishments have only one purpose: to sell goods. Examples of a primary retail establishment include a grocery store, dry goods store, hardware store, etc.

The Plan recognizes that there are some types of primary retail development that by their nature are less appropriate in the village. These would be those businesses that require a substantial amount of space to store materials, such as lumberyards or nurseries. It will be noted in the Plan where these uses are appropriate.

**Secondary retail** – Secondary retail establishments have a retail presence, but that is not their primary purpose. Examples include a veterinarian's office (which sells pet food), an eye doctor's office (which sells eyewear) or a cabinet maker (with a small showroom). Their retail presence must be clearly subordinate to their primary purpose.

but are well served by existing roads. Density of development within this land use area should be no smaller than 4 acres.

Although residential development is intended to be the principal type of development in this area, the Medium Density Residential Area would be an appropriate location for small-scale businesses that fit well with the area in terms of scale, traffic and potential for disruption of the character of the area. These would include home occupations, small service businesses, small professional offices and inns. Retail development within this area would be limited to secondary retail and those primary retail establishments that require a substantial amount of exterior storage space for their materials. Outdoor recreation and agriculture are encouraged in the Medium Density Residential Area.

### **Goal**

To provide a location for medium density development with good access to local roads while preserving the rural character of the community.

### **Policies**

1. It is the policy of the Town that the establishment of medium density single and multi-family housing be encouraged in areas with good access to town roads.
2. It is the policy of the Town that all commercial development within the medium density residential areas must be consistent with the existing character of the neighborhood.
3. It is the policy of the Town that secondary retail establishments are appropriate in this area provided that they do not have an undue impact on the surrounding area.

### **Recommendation**

The Planning Commission should modify the Bethel Zoning bylaw to decrease current residential densities to a minimum of four acres.

### **Rural Development Area**

The Purpose of the Rural Development Area is to provide a rural location for moderate density residential development, while allowing for continued agricultural and forestry operations. The Rural Development Area is intended to remain rural in nature; therefore density in this land use area should be no less than 10 acres per development.

Multi-family development is allowed in this area provided that it has adequate access to existing services, such as roads. The types of commercial development that are appropriate in this area would include home occupations, small service businesses, small professional offices and inns. Primary retail development may not locate in the Rural Development Area, but appropriately scaled businesses with a secondary retail component may be allowed. Businesses that require the trucking of goods are discouraged from locating in the Rural Development Area. Agriculture, forestry and outdoor recreation are encouraged in this area.

## **Goal**

To maintain and preserve the rural areas of Bethel and encourage the continued vitality of the working landscape while allowing appropriate residential growth.

## **Policies**

1. It is the policy of the Town to encourage a mix of residential, agricultural, forestry and recreational uses in this area.
2. It is the policy of the Town that primary retail development is inappropriate for this area.
3. It is the policy of the Town that all commercial development within the Rural Development Areas must be consistent with the existing character of the neighborhood.

## **Resource Conservation Areas**

This land use area represents the most rural topography in town. Because of its more remote nature it does not have good access to town services including roads. Additionally, the land within this area represents a substantial amount of available wildlife habitat which is vital to the rural nature of the community. Because of this, the purpose of this land use area is to allow residential development at a scale that protects existing natural resources including wildlife habitat. Density in this area should be limited to twenty acres.

Low density residential development, agriculture, forestry and outdoor recreation should be the primary use with some commercial, including small-scale home occupations, small service businesses, small professional offices and inns. Commercial businesses or home occupations that require the trucking of goods should be discouraged from this rural area. Commercial retail development of any kind is not allowed.

## **Goal**

To maintain and preserve the rural areas of Bethel by limiting the density and scale of development.

## **Policies**

1. It is the policy of the Town that land development or subdivision in this Area should be planned to minimize reduction of the resource value of such areas for forestry by providing reasonable population densities, use of cluster development, and new community planning designed to economize on the costs of roads, utilities, and land usage.
2. It is the policy of the Town that in locations defined as exhibiting significant wildlife habitats, planning for land development or subdivision should be sensitive to the economic, social, cultural, recreational, or other benefits to the public of the habitat. Where loss to the public of the resource is imminent by a development or subdivision, all feasible and reasonable means to prevent significant loss or imperilment of the resource should be employed.

3. It is the policy of the Town that commercial development that is not associated with a home occupation, recreational, agriculture or forestry businesses is not appropriate in this area.

### **Flood Hazard Area**

Some lands adjacent to the White River as well as its tributaries are subject to periodic flooding. Floodplains and Fluvial Erosion Hazard Areas are unsuitable for development because of the high loss potential for life and property as well as the limited ability of septic systems to perform adequately during periods of high water. For more specific information about the function of Floodplains, see Chapter IX, Natural Resources.

It is the purpose of this land use area to:

- Avoid and minimize the loss of life and property, the disruption of commerce, the impairment of the tax base, and the extraordinary public expenditures and demands on public services that result from flooding related inundation and erosion;
- Ensure that the selection, design, creation, and use of development in hazard areas is safe and accomplished in a manner that is consistent with public wellbeing, does not impair stream equilibrium, flood plain services, or the stream corridor;
- Manage all flood hazard areas designated pursuant to 10 V.S.A. Chapter 32 § 753, the municipal hazard mitigation plan; and make the Town of Bethel, its citizens, and businesses eligible for federal flood insurance, federal disaster recovery funds, and hazard mitigation funds as may be available.
- To protect the environmental and recreational value of Bethel's rivers and streams.

As of the date this Plan was adopted, Bethel's Flood Hazard Regulations have been designed to meet the minimum standards (for more information, see Chapter IX, Natural Resources) set by the Federal Emergency Management Agency (FEMA) and the National Flood Insurance Program (NFIP). Current Zoning Bylaws do not allow new development within the floodway, but does allow development within the 100-year floodplain, uses allowed require a conditional use permit. Uses currently allowed with a conditional use permit include single and multi-family residences, commercial businesses, public buildings, quarries and home occupations to name a few.

Two Rivers-Ottawaquechee Regional Commission has determined that approximately 26 structures (including 20 houses and 6 businesses) are located within the mapped flood hazard areas. The severe damages and complete loss of homes caused by Tropical Storm Irene in 2011 highlighted the need for Bethel to reevaluate the requirements of the Flood Hazard Area, both in terms of uses allowed and in terms of the area designated as Flood Hazard Area.

In order to protect the citizens of Bethel from further damages from a severe flooding event, and to implement the vision of survey responders, the planning commission is proposing the following:

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

2. The prohibition on new development would not apply to small out-buildings or similar structures provided they are properly flood-proofed and meet the thresholds required by the National Flood Insurance Program for flood hazard regulation.
3. The prohibition would not apply to renovations to existing structures unless the proposed renovations expand the footprint of the existing building or exceed the substantial improvement thresholds required by the National Flood Insurance Program for flood hazard regulation.
4. The best and most appropriate uses within the Flood Hazard Area on the White River are those which are recreational and agricultural in nature. Minimizing development within these areas will help protect both public and private investments as well as the natural and scenic quality of Bethel's waterways.

### **Goal**

To protect the citizens of Bethel and the quality of our waterways as natural and recreational resources by using sound planning practices within designated Flood Hazard Areas.

### **Policies**

1. It is the policy of the Town that only agriculture, recreational and open space uses should be allowed in floodplains.
2. It is the policy of the town that new development within the 100-year floodplain is discouraged excluding properly designed outbuildings and renovations that meet the requirements for Flood Hazard regulation as stipulated by the Federal Emergency Management Agency.

### **Recommendations**

1. The Planning Commission should regularly review the Flood Hazard section of the Bethel Zoning bylaw to ensure that it remains up-to-date with the requirements of FEMA and the NFIP.
2. The Planning Commission should examine additional protections for the Flood Hazard Area, and areas outside the FHA (Including the River Corridor Area) that are prone to flooding or flood damage. These should be incorporated into the Bethel Zoning bylaw.
3. The Planning Commission should revise the Bethel Zoning bylaw to prohibit new development within the floodplain excluding properly designed outbuildings and renovations that meet the requirements for Flood Hazard regulation as stipulated by the Federal Emergency Management Agency.

### XIII. Transportation

Land use, energy, and transportation are related. Land use, both within and outside Bethel's borders, drives the need for improvements to the transportation system. At the same time, local land use goals must be facilitated in part by providing the necessary transportation facilities to accommodate growth where growth is desired. In addition, a given land use can have very different impacts on the transportation system depending on how it is sited and designed. Land use and transportation are both linked to the town's economic well-being. Poorly planned land use patterns increase transportation costs and also the tax rate, whereas well planned development can add to the tax base of the town, providing additional funds for the transportation system.

#### A. Public Highway System

Highway classifications determine the amount of state aid available to assist with repair and maintenance. The Vermont Agency of Transportation (VTrans) and the Selectboard determine road classes. Criteria include traffic volume, road condition and function. Class two highways are the major connectors linking villages with each other and with state highways, and they receive a higher rate of State aid than Class 3 highways.

Miles of Roads in Bethel	
Class 1	.892
Class 2	11.94
Class 3	56.25
Class 4	35.52
<b>Total Town Roads</b>	<b>104.60</b>

21: Miles of roads in Bethel  
(Source: Vtrans)

Main St., Church St. and a portion of Pleasant St. are Class 1. Eleven percent (11%) of Bethel's roads are Class 2, including Camp Brook, Christian Hill, Factory Hill-Randolph Center, North Rd and Peavine Blvd. The remaining roads in Bethel are either Class 3 or 4. Class 3 highways are other town roads, including most gravel roads, that are maintained in a manner enabling them to be driven under normal conditions in all seasons by a standard car. The majority (53%) of Bethel's roads are Class 3. 34% of Bethel's highways are Class 4. Class 4 highways are generally in poor condition and are not maintained. No state aid is available for work on Class 4 highways.

While not suited for regular traffic, these roads do represent a valuable asset for the town from a recreation standpoint. Such town-owned corridors will help ensure that there will continue to be a place to enjoy snowmobiling, ATV, cross country skiing, walking, hunting, horseback riding and other outdoor recreation.

Apart from education costs, public roads have been and will continue to be Bethel's largest town asset requiring significant financial investments paid through municipal taxes. Transportation funding sources come from numerous combinations of the local tax base, state and federal gas tax receipts, state and federal allocations and registration fees. The most significant funding resource comes from the federal transportation bill which passes through the State of Vermont and is distributed to towns by the Agency of Transportation. The federal and state government pays a percentage of project costs and the community pays the remainder. This funding applies only to Class 1-3 roads. Maintenance of Class 4 roads is funded exclusively by the community. The Two Rivers-Ottawaquechee Regional Commission has compared programs throughout the region and recommends a program of early intervention using

preventative maintenance, because such a program has proven to be 75-85% less costly than larger reconstruction work after significant deterioration has occurred. Such a program should be a part of an adopted Transportation Capital Budget and Transportation Program.

Proper and timely road and drainage systems maintenance can help protect these systems from most severe weather events. Maintaining a reliable and up-to-date inventory of existing culverts and structures, coupled with a short and long range plan for replacement and upsizing is essential. Replacing deficient culverts and bridges also helps protect water quality – installing appropriately scaled and designed structures that can handle flood events, stormwater runoff, promote fish passage, and minimize the discharge of road sediment. These upgraded culverts and bridges, operating in greater harmony with the natural environment, will also be less likely to fail during storm events.

### B. State and Federal Highways

State highways in Bethel include Route 12, Route 14 and Route 107. Vermont Route 107 is a primary state route across central Vermont linking I-89 to Route 14 and Route 4, traffic between these routes must travel through Bethel. U.S. Route 4 is the major east-west highway and Route 107 is a road of lesser importance and status than Route 4, however there have been discussions regarding a redirecting of truck traffic off of Route 4 and on to Route 107. This concept is unlikely to find much support due to the significance of Route 4. Bethel does not encourage any efforts to expand the width of Route 107 (except to accommodate bicycle traffic). This type of highway expansion can lead to increased speed and greater traffic.

State/Federal Roads in Bethel	
State Highways	11.36
Interstate Highways	2.9
<b>Total State/Federal Roads</b>	<b>14.26</b>

22: Miles of State/Federal roads in Bethel  
(Source: Vtrans)

### C. Class 4 & Trails

Class 4 roads and trails primarily offer access to Town and conservation resources and provide unique insights into an agrarian landscape long abandoned. Many Class 4 roads have been incorporated into the natural landscape whereby very little development has occurred along these roads. Class 4 roads are not maintained except for some culvert and bridge work to ensure access for emergency vehicles. The town also does not plow these roads during the winter. Public utility services or other municipal infrastructure that typically accompany roads are nearly nonexistent. Often these roads are scenic travel corridors for hikers and bicyclists and provide limited access to hunting and conservation lands.

Trails are used exclusively for recreational purposes and are not intended for vehicle access, therefore they are not maintained. According to the Vermont Agency of Transportation in 2012, Bethel had no publicly owned trails.

Bethel has a number of ‘unmapped corridors’. These do not meet the criteria of “unidentified corridors” and yet do not meet the necessary criteria for mapping as class 4 highways. This dilemma needs legislative action to be resolved.

## **D. Development Review Road Standards**

The Town currently uses highway rules and regulations based on state standards that were adopted by the Selectboard in March of 2011. This policy details road construction standards and policies for road classifications, right-of-way, access, road acceptance, and numerous other construction and maintenance related activities. The responsibility of ordinance implementation rests with the Selectboard and the Bethel Road crew.

Insofar as guidelines for zoning review can contribute to this process, the following planning considerations should continue or be expanded upon in future policy updates:

- Emergency management services will have guaranteed safe access to all development.
- Roads should be designed with multi-modal transportation safety (pedestrian, bicycle, etc.) in mind.
- Since local and state road construction follows State of Vermont design standards, private roads should be constructed to those standards, thereby minimizing changes if the road is accepted by the Town at a later date.
- Road design and construction should adhere to the relevant Town Plan goals and objectives - land use, natural resources and transportation elements.
- All roads will reflect a context-sensitive design that preserves and enhances the adjacent land uses and transportation system.
- Private road and driveway standards should be adopted to ensure stormwater is not discharged onto public highways or drainage systems.
- The development of private roads should be approved by the Selectboard after review of the proposed road by the town road Supervisor and a designated representative of the Fire Department that serves the town.

Major transportation projects often place a greater emphasis on contemporary engineering design standards. However, in some instances, the design and engineering of our roadways and bridges fail to consider the Town's unique historical and natural landscapes. While engineering sufficiency criteria are important factors for road and bridge improvements, compatibility with existing and future development patterns also are important considerations.

## **E. Access Management**

Access management is an important process to provide reasonable accessibility to adjacent land uses while maintaining a safe and efficient flow of traffic. The Town recognizes the value of access management and can implement access management strategies through its planning and public works related ordinances and policies. The following are some of these strategies for all public and private transportation and development projects impacting local and state public roads as well as private roads:

- Utilize State of Vermont design standards for all temporary and permanent access, to include emphasis on drainage, sight distance, and access for emergency services;
- Encourage use of shared driveways and/or permitting access that may result in a future shared driveway;

- Require the review of access for existing development whenever a change of use, or other application process is brought before the Town;
- Encourage commercial properties to use existing development nodes in order to preserve or create road segments with few accesses, unless additional replacement access better meets access management goals;
- When practical, approve subdivisions with private and public road designs that allow shared access with other adjacent subdivisions and/or have the private rights-of-way reserved so an access may be built to connect to existing and future development;
- Encourage permanent landscaping and roadside enhancements to visually define access points and contribute to the roadway's aesthetic character;
- Use sight-distance standards based on the actual travel speeds and not the posted speed limits. If no such data exists or is not current, then the Town will work with the Regional Planning Commission to obtain the appropriate data.

## **F. Other Modes of Travel**

### **Bicycles and Pedestrians**

Many residents bike or walk on town roads in Bethel. The Town maintains a network of sidewalks within parts of the Village Area year-round to allow pedestrian travel to and from the core of the Village as well as to provide schoolchildren with a safe route to walk to school. Not all areas of the village are served by sidewalks. In the more rural areas of town bicycle and pedestrian travel is reasonably safe. Routes 12 and 107 are a good location for bicycle travel. In some areas, travel along Routes 12 and 107 is less safe due to higher traffic volume and speed, lack of available shoulders and poor pavement quality.

Additional recreational opportunities can be found using trails maintained by VAST and VASA.

### **Public Transportation**

Bethel is fortunate to have access to a small regional public transportation system, Stagecoach, Inc. Stagecoach offers regular transportation to West Lebanon, NH and Montpelier, VT. Their southern route to West Lebanon (the 89er) has a regular stop located in Bethel's village. In addition, a weekly "shopping route" to West Lebanon is offered that also stops in Bethel. Stagecoach also offers limited public transportation in the form of special requests for individuals who need transportation for medical reasons. Bethel residents can take advantage of Stagecoach's "Ticket to Ride" Program which helps pay a substantial percentage of the cost of rides for senior citizens (60+) and persons with special needs when there is not available transportation in the household or the person requesting the trips is unable to drive on the day of the trip. Ticket to Ride is available for a broad array of destinations, such as medical services, shopping, errands, and social purposes.

Given that Bethel's elderly population is growing, the need for an affordable source of public transportation that can bring the elderly to major medical facilities like Dartmouth-Hitchcock and larger commercial centers for day-to-day shopping needs is important.

## **Rail Facilities**

Bethel is traversed by the New England Central railroad (NECR) which goes from New London, Connecticut, through White River Junction to East Alberg, VT. The NECR line serves both freight and Amtrak passenger traffic. The nearest passenger station is in Randolph. The NECR has approximately four (4) miles of single track within the Town's boundaries with two customer tracks. There are four trains per day through Bethel: southbound freight, southbound Amtrak, northbound freight and northbound Amtrak. NECR still plans to add another daily northbound and southbound freight train in the future. New England Central's (NECR) major business is in pulp/paper and lumber. The NECR delivers lumber to Bethel Mills and feed ingredients to Green Mountain Feeds.

## **G. Goals, Policies and Recommendations**

### **Goals**

1. To provide and maintain a safe, energy-efficient and well-maintained transportation network in a cost-effective manner, integrating all modes of travel (auto, pedestrian, bicycle, and mass transit) and meeting the needs of the public in a manner consistent with the other goals, policies and recommendations of this Town Plan.
2. To maintain the rural and scenic character of the back roads and byways thereby protecting the rural scenic quality of the town whenever possible.

### **Policies**

1. It is the policy of the Town to maintain the existing road system, while discouraging the expansion or addition of new roads.
2. It is the policy of the Town to consider public input prior to a decision to substantially change the maintenance level, surface treatment, or class of a town road.
3. It is the policy of the Town that to evaluate traffic volume and maintenance costs against other factors when deciding whether or not to pave a road, such as the up-front cost of paving and base improvements that may be necessary to support a paved surface and the potential quality-of-life impacts to residents when determining which roads to pave and when to pave them.
4. It is the policy of the Town to replace undersized culverts and bridges with appropriately sized infrastructure whenever financially feasible, when addressing improvements on Class 3 roads.
5. It is the policy of the Town to integrate land use and transportation planning by encouraging concentrated growth in areas served by an adequate highway system, utilizing land use regulations and appropriate highway access management techniques to control the impacts of

development on the transportation system, and making transportation improvements in areas where growth is desired.

6. It is the policy of the Town to encourage access management techniques that limit the number of access points during new development along highways to reduce driver confusion and traffic congestion and to minimize conflicts between through and local (turning) traffic via provisions on further subdivision in new access permits.
7. It is the policy of the Town to cooperate with other communities in the region through the TRORC and its Transportation Advisory Committee to ensure that the region's transportation system is developed in a well-coordinated manner that recognizes and balances the needs and desires of each community.
8. It is the policy of the Town to consider the relationship of a road to surrounding features of the landscape when planning improvements needed to safely accommodate increasing traffic.
9. It is the policy of the Town to combine widening of roadways to accommodate safe use by bicyclists with traffic calming measures and enforcement of speed limits to ensure that traffic speeds do not increase.
10. It is the policy of the Town to retain Class 4 roads, trails, and other public rights-of-way as public resources.
11. It is the policy of the Town to require development on private roads to adhere to town access standards and to provide safe year-round access for town services, particularly fire and rescue.
12. It is the policy of the Town to discourage any effort by the state to add additional lanes of vehicular traffic or to increase the speed limit of either Routes 12, 14, or 107. However, any efforts to expand the shoulder of Routes 12, 14, or 107 should be supported, provided such efforts do not exacerbate the likelihood of flood hazard damage or increase existing travel. The town encourages VTrans to reduce vehicle lane size to accommodate bicycle traffic on roadways.
13. It is the policy of the Town to maintain a reliable and up-to-date inventory of existing culverts and structures, coupled with a short and long range plan for replacement and upsizing.
14. It is the policy of the Town to actively participate in any process or project which would result in significant changes to Route 12 or Route 107.
15. It is the policy of the Town to support efforts to sustain, expand, or enhance existing public transportation.

**Recommendations**

1. The Town should develop a town highway capital plan and schedule that will guide maintenance and road infrastructure investments in the future.
2. Continue participation in the Regional Transportation Advisory Commission as well as the TRORC Road Foreman's meeting program.
3. The Selectboard should actively explore the purchase and utilization of simple to use rural road maintenance software for maintaining roads and drainage systems.

## XIV. Relationship to Other Plans

### A. Relationship to Municipal Plans

The Municipal Plan focuses primarily on development and policy within the community's boundaries. However, it is important to recognize that how a community grows and changes can be directly impacted by development that takes place outside of the community. For example, many places had large and vibrant villages that were negatively impacted by the location of the railroad in outside areas.

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

- **Barnard** – The Town of Barnard has had an adopted plan since 1971, which has been revised regularly, as well as a newly adopted Unified Bylaw (zoning and subdivision). The pattern of development promoted by the Barnard Town Plan along Bethel's border is very similar to the diffuse pattern outlined in the Land Use chapter of this plan. Uses encouraged in Barnard are likewise similar. There are no potential conflicts between these plans.
- **Braintree** – The Town of Braintree has had a long history of planning and zoning. Their current Plan was adopted in 2012. The Braintree Unified Bylaw (zoning and subdivision) was adopted in 2010. Braintree and Bethel share a very limited amount of border. What little does touch is considered rural residential which allows a minimum lot size of 10 acres. Although density on the Bethel side is lower in this area (20 acres) there are unlikely to be a conflicts between the Bethel and Braintree Plan.
- **Randolph** – The Town of Randolph has a Municipal Plan (adopted in 2013), zoning and subdivision regulations. Bethel and Randolph share the longest contiguous border of all the communities that neighbor Bethel, as well as access to Route 14 and Route 12. Generally, Randolph's patterns of development along the border with Bethel are rural residential in nature. Allowed densities are greater than much of the area in Bethel, which may at some point have a negative impact on Bethel's adjacent Rural Conservation Areas. On Route 12, Randolph has designated an Industrial Area which abuts Bethel. This does have the potential for conflict, but it should be noted that in 2013 the Randolph Town Plan modified the adjacent land use area in an attempt to reduce potential conflicts.
- **Rochester** – The Town of Rochester has had a Town Plan, Zoning and Subdivision Regulations since the 1970's. Bethel and Rochester share a substantial amount of border in very rural areas. While the uses in areas adjacent to Bethel are similar (primarily residential, agricultural and forestry uses), Rochester's minimum density in these areas is much higher (3 acres) than Bethel's (20 acres). While it is unlikely that this will result in conflicts, there is the potential that the higher density development in Rochester could negatively impact the purpose of Bethel's Rural Conservation Areas – which is primarily the protection of rural areas from dense development.

Wildlife habitat that runs between Bethel and Rochester could be damaged by excessive development in Rochester along the border.

- **Royalton** – The Town of Royalton has an adopted Town Plan and flood hazard regulations. Bethel and Royalton share a border which includes access to Route 107. Although Royalton does not have a zoning ordinance, the language contained in their Town Plan is very clear with regard to the types of uses and densities which are appropriate throughout the community. The Route 107 corridor is specifically protected from strip development by the language in the Royalton Town Plan. It is unlikely that there will be conflicts between the Royalton Town Plan and the Bethel Town Plan.
- **Stockbridge** – The Town of Stockbridge has an adopted Town Plan (2010) as well as zoning, subdivision and flood hazard regulations. Bethel and Stockbridge share access to Route 107, therefore the patterns of development which exist along their borders is important. As of the writing of this Plan, Stockbridge allows a wide range of development types along Route 107 including all types of commercial development. Given that this Plan proposes primarily residential development where the communities share access to Route 107, there is the potential for conflict. In adjacent areas of the two communities that are not along the highway, the proposed pattern of development is similar, although Stockbridge allows a much greater density of development in rural areas.

## **B. Relationship to the Regional Plan**

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

The Regional Commission adopted its Regional Plan in June, 2012. It will remain in effect for a period of five years. This Plan was developed to reflect the general planning goals and policies expressed in the local plans. It is an official policy statement on growth and development of the Region. The Regional Plan contains several hundred policies to guide future public and private development in the Region. Policies for land use settlement are identified. These areas are: Town Centers, Village Settlement Areas, Hamlet Areas, Rural Area, and Conservation and Resource Areas. Delineation of each land use area is mapped or charted.

Prior to revisions to this Plan, the Two Rivers-Ottawaquechee Regional Commission provided Bethel with an "enhanced consultation" at which staff identified areas of conflict between the Regional Plan and the Bethel Town Plan adopted in 2010. The major area of concern was the extensive amount of commercial development (specifically retail) allowed in many areas of town that the Regional Commission viewed as

counter to the state planning goal which discourages strip development. Additionally, the allowance of retail development in these areas was directly in conflict with the Regional Plan which contains policies that require principle retail establishments to be located in village centers and downtowns.

In response to this conflict, the Bethel Planning Commission has modified the areas identified and excluded retail development from these areas. If adopted as originally written, there will be no conflict between the Regional Plan and the Bethel Town Plan.

### **C. Goals, Policies and Recommendations**

#### **Goal**

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

#### **Policies**

1. It is the policy of the Town to encourage continued communication and cooperation between Bethel and its neighboring towns.
2. It is the policy of the Town to continue participation in the Two Rivers-Ottawaquechee Regional Commission.
3. It is the policy of the Town to exchange planning information and development data with neighboring communities.

## XV. Town Plan Implementation

Title 24, Chapter 117, §4382(7) requires a Town Plan to contain a “recommended program for the implementation of the objectives of the development plan.” While it is not required by law that communities implement any of the policies or recommendations in a municipal plan, it is important to recognize that in order to meet the vision of the Plan, it must be implemented wherever possible.

Implementation can be approached in multiple ways some regulatory and some non-regulatory, they include (but are not limited to) the following:

Regulatory	Non-Regulatory
Zoning & Subdivision bylaws	Design a Capital Budget & Program
Strengthening Town Plan language to clearly influence Act 250 proceedings (use of direct language, such as "shall")	Advisory Committees (i.e. Conservation Commissions or Energy Committees)
Official Map	Education/Outreach on important issues
Access Permits - Town Highways Only (Selectboard)	Purchase or acceptance of development rights
Flood Regulations & National Flood Insurance Program	Follow-up on recommendations for action in Plan

### A. Regulatory Implementation

Regulation of land use and development through rules adopted by the Town is one possible method of Plan implementation. Well recognized and utilized means include, but are not limited to, zoning bylaws and subdivision regulations. Examples of potential implementation tools include:

#### Zoning Bylaws

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

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

Bethel has a zoning ordinance that establishes districts or zones that have a different set of uses, densities, and other standards for development. Zoning districts must be reasonably consistent with the Town Plan, and it is the responsibility of the Planning Commission to implement changes to the Zoning bylaws that are proposed in this Plan. As an alternative to conventional methods, Bethel may opt to implement a set of measurable performance standards for specific uses as opposed to dividing the Town into districts. This technique, referred to as "performance zoning," is designed to be more flexible and to recognize the

specific conditions of each site proposed for development. Additionally, if the community is seeking to sustain the character of the village, it may want to consider the implementation of “form based zoning” which focuses less on uses and setbacks and instead guides the design and functionality of the building proposed in a manner that will ensure that it fits in with its surroundings.

### **Subdivision Regulations**

Bethel has had subdivision regulations since the 1970s. These regulations are administered by the Zoning Administration and Development Review Board. Subdivision regulations govern the division of parcels of land and the creation of roads and other public improvements. Furthermore, subdivision regulations can ensure that land development reflects land capability and that critical open spaces and resources are protected from poor design or layout. It is the responsibility of the Planning Commission to implement any changes to subdivision regulations that are proposed in this Plan.

### **Flood Hazard Bylaws**

Under Vermont law [24 V.S.A., Section 4412], the Town of Bethel is able to regulate the use of land in a defined flood hazard area adjacent to streams and ponds. These bylaws have been established to ensure that design and construction activities within the limits of the 100 Year Flood Plain are designed so as to minimize potential for flood damage and to maintain use of agricultural land in flood-prone areas. As noted in the Natural Resources section of this Plan, property owners are eligible for federal flood insurance on buildings and structures at relatively low federally subsidized premium rates. However, such insurance cannot be obtained for properties in Bethel unless the Town has in effect a Flood Hazard bylaw which, at present, Bethel has. The current Flood Hazard bylaw is designed to meet the minimum standards required for a community to be part of the National Flood Insurance Program. In an effort to encourage greater resiliency, the town may want to consider strengthening these regulations.

### **Act 250**

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

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

These criteria relate to the environmental, economic, and social impacts of the proposed project on the community and region. Parties to Act 250 proceedings include Bethel, through the Planning Commission and Selectboard, the State, and the Regional Commission. One criterion that needs to be addressed is whether the project is in conformance with the Bethel Town Plan. If a project were determined not to be in conformance with the plan, the District Environmental Commission would have a basis to deny a permit. As such, Act 250 reviews can take into consideration protection of those types of resources

considered important to the well-being of the community. Accordingly, it is in the interest of the Town to evaluate Act 250 projects affecting Bethel and to offer testimony, as appropriate.

For a Town Plan to be given serious weight under Act 250, the Plan must contain specific and unambiguous language. If a community is serious that a policy be recognized by the District Environmental Commission during Act 250 review, it must use firm language such as “shall” or “must” instead of “should” or “could.” The Planning Commission has been selective about where strong language is used in policy throughout this document, as it is important to recognize that the Town Plan should have some flexibility. In instances where flexibility was not wanted, the Planning Commission wrote policy with appropriately strong language.

### **Highway Ordinances**

Bethel has in effect a Highway Ordinance setting forth the standards and conditions for the maintenance, improvement, discontinuance, laying out and acceptance of Town highways. In addition, the ordinance includes provisions related to the reclassification of town highways (Classes 2, 3 and 4).

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

## **B. Non-Regulatory Implementation**

### **Capital Budget & Program**

The creation of a capital budget and program has been discussed in several chapters of this Plan. A capital budget and program is a financing approach that benefits the town greatly in the selection, prioritization, timing and costing of capital projects. Under the capital budget, a project is selected (e.g. bridge refurbishment), a funding source determined (e.g. general taxes, and general obligation bonds) and a priority year given for each activity. Collectively these capital projects make clear when public facilities will be placed to accommodate projected growth.

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

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

## **Advisory Committees**

State statute authorizes a community, by vote of the Selectboard, to create advisory committees. These committees can have differing roles, some provide advice to the Planning Commission or Development Review Board regarding development (for example, a historic review committee as part of a design review district), but more often advisory committees are created to focus on a specific topic in the Plan. The most common advisory committees are the Conservation Commission and the Energy Committee. These groups (outlined in the Natural Resources and Energy chapters respectively) can assist the Selectboard and/or Planning Commission with the creation of policy, but they can also act as the primary source of outreach and education relating to their primary focus point. Bethel has a Conservation Commission but does not have an Energy Commission. The Planning Commission has identified specific roles an Energy Commission might have if created by the voters.

## **Coordination of Private Actions**

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

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

- Green Mountain Economic Development Corporation
- Vermont Land Trust and Upper Valley Land Trust
- Twin State Housing Trust
- Owners of significant properties of high resource or development value, and
- Major employers in Bethel.

## **Conservation Activities**

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

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

## Vermont Community Development Program

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

Bethel should investigate the Vermont Community Development Program and its potential to assist the community in addressing its housing and infrastructure needs. The Regional Commission and the Vermont Agency of Commerce and Community Development are resources available to assist.

## Vermont Local Roads

The Vermont Local Roads program offers technical assistance to communities, which focuses on transportation infrastructure and maintenance.

## C. Responsibility for Implementation

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

In addition to assigning responsibility, the Planning Commission should also keep track of progress made toward implementing the goals, policies and recommendations of this Plan. This information will be useful to identify areas where additional effort needs to be applied to achieve implementation. It can also be used to describe how successful the community has been at implementation in the next iteration of this Plan, and to guide future policy.

In order to track the progress of implementation, the Planning Commission has included a chart that identifies the policy or recommendation, the responsible party and the progress. See appendix A.

### Acronyms Used in Appendix A

**AMP** = This is a term from state statute that means the "appropriate municipal panel."

**CC** = Conservation Commission

**DRB** = Development Review Board

**PACE** =Property Assessed Clean Energy (see p.54)

**PC** = Planning Commission

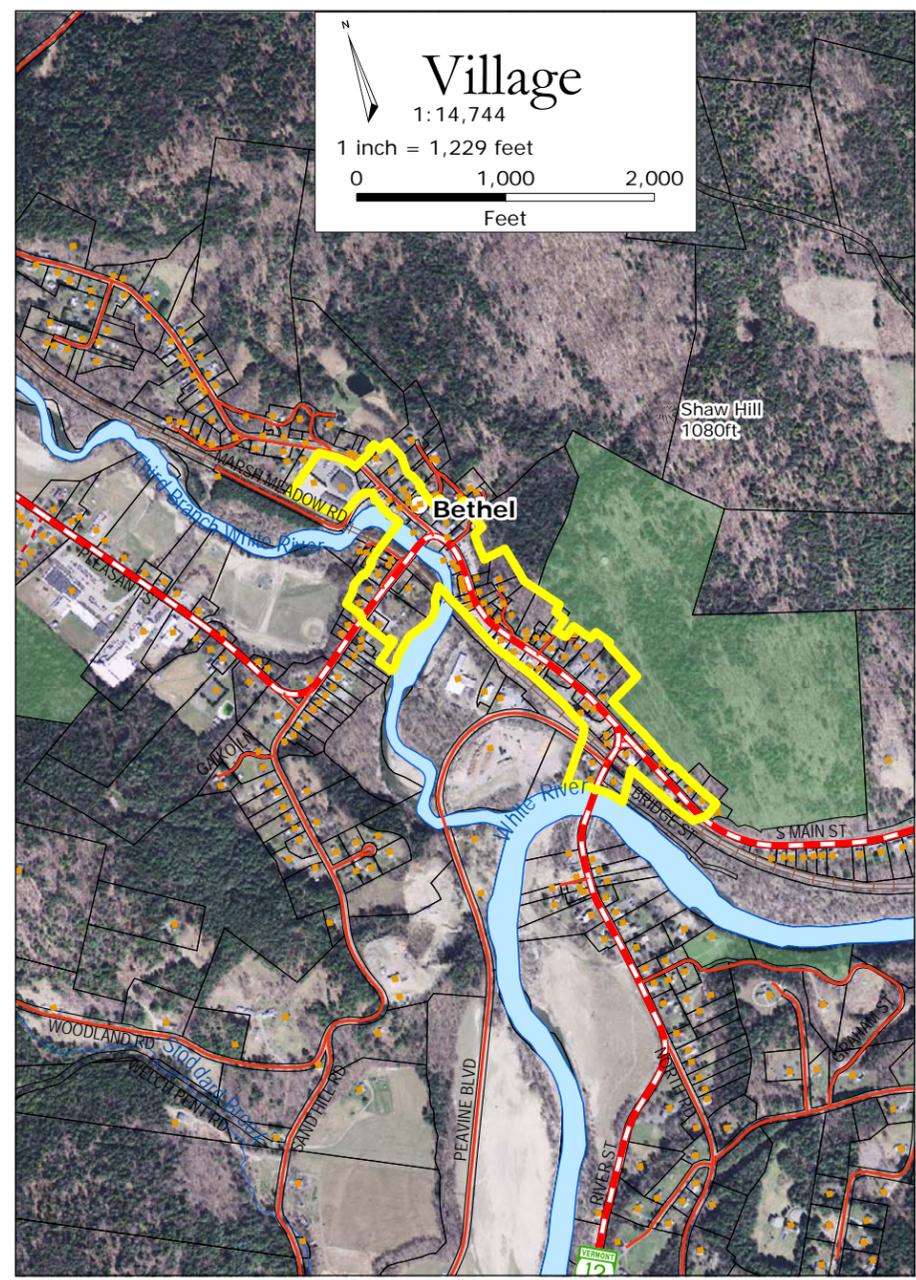
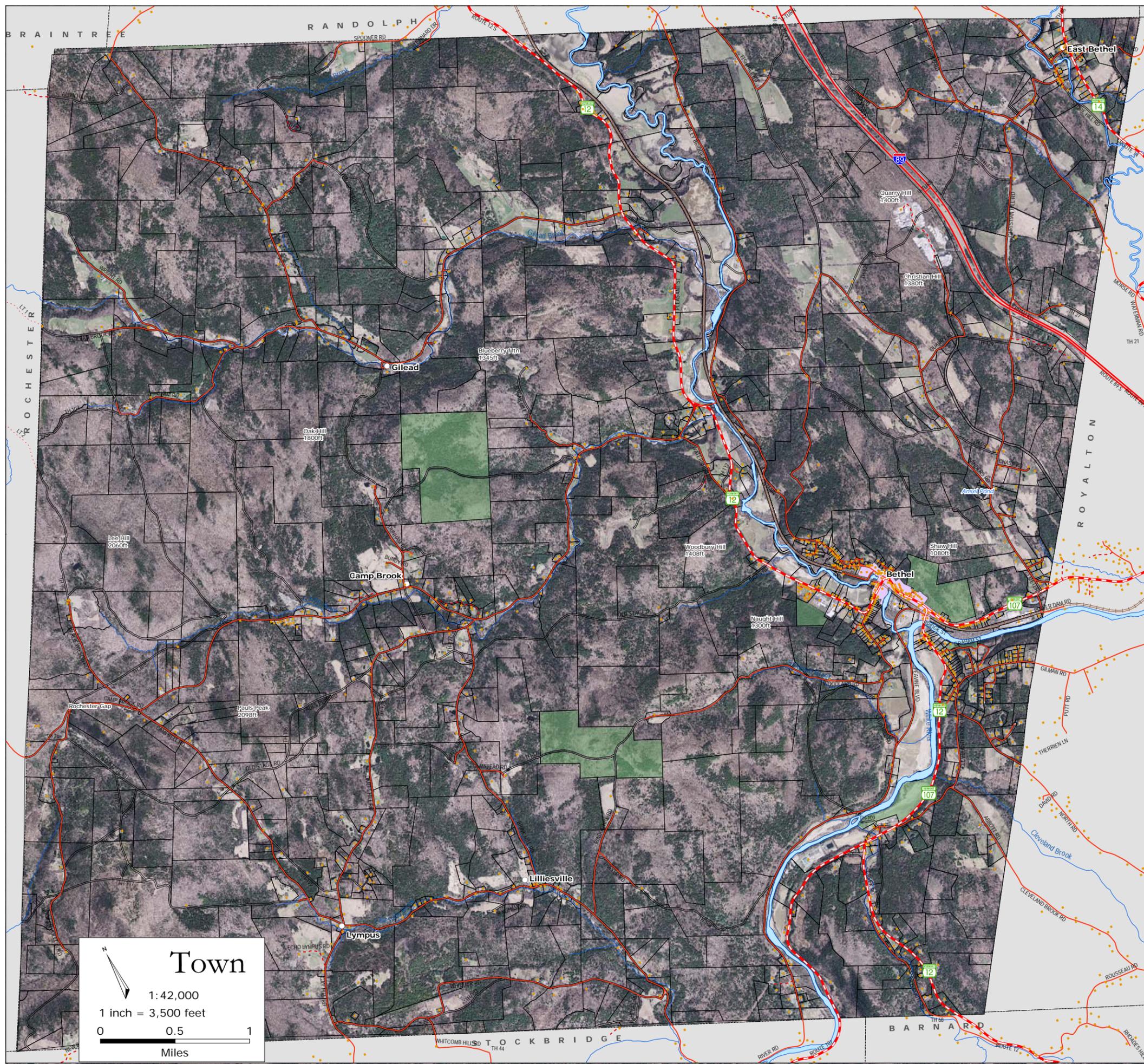
**SB** = Selectboard

Implementation Plan		
Chapter	Action Item	Responsibility & Timeframe
Economic Development	The Development Review Board should review applications for industrial development with careful attention to environmental and fiscal impacts.	Responsibility: DRB Timeframe: Ongoing
	The Town should encourage and support the responsible development of information technology and communication infrastructure necessary for new economic growth.	Responsibility: SB Timeframe: Ongoing
Housing	Community leaders should work with state housing agencies, non-profit organizations, and lending institutions to insure the availability of loan or grant funds for Bethel residents to acquire or improve their primary homes.	Responsibility: SB Timeframe: Ongoing
	The Town should work with the Two Rivers-Ottawaquechee Regional Commission to evaluate Bethel's role in supplying the region's housing stock by assessing its capacity for growth.	Responsibility: PC/RPC Timeframe: Next 5 years
Utilities & Facilities	The Selectboard should work with the Planning Commission to create a Capital Budget and Program to guide future investments in infrastructure.	Responsibility: SB/BC Timeframe: Next 5 years
	The Selectboard should work with the Planning Commission to find ways to enhance cellular coverage in Town.	Responsibility: SB/PC Timeframe: Ongoing
	The Selectboard should continue to support efforts to increase internet coverage within Bethel, such as the East Central Vermont Fiber Project.	Responsibility: SB Timeframe: Ongoing
	The Town should continue to utilize the municipal web site to improve communication and provide residents with access to municipal data.	Responsibility: All AMPs Timeframe: Ongoing
	The Town should make meeting the requirements of state solid waste regulations a priority, focusing on cost-effective methods of compliance.	Responsibility: SB Timeframe: Next 2 years
	The Town should continue to participate in the Vermont Village Designation Program to allow local business owners the ability to access tax credits for substantial improvement and code improvements to structures in the Village.	Responsibility: SB Timeframe: Next 3 years
	The Town should investigate alternative ways of disposing of biosolids from the municipal wastewater system if the U.S. Fish and Wildlife Service property is unavailable.	Responsibility: CC/SB Timeframe: Next 5 years
Recreation	The Town should consider creating a long range recreation plan that utilizes citizen input and good planning practices.	Responsibility: CC/SB Timeframe: Next 5 years
	The Conservation Commission should develop proposals for the best and most productive use of municipal properties.	Responsibility: CC Timeframe: Next 2 years

<b>Health &amp; Emergency Services</b>	The Selectboard should update the Local Emergency Operations Plan at least once a year or when key emergency management personnel change.	Responsibility: SB Timeframe: Yearly
	The Selectboard should adopt a Hazard Mitigation Plan with assistance from the Two Rivers-Ottawaquechee Regional Commission	Responsibility: SB Timeframe: 1 year
	The Selectboard should have a clear plan for use of the emergency shelter. This plan should include written guidelines with regard to staffing and operation.	Responsibility: SB Timeframe: 1 year
	Town officials who are part of Bethel’s emergency management team should receive adequate training in the Incident Command System (ICS).	Responsibility: SB Timeframe: Next 2 years
<b>Transportation</b>	The Town should develop a town highway capital plan and schedule that will guide maintenance and road infrastructure investments in the future.	Responsibility: SB Timeframe: Next 5 years
	Continue participation in the Regional Transportation Advisory Commission as well as the TRORC Road Foreman’s meeting program.	Responsibility: SB Timeframe: Ongoing
	The Selectboard should actively explore the purchase and utilization of simple to use rural road maintenance software for maintaining roads and drainage systems.	Responsibility: SB Timeframe: Next 2 years
<b>Energy</b>	Town officials and volunteers should work to increase public awareness and use of energy conservation practices, energy-efficient products and efficiency and weatherization programs through educational efforts aimed at local residents and businesses.	Responsibility: EC/ZA/CC Timeframe: Ongoing
	The Town should consider municipal or community-based renewable energy generation on town buildings and property to serve town facilities.	Responsibility: SB/EC Timeframe: Next 5 years
	The Planning Commission should identify areas in town that are appropriate for large scale energy production such as wind and solar.	Responsibility: PC/EC Timeframe: Next 5 years
	The Select Board should formally create an Energy Committee as a Town committee so that they may develop an Energy Action Plan as a supplement to the municipal plan and to find opportunities to reduce municipal expenses through energy efficiency and energy conservation.	Responsibility: SB Timeframe: ASAP
	The Town should implement energy efficiency measures recommended by the energy audits and (if formed, an Energy Committee) for existing and future facilities as opportunities arise, and incorporate priority efficiency improvements (e.g., facility retrofits, renovations, and equipment upgrades) in the town's capital budget and program.	Responsibility: SB/EC Timeframe: Ongoing
	The Town, with help from the Energy Committee (if formed), should develop municipal procurement and purchasing that emphasize products that are energy efficient (e.g., Energy Star® rated).	Responsibility: SB/EC Timeframe: Next 2 years

	The Town should develop facility maintenance and operation policies that maximize energy efficiency while maintaining comfort levels for employees and visitors.	Responsibility: SB Timeframe: Next 2 years
	The Town should consider the benefits and/or drawbacks of using regionally available alternative-fuels, such as biodiesel, in municipal vehicles.	Responsibility: SB Timeframe: Next 2 years
	The Selectboard should discuss PACE at a future meeting and decide whether the program should be placed on the ballot for Town Meeting.	Responsibility: SB Timeframe: Next 2 years
<b>Land Use</b>	The Planning Commission should amend the Bethel Zoning Bylaw to merge the multiple sub-sets of the Bethel Village Zone (Village Residential, Village Business, Village Commercial and Village Industrial) into a single, high density village zone with clearly defined permitted and conditional uses.	Responsibility: PC Timeframe: ASAP
	The Planning Commission should amend the Bethel Zoning Bylaw to include Hamlet areas located in East Bethel and at Locust Creek (at the junction of Routes 107 and 12).	Responsibility: PC Timeframe: ASAP
	The Planning Commission should modify the Bethel Zoning Bylaw to decrease current residential densities to a minimum of four acres.	Responsibility: PC Timeframe: ASAP
	The Planning Commission should regularly review the Flood Hazard section of the Bethel Zoning Bylaw to ensure that it remains up-to-date with the requirements of FEMA and the NFIP.	Responsibility: SB Timeframe: Ongoing
	The Planning Commission should examine additional protections for the Flood Hazard Area, and areas outside the FHA (Including the River Corridor Area) that are prone to flooding or flood damage. These should be incorporated into the Bethel Zoning Bylaw.	Responsibility: PC Timeframe: Next 2 years
	The Planning Commission should revise the Bethel Zoning Bylaw to prohibit new development within the floodplain excluding properly designed outbuildings and renovations that meet the requirements for Flood Hazard regulation as stipulated by the Federal Emergency Management Agency.	Responsibility: PC Timeframe: Next 2 years

<b>Natural, Scenic &amp; Historic Resources</b>	The Town should develop a reliable and up-to-date inventory of existing culverts and structures, coupled with a short- and long-range plan for replacement and upsizing.	Responsibility: SB/Road Crew Timeframe: Next 2 years
	The Planning Commission should update the Bethel Zoning Bylaw to ensure that it meets the standards required by the Federal Emergency Management Agency so that Bethel may continue to participate in the NFIP.	Responsibility: PC Timeframe: ASAP
	The Planning Commission should revise the Bethel Zoning Bylaw to limit new development within the floodplain to include only renewable energy generation facilities, recreational and agricultural uses.	Responsibility: PC Timeframe: ASAP
	FEMA shall maintain maps that reflect as accurately as possible the flood hazard areas to assist in appropriate land use decisions.	Responsibility: FEMA Timeframe: ASAP
	Town employees and contractors should become familiar with the best management practices to prevent the accidental spread of invasives.	Responsibility: SB/Road Crew Timeframe: ASAP
	The Town should time roadside mowing to minimize and reduce the spread of invasive species.	Responsibility: SB/Road Crew Timeframe: ASAP
	The Town should consider creating a conservation fund to be administered by the Conservation Commission for the purposes of natural resource protection and land preservation.	Responsibility: SB Timeframe: Next 5 years
<b>Agriculture &amp; Forestry</b>	To promote a better understanding of the farming and forestry practices, and natural resource management in general; the industry, conservation organizations, public schools and the tourism and recreation industries should sponsor continuing educational opportunities to the public.	Responsibility: CC Timeframe: Ongoing



Bethel, Vermont  
*2011 Orthophotography*

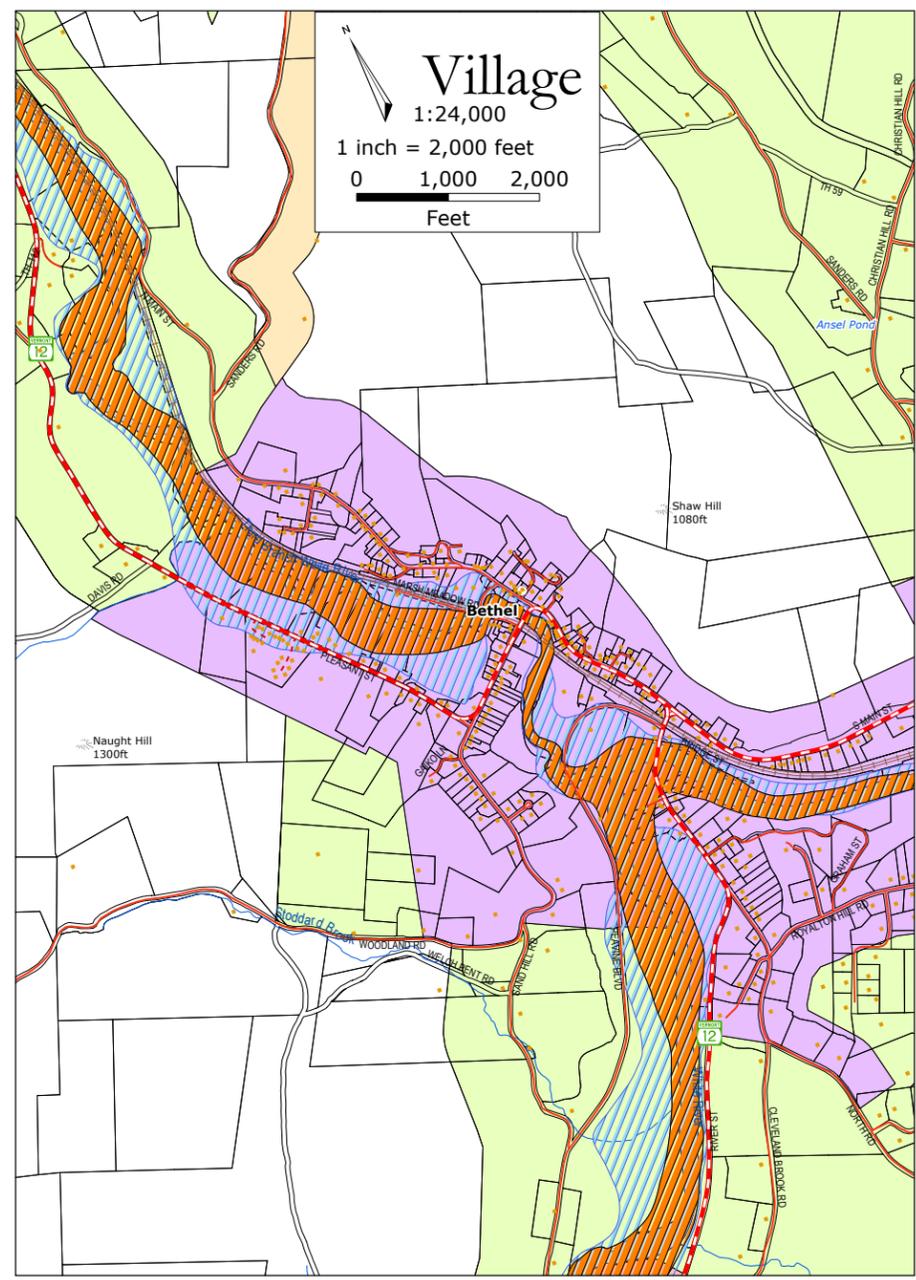
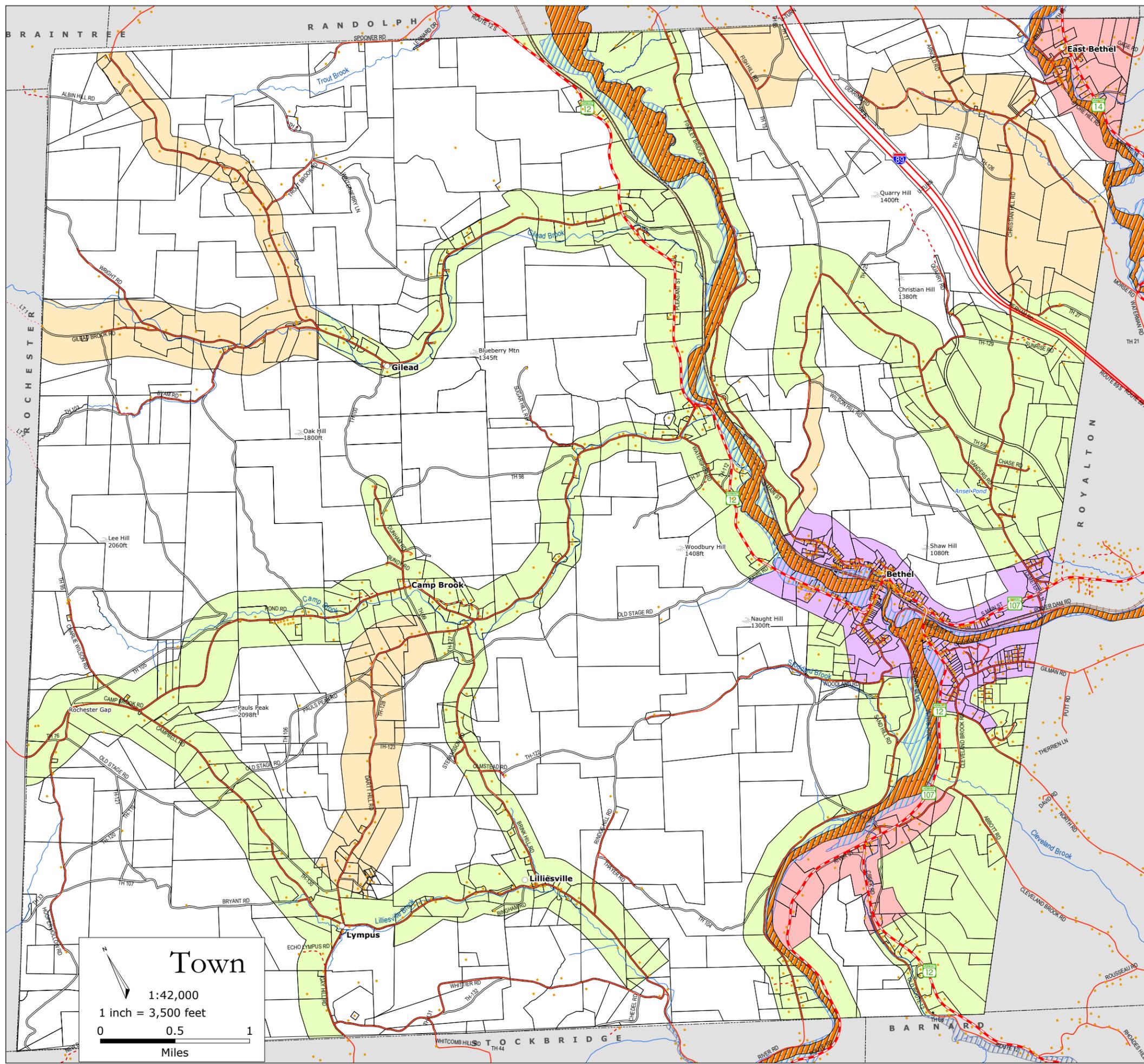
**Current Land Use**  
*Map 1 of 5*  
**Town Plan**  
 ADOPTED: 9/22/14

- addresses
- state highway
- maintained town highway
- other town rights-of-way
- private
- rail corridor
- surface water
- tax parcel boundaries
- town and other public lands
- Village Designation Boundary

**TWO RIVERS-OTTAUQUECHEE**  
 REGIONAL COMMISSION  
**GIS Service Center**  
 128 King Farm Rd  
 Woodstock, VT 05091  
 802-457-3188  
[trorc.org](http://trorc.org)

**Town**  
 1:42,000  
 1 inch = 3,500 feet  
 0 0.5 1  
 Miles

**Village**  
 1:14,744  
 1 inch = 1,229 feet  
 0 1,000 2,000  
 Feet



Bethel, Vermont

Future Land Use

Land Use Areas

Map 2 of 5

Town Plan

Adopted: 9/22/14

- Medium Density Residential Area
- Resource Conservation Area
- Rural Development Area
- Hamlet Area
- Village Area
- Flood Hazard Overlay (Floodway)
- Flood Hazard Overlay (Floodplain)

- addresses
- tax parcel boundaries

**Town**

1:42,000

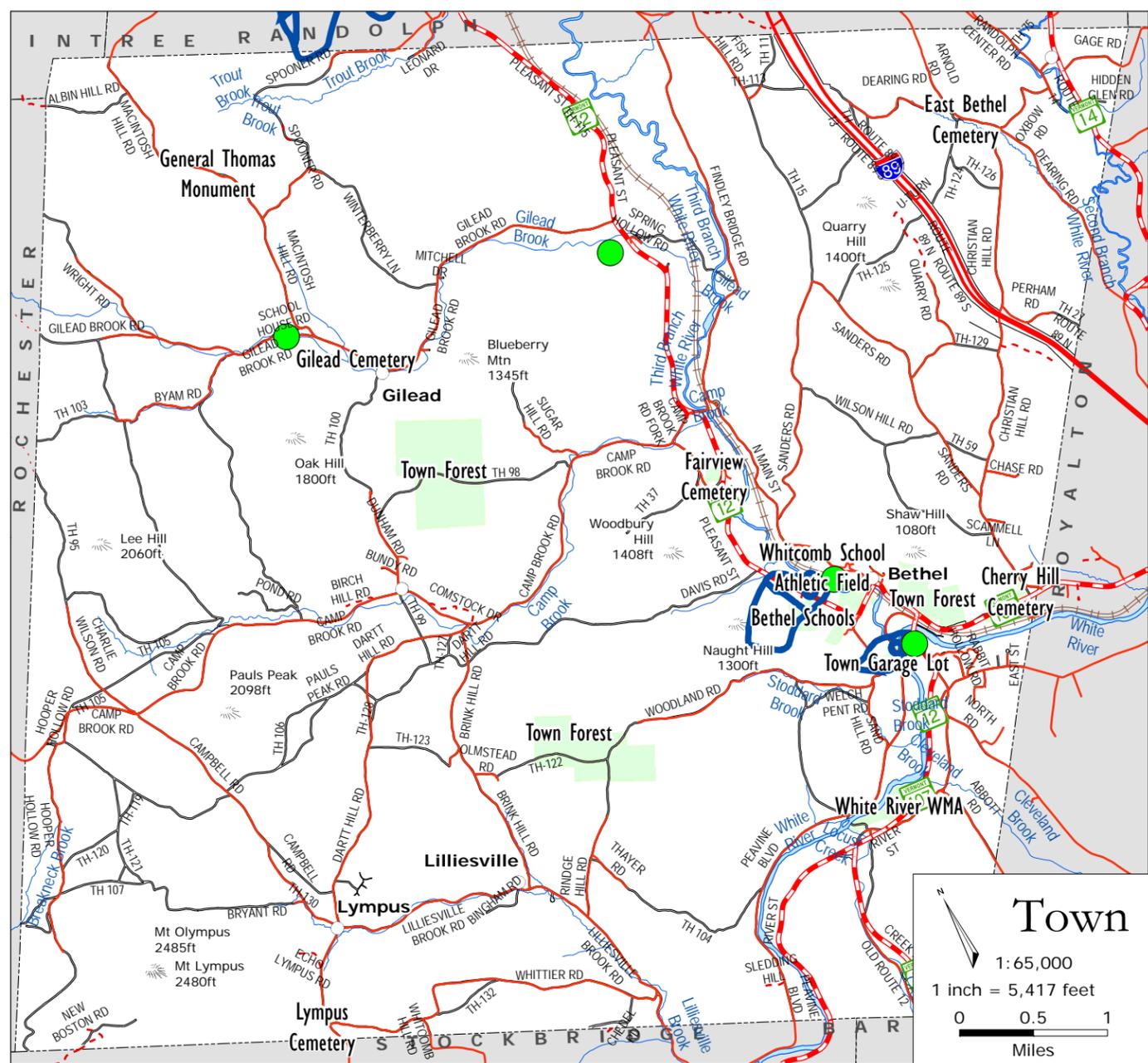
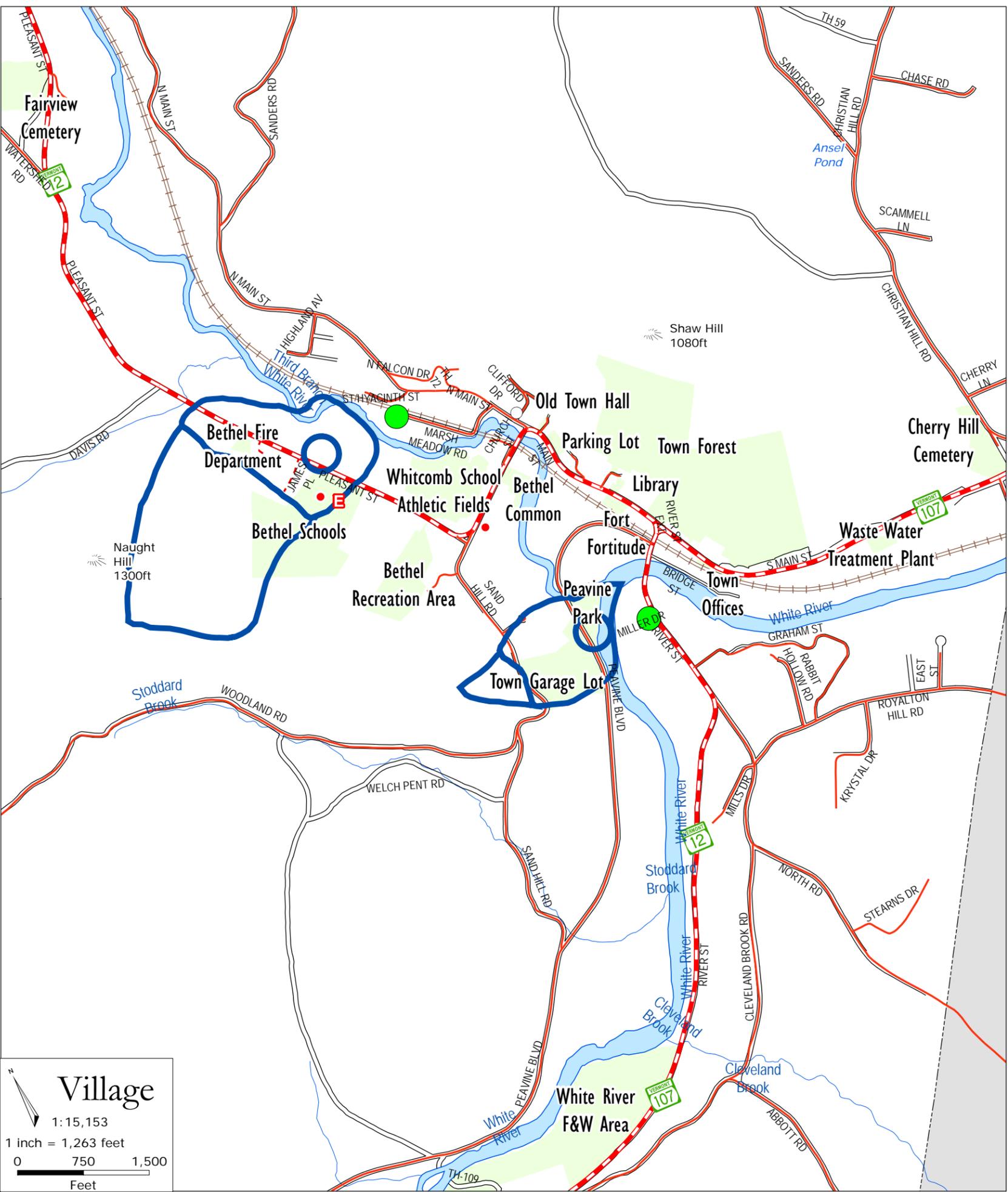
1 inch = 3,500 feet

0 0.5 1

Miles

**TWO RIVERS-OTTAUQUECHEE**  
REGIONAL COMMISSION

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**Bethel, Vermont**

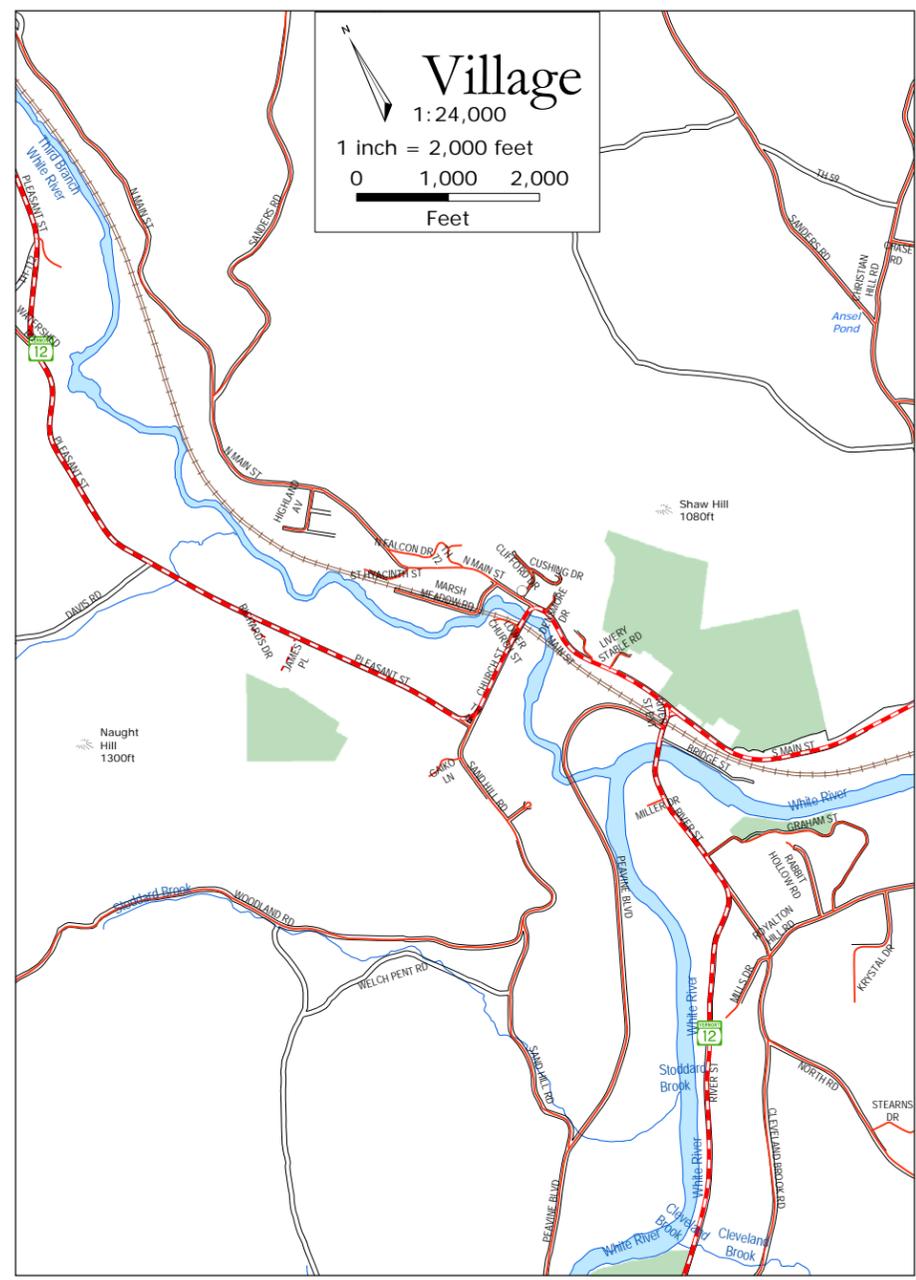
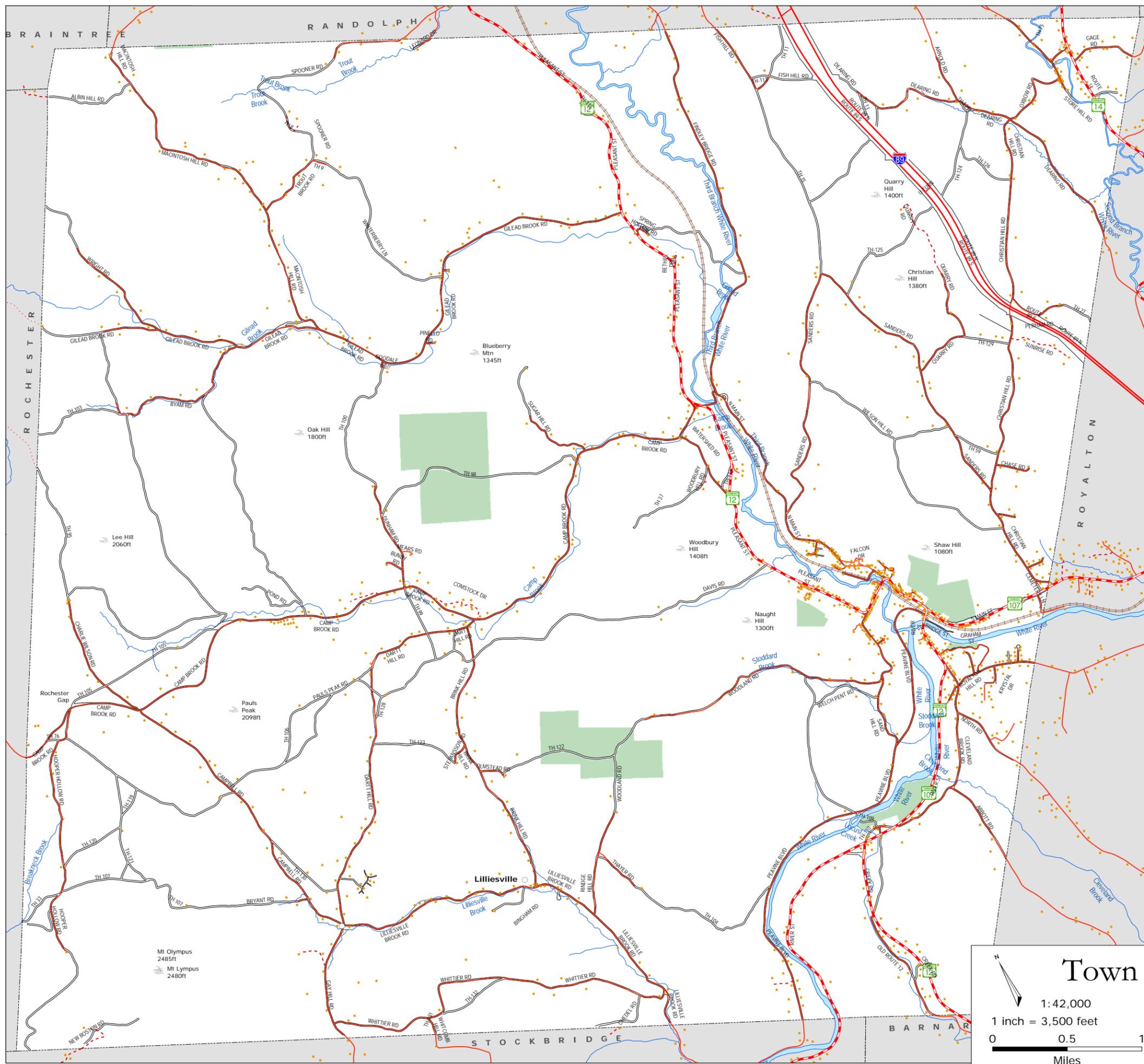
- TS Irene buyouts
- emergency shelters:  
Whitcomb High School  
St. Anthony's Catholic Church
- state highway
- maintained town highway
- other town rights-of-way
- private
- rail corridor
- surface water
- aquifer protection area
- town and other public lands

**Town Facilities**  
*Map 3 of 5*  
**Town Plan**

Adopted: 9/22/14

**Village**  
1:15,153  
1 inch = 1,263 feet  
0 750 1,500  
Feet

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REGIONAL COMMISSION  
**GIS Service Center**  
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**Bethel, Vermont**

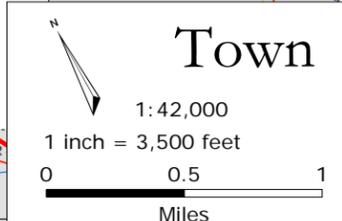
- addresses
- state highway
- maintained town highway
- other town rights-of-way
- private
- rail corridor
- surface water
- town and other public lands

**Transportation**

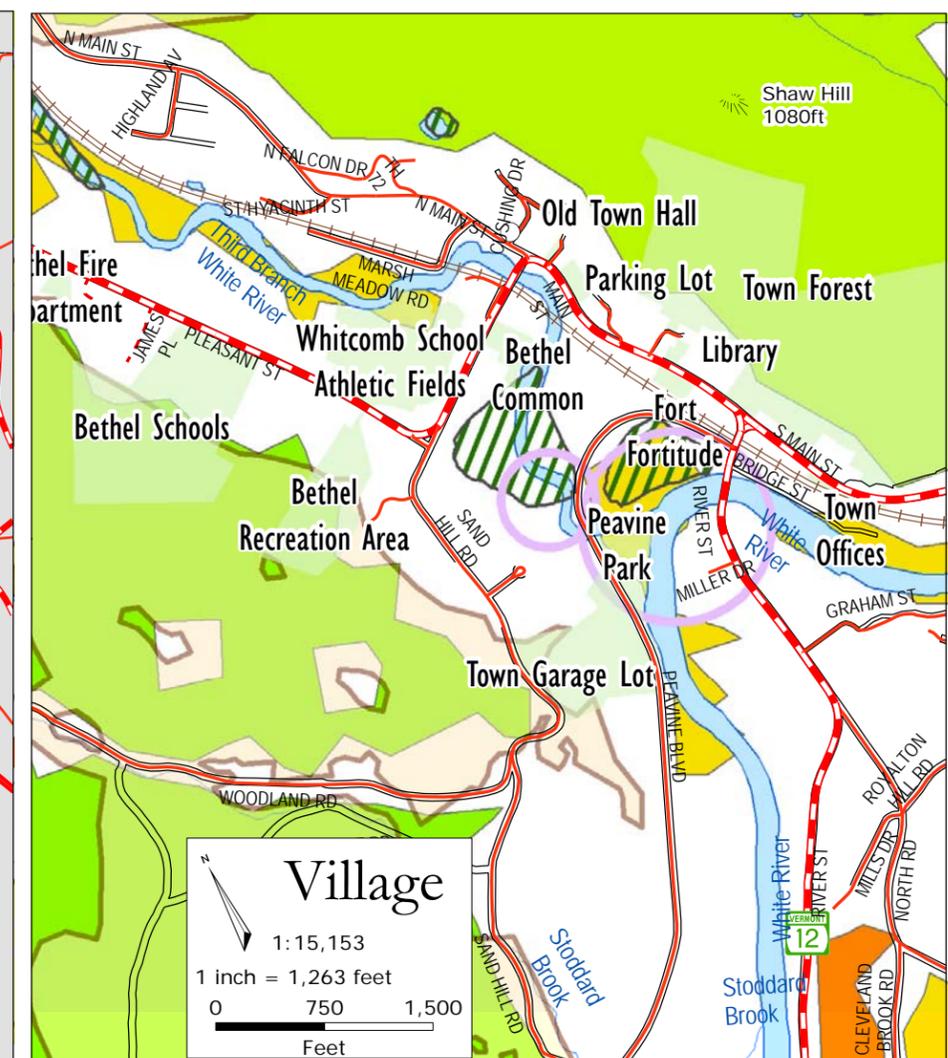
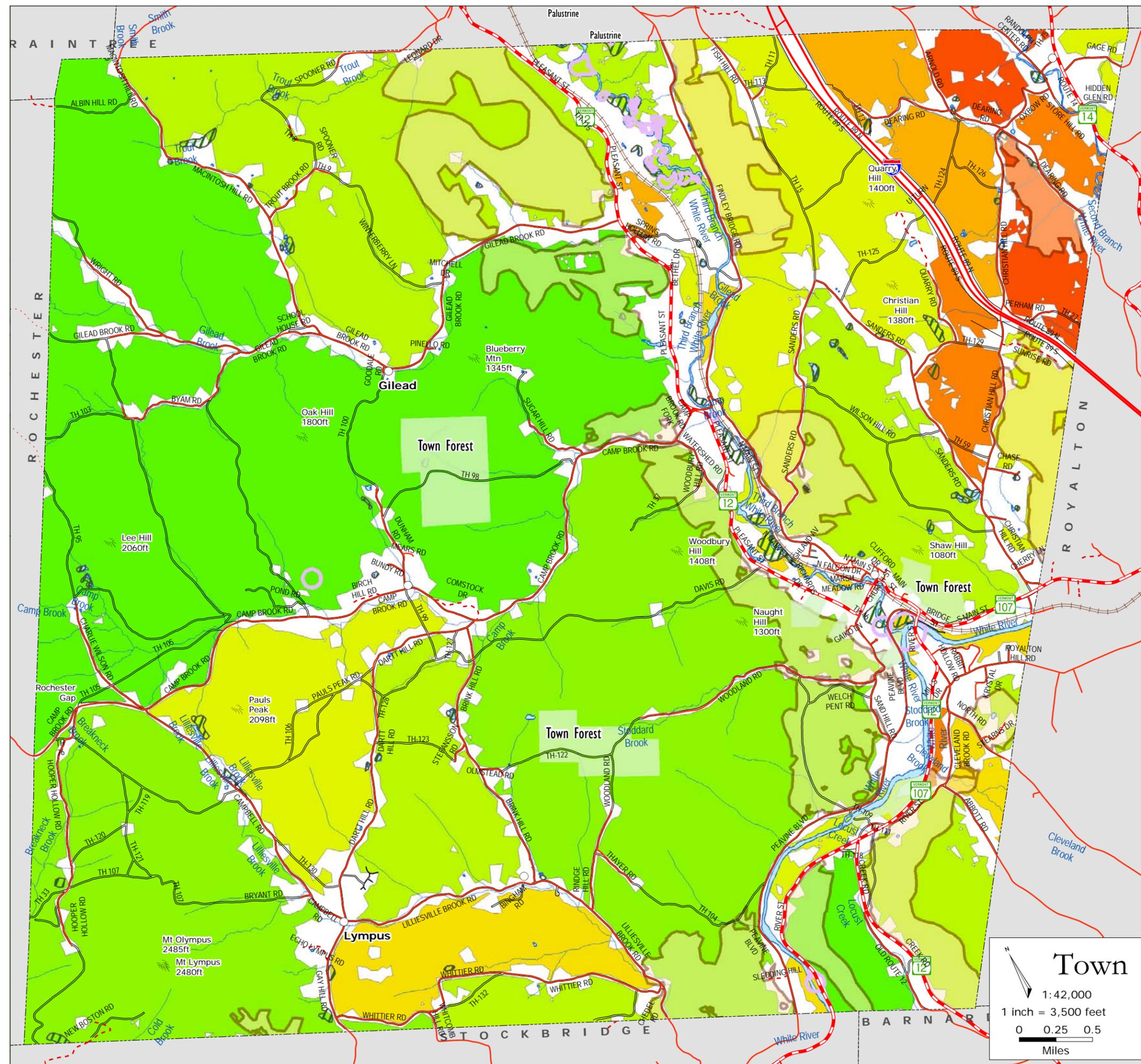
*Map 4 of 5*

**Town Plan**

ADOPTED: 9/22/14



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**Bethel, Vermont**

- state highway
- maintained town highway
- other town rights-of-way
- private
- rail corridor
- surface water
- town and other public lands
- deer wintering yard
- endangered species
- state wetlands

**Natural Resources**

*Map 5 of 5*  
**Town Plan**  
 ADOPTED: 9/22/14

**TWO RIVERS-OTTAUQUECHEE**  
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**Suitability of Wildlife Habitat**

- 0.0 - 1.9 **Worst Quality Habitat**
- 2.0 - 2.5
- 2.6 - 3.1
- 3.2 - 3.6
- 3.7 - 4.1
- 4.2 - 4.6
- 4.7 - 5.3
- 5.4 - 6.1
- 6.2 - 7.0
- 7.1 - 8.3 **Best Quality Habitat**

*Habitat blocks were identified using 11 factors to assess their biological value and their contribution in representing physical landscape diversity. Each of these 11 factors was weighted to reflect the relative importance of each factor in determining the final biological and physical diversity rank for the blocks.*

