

# Bethel Town Plan

---

Adopted November 23, 2020

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

## Table of Contents

<b>I. Introduction</b> .....	<b>5</b>
<b>A. Organization of Town Plan</b> .....	<b>5</b>
<b>B. General Purpose and Intent of the Plan</b> .....	<b>5</b>
<b>C. Public Participation in Plan Development</b> .....	<b>7</b>
<b>D. History of Town Planning in Bethel</b> .....	<b>9</b>
<b>E. Town History</b> .....	<b>9</b>
<b>II. Demographics</b> .....	<b>11</b>
<b>A. Population</b> .....	<b>11</b>
<b>B. Age of Population</b> .....	<b>12</b>
<b>III. Economic Development</b> .....	<b>15</b>
<b>A. Economic Statistics</b> .....	<b>15</b>
<b>B. Locations of Economic Activity</b> .....	<b>17</b>
<b>C. Future Economic Development</b> .....	<b>17</b>
<b>D. Goals, Policies, and Recommendations</b> .....	<b>19</b>
<b>IV. Housing</b> .....	<b>21</b>
<b>A. Housing Profile</b> .....	<b>21</b>
<b>B. Rental Housing</b> .....	<b>22</b>
<b>C. Affordability</b> .....	<b>22</b>
<b>D. Senior Housing</b> .....	<b>24</b>
<b>E. Goals, Policies, and Recommendations</b> .....	<b>24</b>
<b>V. Education</b> .....	<b>27</b>
<b>A. Educational Facilities</b> .....	<b>27</b>
<b>B. Student Enrollment</b> .....	<b>28</b>
<b>C. Cost of Education</b> .....	<b>29</b>
<b>D. Child care</b> .....	<b>30</b>
<b>E. Adult Education</b> .....	<b>30</b>
<b>F. Goals, Policies, and Recommendations</b> .....	<b>31</b>
<b>VI. Utilities and Facilities</b> .....	<b>33</b>
<b>A. Capital Budgeting &amp; Planning</b> .....	<b>33</b>
<b>B. Town Buildings</b> .....	<b>33</b>
<b>C. Privately Owned Community Buildings</b> .....	<b>35</b>
<b>D. Municipal Services</b> .....	<b>35</b>
<b>E. Cemeteries</b> .....	<b>38</b>
<b>F. Communication Facilities</b> .....	<b>38</b>
<b>G. Electric Utilities</b> .....	<b>40</b>
<b>H. Other Facilities</b> .....	<b>40</b>
<b>I. Goals, Policies, and Recommendations</b> .....	<b>41</b>

<b>VII. Emergency Services .....</b>	<b>43</b>
<b>A. Fire Protection Services.....</b>	<b>43</b>
<b>B. Police Protection Services.....</b>	<b>44</b>
<b>C. Emergency Medical Services .....</b>	<b>45</b>
<b>D. Emergency Management Planning .....</b>	<b>45</b>
<b>E. Goals, Policies, and Recommendations .....</b>	<b>47</b>
<b>VIII. Community Health and Wellness.....</b>	<b>49</b>
<b>A. Introduction.....</b>	<b>49</b>
<b>B. Population Profile.....</b>	<b>49</b>
<b>C. Health Care Facilities .....</b>	<b>50</b>
<b>D. Emergency Medical Services.....</b>	<b>51</b>
<b>E. Town Health Officers .....</b>	<b>51</b>
<b>F. Health Impact Assessment.....</b>	<b>51</b>
<b>G. Environmental Quality.....</b>	<b>52</b>
<b>H. Healthy Lifestyles.....</b>	<b>52</b>
<b>I. Goals, Policies, and Recommendations .....</b>	<b>55</b>
<b>IX. Energy .....</b>	<b>57</b>
<b>A. Background .....</b>	<b>57</b>
<b>B. Energy Demands.....</b>	<b>57</b>
<b>C. Current Energy Sources .....</b>	<b>59</b>
<b>D. Renewable Energy Resources .....</b>	<b>60</b>
<b>E. Permitting Considerations.....</b>	<b>64</b>
<b>F. Residential Energy Efficiency.....</b>	<b>65</b>
<b>G. Municipal Role in Energy Efficiency .....</b>	<b>67</b>
<b>H. Energy and Land Use Policy .....</b>	<b>68</b>
<b>I. Energy and Transportation Policy .....</b>	<b>69</b>
<b>J. Goals, Policies, and Recommendations .....</b>	<b>69</b>
<b>X. Natural, Scenic, and Cultural Resources.....</b>	<b>72</b>
<b>A. Background .....</b>	<b>72</b>
<b>B. Water Resources .....</b>	<b>73</b>
<b>C. Wetlands.....</b>	<b>75</b>
<b>D. Floodplains.....</b>	<b>76</b>
<b>E. Flora, Fauna, and Natural Communities.....</b>	<b>77</b>
<b>F. Invasive Species .....</b>	<b>79</b>
<b>G. Mineral Resources .....</b>	<b>80</b>
<b>H. Significant Natural and Historic Areas.....</b>	<b>81</b>
<b>I. Conservation Commission.....</b>	<b>83</b>
<b>J. Land Protection Strategies.....</b>	<b>83</b>
<b>K. Goals, Polices, and Recommendations .....</b>	<b>84</b>
<b>XI. Flood Resilience.....</b>	<b>86</b>
<b>A. Background .....</b>	<b>86</b>

B. Flood Hazard and River Corridor Areas in Town .....	88
C. Promoting Flood Resilience .....	90
D. Goals, Policies, and Recommendations .....	91
<b>XII. Agriculture and Forestry.....</b>	<b>93</b>
A. Background .....	93
B. Farm and Forest Land Issues .....	93
C. Agricultural Trends .....	94
D. Forestry Trends.....	95
E. Sustaining Agriculture and Forestry .....	95
F. Farming, Forestry, and the Economy .....	96
G. Goals, Policies, and Recommendations .....	97
<b>XIII. Recreation .....</b>	<b>99</b>
A. Public Recreational Facilities .....	99
B. Municipal Properties .....	100
C. Recreation Facilities Planning.....	100
D. Recreation and the Bethel Economy .....	100
E. Goals, Policies, and Recommendations .....	101
<b>XIV. Land Use.....</b>	<b>102</b>
A. Introduction.....	102
B. Overall Land Use Goals.....	102
C. Current Land Use.....	103
D. Future Land Use.....	103
Core Business Area.....	104
Village Area.....	104
Hamlet Area.....	105
Medium Density Development Area .....	106
Rural Development Area.....	107
Resource Conservation Area.....	108
Floodplain Area .....	109
Wellhead Protection Area .....	110
<b>XV. Transportation .....</b>	<b>111</b>
A. Public Highway System .....	111
B. State and Federal Highways .....	112
C. Class 4 & Trails .....	112
D. Development Review Road Standards .....	113
E. Access Management .....	114
F. Other Modes of Travel .....	114
G. Goals, Policies and Recommendations .....	116
<b>XVI. Relationship to Other Plans .....</b>	<b>119</b>
A. Relationship to Municipal Plans .....	119
B. Relationship to the Regional Plan.....	120

<b>C. Goal, Policies, and Recommendations .....</b>	<b>121</b>
<b>XVII. Town Plan Implementation .....</b>	<b>122</b>
<b>A. Regulatory Implementation.....</b>	<b>122</b>
<b>B. Non-Regulatory Implementation .....</b>	<b>124</b>
<b>C. Responsibility for Implementation.....</b>	<b>126</b>
<b>APPENDIX A: Implementation Plan .....</b>	<b>128</b>
<b>APPENDIX B: Energy Data and Maps .....</b>	<b>142</b>

Maps that accompany this Plan:

- Current Land Use (Map 1)
- Future Land Use (Map 2)
- Town Facilities (Map 3)
- Current & Proposed Transportation (Map 4)
- Natural Resources (Map 5)
- Existing Energy Generation (Appendix B)
- Biomass Energy Potential (Appendix B)
- Hydroelectric Energy Potential (Appendix B)
- Solar Energy Potential (Appendix B)
- Wind Energy Potential (Appendix B)

## **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: 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 eight 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:**

7. To protect the rural character of the Town;
8. To continue Bethel village as a town center;
9. To protect and restore historical resources;
10. To provide safe, healthy, and affordable housing for all segments of the population;
11. To prevent the creation of traffic hazards and congestion and aesthetically displeasing development on Routes 107 and 12 and within the village center; and
12. To promote environmentally sound development practices.

## C. Public Participation in Plan Development

This Plan was updated from 2019 to 2020 by the Bethel Planning Commission, with technical assistance from Two Rivers-Ottawaquechee Regional Commission. Plan chapters were edited during Planning Commission meetings, which are open to the public. The Town encourages volunteerism and community engagement in the writing of the Town Plan and all aspects of municipal government. Specific community stakeholders were invited to join these conversations or to provide feedback remotely; these included:

- Bethel Energy Committee representatives\*
- Bethel Recreation Committee representatives\*
- White River Partnership representatives\*
- Bethel Conservation Commission representatives\*
- Bethel Revitalization Initiative representatives\*
- Bethel Historical Society representatives
- Bethel Town Health Officer
- Bethel Town Constable\*
- Bethel Fire Chief\*
- Bethel Road Foreman
- Bethel Water and Wastewater Departments\*
- Bethel Public Library
- Bethel Elementary Administration
- White River Valley Middle School Administration
- Bethel Emergency Shelter Manager\*
- Bethel Town Manager\*
- Bethel/Royalton Solid Waste Program\*

Many of the aforementioned stakeholders (marked with an asterix (\*) in the list above) provided input on one or more chapters. Janice Eberly of the Vermont Department of Health also participated in discussions about several chapters.

A remote public forum was held on September 16th, 2020 via web conference to gather additional input on the draft plan.

In 2018, the Bethel Planning Commission developed and circulated a survey to gather community input in preparation for updating the Town Plan. Between July and November 2018, approximately 1,100 surveys were distributed and 124 responses were received (a response rate of about 11%). Over 70% of respondents were full time residents of the Town, and about 70% were over the age of 50.

The survey included free response and multiple choice questions. The following is a summary of the multiple choice responses:

<b>Topics</b>	<b>Percentage of respondents who felt topic was very important</b>	<b>Percentage of respondents who felt the Town was doing well with regard to the topic</b>
Small Town Atmosphere	81%	73%
Local Employment Opportunities	61%	10%
Vibrant, Thriving Village Center	75%	34%
Clean Environment	93%	46%
Condition and Maintenance of Roads	89%	51%
Agricultural Character	53%	47%
Social and Cultural Opportunities	60%	34%
Low Cost of Living	57%	15%
Public Safety	79%	50%
Access to Public Transportation	44%	21%
Resilience and Disaster Preparedness	63%	43%

Most respondents agreed or strongly agreed that the Town should:

- Encourage more retail and small business development in the downtown village area
- Encourage more manufacturing and industrial activity
- Encourage more solar and wind energy projects
- Invest more resources in improved public WIFI availability
- Prioritize historic preservation over business development
- Place high priority on environmental impacts in town decision-making
- Prioritize preservation of open spaces for conservation and recreational use

Most respondents disagreed or strongly disagreed with the following ideas:

- Paving more roads
- Extending more sewer lines outward from the village
- Allowing property owners to develop their lands however they choose
- The existing parking, traffic flow, and overall design of the downtown village is adequate.

Copies of survey responses may be requested from the Town Office.

## **D. 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 1970s 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 1980s, 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. In 2017, the Town consolidated its development regulations into a Unified Bylaw, adopted on June 12<sup>th</sup>.

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.

## **E. 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 largest of the pair. Since that time, the west village, then called Marsh's Mills, has been the largest in Town.

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.

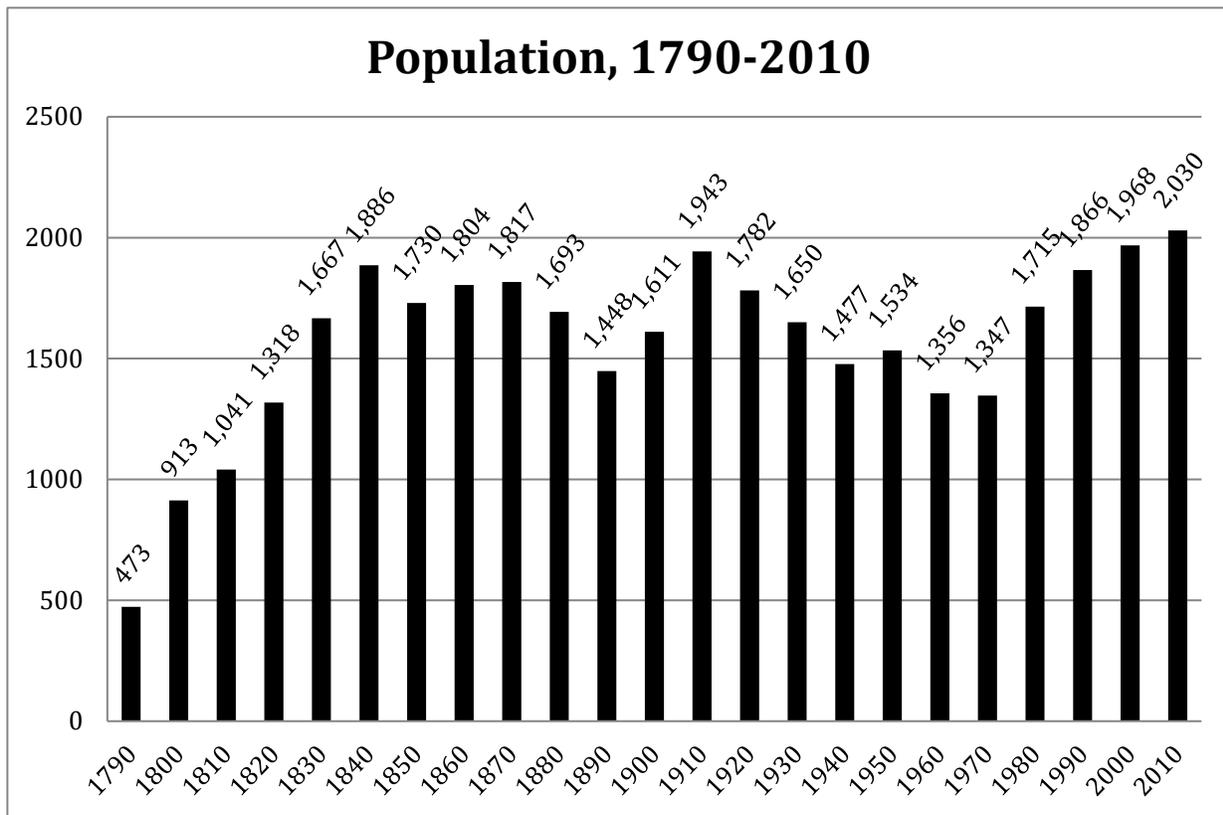
Economic markets shifted, and, by 1922-23, Bethel’s leading industries were no longer competitive with larger manufacturing centers. Many of the skilled workers, including recent immigrants, left Bethel in search of work elsewhere. The next 50 years were characterized by only modest employment opportunities 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.

## II. Demographics

The demographic nature of a town tells the reader a great deal about who the town is and what trends define its direction. To get a real-time snapshot of the Town it is important to have the most up-to-date data available. In the case of this Town Plan, we have used the most current data available from the US Census and American Community Survey, or more recent state-level data whenever possible.

### A. Population



1 - Population, 1790-2010 (Source: 2010 U.S. Census)

Population growth is an important factor in municipal planning and development. Increases or decreases in population, as well as the density and overall distribution pattern of resident and non-resident populations, can affect the type of public services and infrastructure that are necessary. Rapid and unanticipated population increases can compromise rural character, create a demand for new and expanded municipal services, and strain the financial ability of a town to provide public services economically. Large public investments such as educational facilities, public utilities, and highways can be more effectively planned and built within the context of population characteristics or changes within the Town and within the geographic region impacting it.

In order to have a reasonable understanding of Bethel’s future population growth and its potential impacts, the planning commission has included the best available current data.

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. Such an event, however, cannot

<b>Percent Population Change, 1980-2010</b>				
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)

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.

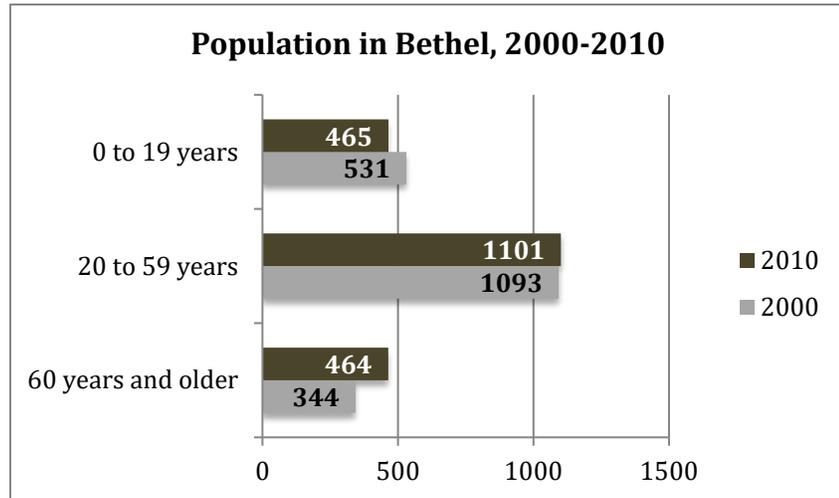
Population density (persons per square mile of land area) in Bethel continues to increase at a slow, but steady rate. Population density was 41.19 in 1990, 43.44 in 2000, and 44.71 in 2010.

## **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 outmigration and in-migration have differed between age groups. For example, in 2000, teenagers made up 16% of the Town’s population. By 2010, that share had fallen to 11.5%. Unlike many communities in Vermont, Bethel appears to be retaining its population of young adults (20-24 years of age). Between 2000 and 2010, the proportion of the Town’s population aged 20-29 years increased from 10.2% to 11.5%.

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



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

capacity to raise tax

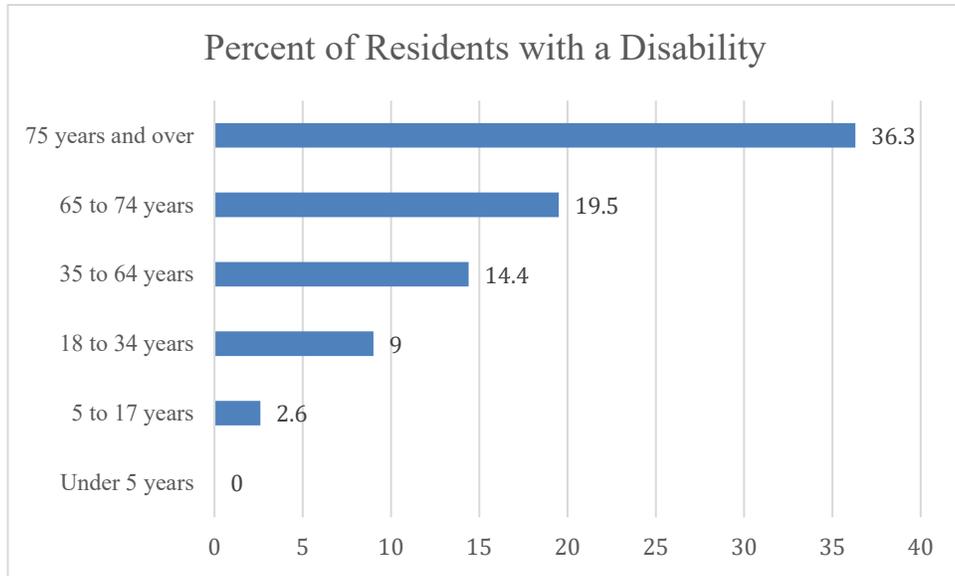
revenues and pay for

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.

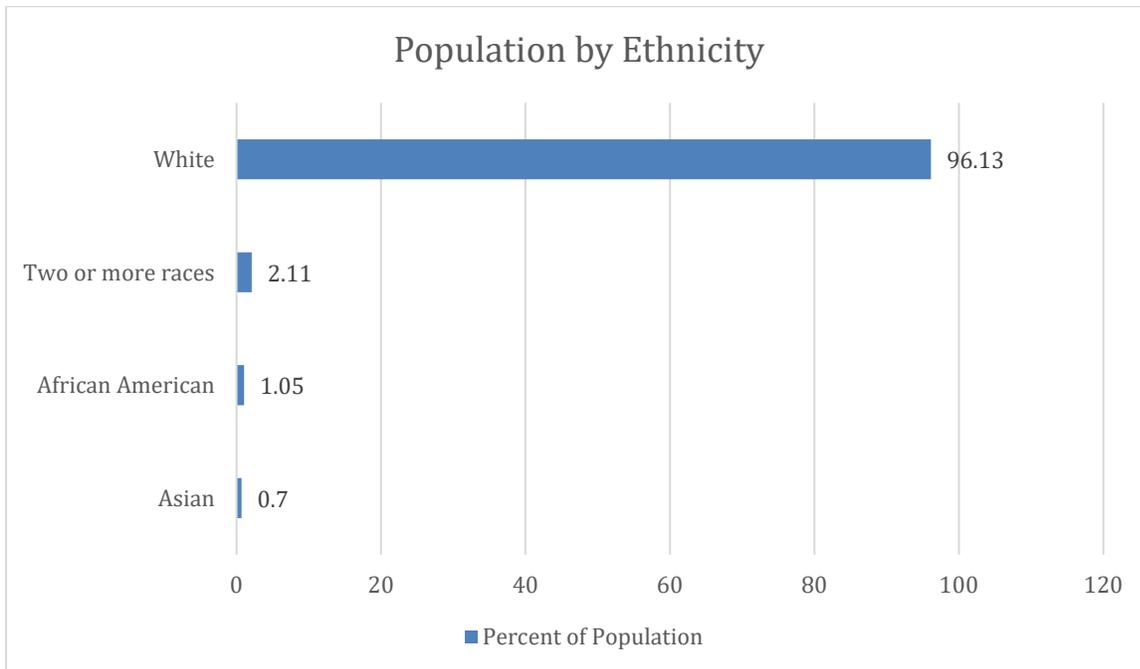
In another trend that mirrors statewide trends, Bethel has an aging population. In 2010, 16% of the population was over 65 years of age, which was lower than Windsor County (18%), but slightly higher than the State of Vermont (14.6%). As of 2017, Vermont has one of the lowest birth rates in the nation (9.1 births per 1,000 of population, compared with 11.8 for the U.S.) which, when coupled with immigration of residents over 55, results in an aging population, as shown in the graph below. As Bethel’s population ages, so do the number of residents with disabilities, and those residents may need services that are not readily available in a town like Bethel. Less than 1% of the U.S. housing is wheel chair accessible, so Bethel, like other towns, needs to strongly encourage developers to build more ADA compliant housing.

### C. Demographics on Disability

As of the 2010 Census 11% (236 residents) of Bethel live with some form of disability, of whom many experience considerable difficulties in functioning. In the years ahead, disability will be an even greater concern because its prevalence is on the rise. This is due to aging populations and the higher risk of disability in older people as well as the global increase in chronic health conditions such as diabetes, cardiovascular disease, cancer and mental health disorders. In Bethel, as across the state, people with disabilities have poorer health outcomes, lower education achievements, less economic participation and higher rates of poverty than people without disabilities. This is partly because people with disabilities experience barriers in accessing services that many of us have long taken for granted, including health, education, employment, and transport as well as information. These difficulties are exacerbated in rural communities with fewer financial resources, such as Bethel. As a community, we must remove the barriers which prevent people with disabilities from participating in our community.



4- Population age group with a disability, 2010. (Source: U.S. Census)



5 – Population by ethnicity, 2010. (Source: U.S. Census)

### III. Economic Development

#### A. Economic Statistics

##### Employment Patterns

The number of Bethel residents in the labor force has decreased slightly since 2013. The unemployment rate has also declined. In 2017, Bethel’s unemployment rate of 3.0% matched that of the state, but was higher than Windsor County’s unemployment rate (2.6%).

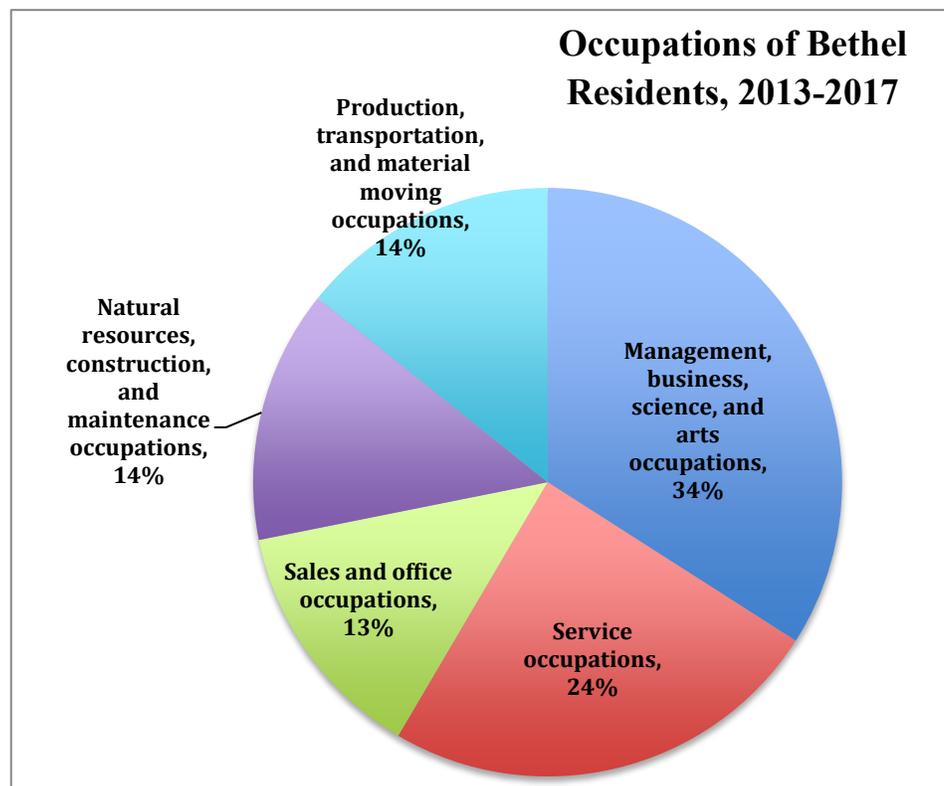
Labor Statistics, Town of Bethel (2013-2017)				
Year	Labor Force	Employment	Unemployment	Unemployment Rate
2013	1,097	1,041	56	5.1%
2014	1,059	1,013	46	4.3%
2015	1,046	1,011	35	3.3%
2016	1,023	988	35	3.4%
2017	1,016	986	30	3.0%

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

##### Occupations

Recent Census data suggest that management, business, science and arts occupations make up the highest percentage (34%) of occupations held by Bethel residents, followed by service occupations (24%).

Most of Bethel’s employed residents work in the private sector (86.7%), while 13.3% work for government. 14% are self-employed (Source: American Community Survey 2013-2017).



7 – Occupations of Bethel Residents (Source: 2013-2017 American Community Survey 5-Year Estimates)

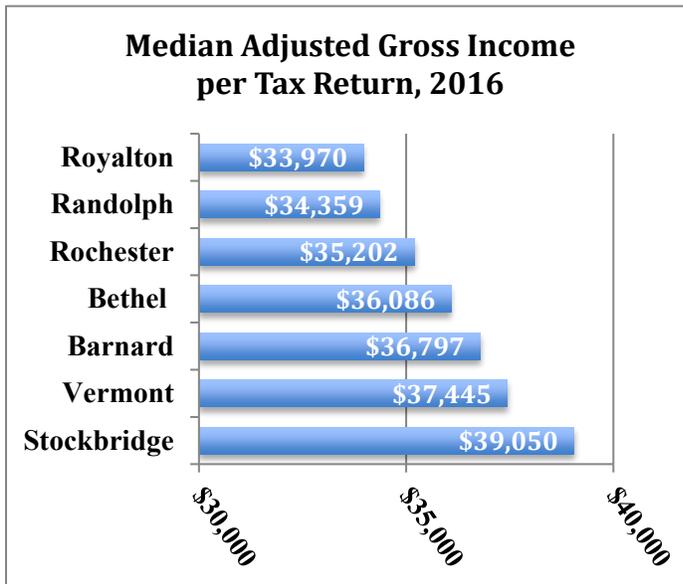
## Wages and Income

Wages are most commonly influenced by pressures outside of the community. Since 2008, some of the businesses located in Bethel have seen an increase in average wages while others have seen a decrease.

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 businesses’ average annual wage between 2000 and 2012 peaked in 2008, dropping quickly in 2009. Adjusted for inflation, Bethel’s average annual wage in 2016 was 3.6% lower than the 2008 average.

<b>Annual Average Wage by Industry<sup>1</sup> in Bethel (2008-2016)</b>			
<b>Industry</b>	<b>2008</b>	<b>2012</b>	<b>2016</b>
Natural Resources and Mining	<i>No data</i>	\$48,641	\$65,948
Construction	<i>No data</i>	\$30,997	\$40,284
Manufacturing	\$51,294	\$45,585	\$51,204
Trade, Transportation, and Utilities	\$36,491	\$29,084	\$30,059
Information	<i>No data</i>	<i>No data</i>	<i>No data</i>
Financial Activities	\$41,479	\$44,290	\$40,909
Professional and Business Services	\$39,538	\$48,930	\$41,587
Education and Health Services	\$32,267	\$30,068	\$42,900
Leisure and Hospitality	\$11,703	\$11,896	\$14,376
Other services, except public administration	<i>No data</i>	<i>No data</i>	<i>No data</i>
Government	\$44,873	\$36,622	\$38,162

**8 - Average Annual Wage by Industry, in 2016 inflation-adjusted dollars**  
(Source: VT Dept. of Labor)



**9 - Median Adjusted Gross Income, 2016** (Source: VT Dept. of Taxes)

The Vermont Department of Taxes reports that in 2016, Bethel’s median adjusted gross income (per tax return) was \$36,086. This figure was close to the median incomes of several neighboring communities, and a little lower than the statewide figure. 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. In 2015, about 14% of employed Bethel residents worked in Town, a substantially higher percentage than found in most of the surrounding towns (US Census Bureau, LEHD Origin-Destination Employment Statistics,

<sup>1</sup> Wage data are only reported by businesses required to provide unemployment insurance coverage. The Vermont Dept. of Labor dataset therefore excludes: self-employed individuals, most farm businesses, some non-profit entities, churches, rail companies, elected officials, certain members of sole proprietorships or partnerships, and students receiving work-study income.

2015). Roughly 73% percent of employed residents commuted less than 25 miles for their primary jobs, indicating that they were employed in neighboring communities like Randolph, Royalton, Stockbridge, or Woodstock.

<b>Primary Job Commute Distance for Bethel Residents, 2015</b>	
Less than 10 miles	40.8%
10-24 miles	32.5%
25-50	14.7%
Over 50 miles	12.0%

**10 - Commute to Work Distance, 2015**  
 (Source: US Census Bureau, LEHD Origin-Destination Employment Statistics, 2015)

## **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 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 School District; Bethel Mills, a building materials supplier; and 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**

In 2018, the Bethel Planning Commission surveyed residents' values, priorities, and visions for Bethel's future. Growing the local economy and revitalizing the Village Center were strong themes in survey responses. A majority of respondents noted that local employment opportunities and a thriving Village Center are very important to the Town's future, and that the Town is currently struggling on those fronts. Most respondents were in favor of encouraging more retail and small business development in the Village Center, and promoting more manufacturing and industrial activity in the Town as a whole.

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). In 2017, Bethel received an Animating Infrastructure grant from the Vermont Arts Council. The Village Center designation also strengthens the Town's candidacy for private grants. AARP funded a Better Block project in Bethel in 2016, and has continued to offer support for community improvement initiatives. The designation promotes village center revitalization, reinforces historic development patterns, and helps to discourage scattered development that would negatively impact natural resources and the character of rural areas. These benefits align with the state's development goals and the land use goals outlined in this Town plan. Bethel's Designated Village Center boundaries are indicated on Map 1, Current Land Use.

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 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

#### **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.

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, Policies, and Recommendations**

**Goal 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.

**Policy a:** 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.

**Recommendation a.1:** The Town will be an active participant in regional economic development planning efforts.

**Policy b:** 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.

**Recommendation b.1:** The Development Review Board should review applications for industrial development with careful attention to environmental and fiscal impacts.

**Policy c:** It is the policy of the Town to encourage diverse and sustainable businesses in Bethel, which create jobs and contribute to the small-town quality of life.

**Recommendation c.1:** The Development Review Board should review applications for industrial development with careful attention to environmental and fiscal impacts.

**Recommendation c.2:** The Town should encourage and support the responsible development of information technology and communication infrastructure necessary for new economic growth.

**Policy d:** 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.

**Recommendation d.1:** The Town of Bethel should periodically review its zoning standards to ensure that home businesses are encouraged and permitted.

**Policy e:** 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.

**Recommendation e.1:** It is recommended that the Town apply to renew the Village Center designation and maintain compliance with requirements of the program.

**Policy f:** It is the policy of the Town to encourage the development of primary retail and other appropriately-scaled commercial uses in the designated Village Center.

**Recommendation f.1:** The Town will inform existing and new businesses about the benefits provided by the Village Center Designation program.

**Goal 2:** To strengthen and maintain the Town’s agricultural, forest, and recreational economies and to ensure continuance of small-town village and rural character.

**Policy g:** It is the policy of the Town to support the development of local enterprises that create markets for locally produced goods and services.

**Recommendation g.1:** The Town will continue to encourage farmer’s markets and local events by Bethel Council on the Arts.

**Policy h:** 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.

**Recommendation h.1:** The Development Review Board should review applications for new development with careful attention to availability of resources and access.

**Policy i:** 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 District area in those areas designated as Hamlet Districts.

**Recommendation i.1:** The Development Review Board should review applications for new development with an eye to preventing sprawl.

## 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.

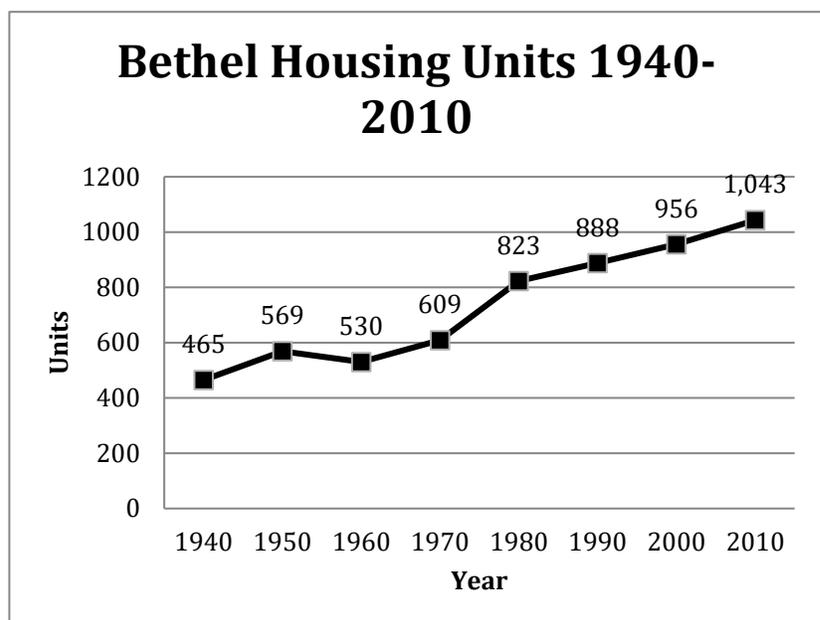
A major goal of this plan is to encourage planning that meets two important community objectives:

1. To encourage safe, energy-efficient, and affordable housing for present and future populations; and
2. To encourage a density and distribution of housing throughout the Town that protects the working landscape and reduces transportation energy use.

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. Moreover, housing that sprawls outside of village centers requires residents to spend a large part of their time and income on driving, decreases the ability of public transit to serve residents, and places transportation burdens on seniors or others who cannot drive. If the supply of housing is inadequate to meet the demand in a town, the shortage can strain the housing markets in 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 1,043 housing units in Bethel (see Figure 11). 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. According to the 2013-2017 American Community Survey 5-Year Estimates, the bulk of Bethel's occupied housing units are single-family homes (70%), 19% are in buildings of 2 or more apartments, and 11% are mobile homes or some other type of housing.



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

As shown in Figure 12, when compared to its neighboring towns and Windsor County as a whole, Bethel tied with Randolph for the highest percentage of owner-occupied homes (62%) in 2010. 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	62%	11%	21%
Randolph	62%	5%	26%
Rochester	48%	28%	16%
Royalton	49%	7%	38%
Stockbridge	51%	35%	10%
Windsor County	52%	22%	20%

12 - 2010 Housing Occupancy, Bethel & Surrounding Area (Source: U.S. Census)

The 2018 Town survey asked residents whether Bethel has a good mix of housing availability. Respondents were fairly evenly split on the question, with 27% in agreement, 33% in disagreement, and the remainder unsure.

## **B. Rental Housing**

In 2010, Bethel’s percentage of renter-occupied housing (22%) was slightly higher than that of Windsor County. The housing market is tight statewide, and lack of available apartments continues to drive up rental costs. The 2010 decennial census recorded that 8.8% of Bethel’s rental units (not including vacation or seasonal rental properties) were vacant. The 2015 *Vermont Housing Needs Assessment* reported a rental apartment vacancy rate of 1.3% in Windsor County. The current rate in Bethel may be higher; the 2013-2017 American Community Survey 5-Year Estimates suggest that up to 8.5% of rental units in the Town are vacant (excluding vacation or seasonal rentals).

## **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 2010 the US Agency of Housing and Urban Development (HUD) calculated the fair market rent for a modest two-bedroom apartment in Windsor County at \$843 per month. By 2018, that cost had risen to \$1074 per month, an 11% increase after adjusting for inflation. In order for a renter in Bethel to afford rent for a two-bedroom apartment at this rate, in 2018 he/she would have needed a household income of roughly \$42,960 annually. Given that the median adjusted gross income among tax returns filed in Bethel in 2016 was \$36,086 (Vermont Dept. of Taxes), it is likely that a substantial percentage of renters in the community find it difficult to afford rental housing. Some respondents to the 2018 Town survey commented that providing affordable housing is a major challenge facing 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. According to data published by the Vermont Department of Taxes, the median home sale price for a residential property under 6 acres in Bethel was \$90,500 in 2010 and \$180,250 in 2018, a 73% increase after adjusting for inflation.

In its 2017 *East Central Vermont Housing Needs* analysis, the Vermont Housing Finance Agency (VHFA) reported that approximately 15% of households in Windsor and Orange Counties are severely cost burdened (i.e., housing costs more than 50% of household income). The 2015 *Vermont Housing Needs Assessment* found that 48% of renter households and 34% of home-owning households in Windsor County had unaffordable housing costs (i.e., more than 30% of household income).

Bethel, like many communities, has experienced a trend toward fewer home occupants. This trend is unlikely to be reversed; the 2015 *Vermont Housing Needs Assessment* projected that between 2015 and 2020, the number of households in Windsor County would grow faster than the population. This trend results in an increased demand for housing. Seniors, single-person households, and other special populations are oftentimes in need of special types of housing including that which is affordable, close to services and other destinations, and accessible by transit. The construction of accessory dwelling units is an important strategy for expanding the number of housing units that are supportive and accessible for seniors and people with disabilities.

Another barrier to affordable housing is the age of homes in Bethel. Vermont's housing stock is among the oldest in the United States. Sixty-eight percent (68%) of the homes in Windsor County were built before 1980, when technology was less energy efficient, housing codes were more lax, and the use of lead-based paint was widespread (American Community Survey, 2013-2017). The 2015 *Vermont Housing Needs Assessment* estimated that 75% of renter-occupied units and 66% of owner-occupied units in Windsor County contained lead paint. Age of housing impacts the cost of maintaining units, protecting the health and safety of all residents, and ensuring accessibility for Vermonters with different abilities.

The location of housing plays an important factor in housing affordability. Living near employment or other daily destinations can reduce driving costs substantially, making it easier for households to make their rent or mortgage payments. 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, to reduce energy needs, and to lower the overall cost of living, the community encourages multi-family housing to be developed within or adjacent to the village center in areas served by infrastructure.

## D. Senior 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 market for affordable housing. Expanding healthcare costs may leave seniors with even less money to spend on housing.

<b>Nursing and Residential Care Beds 2018</b>			
	<b>Nursing Care (II)</b>	<b>Residential Care (III)</b>	<b>Assisted Living Residences</b>
Barnard	0	0	0
Bethel	0	0	0
Randolph	30	18	0
Rochester	0	0	0
Stockbridge	0	0	0

13 - Nursing and Residential Care Beds, 2018 (Source: VT Dept. of Disabilities, Aging & Independent Living)

As seniors (citizens aged 65 or older) become less comfortable with the tasks involved in managing their own home, they often turn to some sort of senior 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 13 indicates that there are no options in Bethel and very few in the surrounding area for this type of care. Senior 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.

## E. Accessible Housing

The challenges faced by people with disabilities in rural communities, such as Bethel, are heightened due to the overall shortage of affordable, safe, accessible housing for individuals with disabilities. The average monthly rent in our region is roughly 150% of the average SSI payment received by people with disabilities. Many individuals with disabilities require residences that are wheelchair accessible, have wider doorways, accessible bathrooms, and lower kitchen surfaces. Bethel residents in need of accessible housing are forced to move away from their community or remain homebound. This is a statewide problem, not just a local issue.

## F. Goals, Policies and Recommendations

**Goal 1:** To promote sufficient safe, healthy, energy-efficient, accessible, and affordable housing for present and future Bethel residents.

**Policy a:** It is the policy of the Town to allow for growth of housing for all income levels, age groups, and ability levels, 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.

**Recommendation a.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.

**Recommendation a.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.

**Recommendation a.3:** The Town should encourage compliance with the state's Residential Building Energy Standards (RBES) for new construction by educating residents about those standards and the need to file appropriate compliance certification (RBES Certificate or Owner/Builder Disclosure Statement) with the Town Clerk. The Town should also work with non-profits and others to improve energy efficiency in existing homes to reduce long-term costs and energy needs.

**Policy b:** It is the policy of the Town that public funds in the form of state or federal subsidies may be necessary to preserve maintenance of or access to accessible and affordable housing. Where such projects involve public funds, they should only be encouraged when these investments result in developments which are accessible and affordable on a long-term basis and when a clear public benefit to the community can be demonstrated.

**Recommendation b.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.

**Policy c:** It is the policy of the Town to promote mixed-income housing by encouraging the development of accessory dwelling units, multifamily housing, and manufactured housing (including mobile homes) in locations similar to where single-family housing is allowed.

**Recommendation c.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.

**Recommendation c.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.

**Recommendation c.3:** The Town should encourage compliance with the state's Residential Building Energy Standards (RBES) for new construction by educating residents about those standards and the need to file appropriate compliance certification (RBES Certificate or Owner/Builder Disclosure Statement) with the Town Clerk. The Town should also work with non-profits and others to improve energy efficiency in existing homes to reduce long-term costs and energy needs.

**Goal 2:** To encourage innovative planning, design, location, and construction of residential housing that minimizes the cost, energy consumption, and environmental impacts of housing.

**Policy d:** 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.

**Recommendation d.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.

**Recommendation d.2:** The Town should work with the Two Rivers-Ottauquechee Regional Commission to evaluate Bethel’s role in supplying the region’s housing stock by assessing its capacity for growth.

**Recommendation d.3:** The Town should encourage compliance with the state’s Residential Building Energy Standards (RBES) for new construction by educating residents about those standards and the need to file appropriate compliance certification (RBES Certificate or Owner/Builder Disclosure Statement) with the Town Clerk. The Town should also work with non-profits and others to improve energy efficiency in existing homes to reduce long-term costs and energy needs.

**Goal 3:** To encourage the preservation of historic structures in ways that serve housing needs.

**Policy e:** It is the policy of the Town that priority should be given to the preservation and improvement of housing already in existence.

**Recommendation e.1:** The Town should work with non-profits and others to improve energy efficiency in existing homes to reduce long-term costs and energy needs.

**Recommendation e.2:** The Town should encourage residents and business owners to apply for historic-preservation grants.

**Goal 4:** To provide for housing in the village center and hamlets that utilizes public sewer and water where available and enables living within walking distance of goods, services, and jobs.

**Policy d:** 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.

**Recommendation d.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.

**Recommendation d.2:** The Town should work with the Two Rivers-Ottauquechee Regional Commission to evaluate Bethel’s role in supplying the region’s housing stock by assessing its capacity for growth.

**Recommendation d.3:** The Town should encourage compliance with the state’s Residential Building Energy Standards (RBES) for new construction by educating residents about those standards and the need to file appropriate compliance certification (RBES Certificate or Owner/Builder Disclosure Statement) with the Town Clerk. The Town should also work with non-profits and others to improve energy efficiency in existing homes to reduce long-term costs and energy needs.

## V. Education

### A. Educational Facilities

Before the 2018-2019 school year, Bethel students attended classes in a single building located on a 38-acre parcel, one-half mile northwest of the village center. The elementary and junior/senior high school were physically separated within the building, but shared some facilities. 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 housed fifteen classrooms, including an art room and computer labs. The portion of the facility used for the Bethel Elementary School has an area of 25,000 square feet, and was constructed in 1971.

In 2018, the Bethel School District merged with South Royalton to form the White River Valley Unified School District, in accordance with Act 46. The district is a member of the White River Valley Supervisory Union, which also serves the communities of Chelsea, Rochester, Sharon, Stockbridge, Strafford, and Tunbridge. The goal for the consolidation was to create more sustainable and efficient school governance structures and improve access to quality education. The school facilities in Bethel now serve students in Pre-Kindergarten through 8th grade. Bethel residents have the choice of sending their children to the Bethel campus or Royalton campus for Pre-Kindergarten through 5<sup>th</sup> grade. High school students (9<sup>th</sup> through 12<sup>th</sup> grade) study at the Royalton campus.

Following a 1995 facilities study, the School board has diligently completed a number of infrastructure improvement projects for the Bethel campus, including the following:

- A new roof was put on the elementary school in 1999, and 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 intercom system was installed in 2008;
- The 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 the high school was built in 1957 and the elementary school in 1971, 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.
- 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;
- The parking lot was repaved in 2013.
- After the merger in 2018, the granite school sign was replaced with an electronic sign, the gym

was painted, furniture was replaced, and new equipment was purchased for technology education classes.

## B. Student Enrollment

Numbers of students in school districts are reported annually to the Vermont Agency of Education. Figure 14 reports two measures of student participation in Pre-Kindergarten and Early Education through 12<sup>th</sup> grade. Average daily membership (ADM) reflects the number of students who lived in the Bethel School District and attended the district’s schools, while enrollment is a count of all students enrolled as of October 1<sup>st</sup> of a given school year, regardless of student residency.

School Year	ADM		Enrollment	
	Elementary	Whitcomb Jr-Sr High	Elementary	Whitcomb Jr-Sr High
2017-2018	162	91	162	94
2016-2017	162	101	163	111
2015-2016	163	112	174	113
2014-2015	167	120	180	126
2013-2014	167	121	177	129
2012-2013	152	118	171	124
2011-2012	147	119	137	129
2010-2011	152	106	151	117

14: Average Daily Membership (ADM) and Enrollment 2010-2018  
(Source: VT Agency of Education)

Bethel Elementary saw slight growth in its population between 2010 and 2018, while attendance of Whitcomb Jr.-Sr. High School declined. This indicates that students opted to attend other schools after elementary school, switched to homeschooling, or their families left Bethel altogether. In the 2018-2019 school year, 334 elementary students (including Pre-Kindergarten) were enrolled in the White River Valley Unified School District, with an ADM of 335. Nearly half of those students were at the Bethel campus. The middle school (located in Bethel) had an enrollment and an ADM of 120. The high school (located in Royalton) had an enrollment of 195 and an ADM of 193.

## C. Cost of Education

Education costs are generally the second-largest expense paid by the taxpayers (transportation is the largest) each year.

District Name	Equalized Pupils	FY 2017 Education Spending / Equalized Pupil	FY 2017 Homestead Tax Rate
Cabot	181.25	\$16,796.63	1.7485
<b>Bethel</b>	<b>283.98</b>	<b>\$16,609.78</b>	<b>1.7122</b>
Craftsbury	154.57	\$16,260.01	1.6761
Springfield	1,325.17	\$16,229.69	1.6730
Chelsea	173.14	\$16,016.24	1.6736
Rochester	133.71	\$15,558.45	1.6038
Proctor	288.59	\$15,464.46	1.5941
Arlington	380.07	\$15,294.09	1.5766
Hartford	1,456.31	\$15,084.18	1.5549
Danville	317.65	\$15,083.71	1.5754
South Burlington	2,420.12	\$15,051.93	1.5516
Montpelier	1,030.46	\$15,020.53	1.5484
Poultney	401.85	\$14,793.33	1.5249
Royalton	332.09	\$14,756.90	1.5212
Northfield	585.58	\$14,631.33	1.5082
Stowe	715.63	\$14,566.15	1.5015
Rutland City	2,218.03	\$14,308.43	1.4749
West Rutland	329.75	\$14,209.29	1.4647
Burlington	4,124.30	\$14,133.35	1.4569
Milton	1,615.45	\$14,083.29	1.4517

15 - Spending Per Pupil and Homestead Tax Rates in K-12 Districts, FY 2017 (Source: VT Agency of Education)

The Bethel School District Board attempted to act conservatively with regard to budgeting, cutting costs by cutting staff. Despite these efforts, a Fiscal Year 2017 comparison of Vermont's 28 school districts operating Kindergarten through Grade 12 public schools indicated that Bethel's education spending per equalized pupil and its homestead tax rate ranked 2<sup>nd</sup> highest. Over the past decade, Town residents have indicated growing concern over the rising cost of education.

## D. Child care

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

- **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 of children served is based on indoor and outdoor square footage, the number of qualified staff, and local zoning regulations.

A Licensed program must be compliant with Vermont Division of Fire Safety rules and applicable water and wastewater system regulations. Types of licensed programs include: child care centers, afterschool programs, family homes serving more children than permitted for a registered provider, and non-recurring care programs.

Child care Providers by Town (2019)		
	Registered	Licensed
Bethel	1	2
Randolph	2	5
Rochester	0	2
Royalton	1	3
Stockbridge	1	2

16: Child care providers by type and town 2019  
(Source: VT Bright Futures)

There are currently only two licensed child care services in Bethel (White River Valley Supervisory Union's One Planet and Bethel Elementary Preschool) and one registered family child care home. The Bethel Elementary Preschool offers free, full-day services for children aged 4, and 10 hours per week for children aged 3. Most residents currently arrange for care with relatives or take their children to child care 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. Since 2014, Bethel University has provided people of all ages with a platform to share knowledge through informal, community-taught, and tuition-free courses during the month of March each year. Additionally, Bethel community members frequently offer classes through their small businesses or community groups. More formal adult education opportunities are provided by schools located in nearby towns:

- 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. In the past, RTCC has offered adult education courses ranging from the traditional tech center focuses of mechanical and woodworking, to computer technology,

small business management, bookkeeping, as well as arts, crafts, and languages. The program is currently on hiatus.

- Center for Cartoon Studies (CCS) – Located in White River Junction, CCS offers a two-year Master of Fine Arts Degree program focused on creation of comics and graphic novels.
- Norwich University (NU) – A private military college situated in Northfield, Norwich University offers a wide array of undergraduate degrees and 14 master’s degree programs. Some undergraduate coursework and most master’s degrees can be completed online.
- Vermont Law School (VLS) – Located in South Royalton, VLS offers Juris Doctor (JD) degrees, master’s degrees, and post-JD degrees. Curriculum is focused on environment, energy, agriculture, and criminal/restorative justice. Students can choose accelerated or extended timelines for degree completion, as well as distance learning opportunities.
- Community College of Vermont (CCV) – Several CCV campuses are located in the nearby communities of Rutland, White River Junction, and Montpelier. There are also online learning options. Students can pursue Associate of Arts degrees, Associate of Science degrees, or a variety of professional certificates.

## F. Goals, Policies, and Recommendations

**Goal 1:** To encourage the creation of additional safe and affordable child care facilities that meet the established needs of residents in Bethel.

**Policy a:** It is the policy of the Town to support the private development of additional facilities to meet the child care needs of its residents and may assist with seeking funding to develop these facilities.

**Recommendation a.1:** The Town will endeavor to be responsive to individuals seeking to establish themselves as childcare providers, and to the extent that it is able, it will assist them in overcoming barriers toward licensing and registration.

**Policy b:** It is the policy of the Town to support private sector efforts to seek funding to assist with the development of child care infrastructure and to ensure that no barriers to increasing child care capacity are created by future changes in zoning regulations.

**Recommendation b.1:** The Town will endeavor to be responsive to individuals seeking to establish themselves as childcare providers, and to the extent that it is able, it will assist them in overcoming barriers toward licensing and registration.

**Policy c:** It is the policy of the Town to promote business assistance and workforce development for child care providers.

**Recommendation c.1:** The Town should provide links on the Town’s website to the Department of Children and Family Bright Futures Child Care Information System.

**Recommendation c.2:** The Town should remain engaged through regular communication with local child care providers for ongoing assessment of needs and resources that the Town could provide.

**Goal 2:** To enable the best opportunity to educate our students at the most equitable cost to the Town's taxpayers.

**Policy d:** 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 burden on the capacity of tax payers to finance educational services.

**Recommendation d.1:** The Town will seek to consider the financial impact on the educational system of all large-scale development decisions.

**Policy e:** It is the policy of the Town to support continued efforts by Bethel Schools to reduce their energy use and supply electric and heating needs from renewable energy sources.

**Recommendation e.1:** The Town should support Bethel schools in accessing state assistance to plan and implement energy projects, through the School Energy Management Program.

**Goal 3:** To provide a safe and secure learning environment where quality educational opportunities are provided to all students.

**Policy f:** Continue to support quality teachers and resources in Bethel schools.

**Recommendation f.1:** The Town will maintain regular engagement and communication with school administration and the Supervisory Union to make sure that the Town and the school are collaborating to identify needs and maximize educational opportunities.

**Goal 4:** To increase access to adult education and vocational training opportunities.

**Policy g:** The Town will make town facilities available for adult education.

**Recommendation g.1:** The Town will continue to work with local community groups on providing space and support for adult education programs.

## **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). Energy efficiency is a key consideration in utilities and facilities planning; efficiency upgrades provide significant cost savings and reduce the Town's greenhouse gas emissions.

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

State statute (24 V.S.A §4443) enables communities to create a Capital Budget and Program for the purposes of planning and investing in long-range capital planning. A capital budget outlines the capital projects that are planned to be undertaken in the near future. 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 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.

The town of Bethel's current Capital Improvement Program (CIP) guides investments in community infrastructure and equipment for fiscal years 2017 to 2022.

### **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, but the Town has identified some future needs. The latter are not addressed in the Town's 2017-2020 CIP.

The vault where Town records are secured will eventually need to be replaced. Some re-arrangement of contents can accommodate additional documents, which should allow the Town to meet its needs for at least a decade. However, the vault will not be adequate to meet long term demand. The Town has not obtained any cost estimates for a new vault. Financing will likely come from a bond, offset by grant monies.

Off-street parking is very limited. In addition, the Town Office is not energy efficient, resulting in high heating costs during the winter. The Town has prioritized energy efficiency improvements over other facility needs for the near future. The electrical system will be upgraded from a 60 amp to 100 amp service, at a cost of less than \$25,000. The Town also plans to insulate the building and replace a couple windows within the next couple years. That project doesn't yet have a cost estimate, but funding is expected to come from the Town's Capital Building Fund, supplemented by any available grants.

### **Town Garage and Highway Equipment**

The Bethel Town Garage, located just outside of the village on Sand Hill Road, houses public works equipment and does not meet current needs: the building is obsolete, too small, and code-deficient. Bethel's 2017-2020 CIP does not evaluate potential costs or financing methods for meeting these needs. In 2013, the Town obtained cost estimates for 2 alternative improvement projects: demolishing and rebuilding the garage (\$925,106) or renovating and expanding the existing garage building (\$672,789). At the time of the writing of this Plan, the Town is planning to hire an architect to assist with outlining present and future needs, permit compliance, pricing, and construction documents. Improvements may be undertaken in about 5 years' time, with funding from the Capital Building fund, grants, and a possible loan.

The Town owns an array of highway equipment, including various trucks, a backhoe, a grader, and a trailer. Two 2013 Freightliner tandem plow trucks will soon need to be replaced, using funding allocated through the Highway Equipment Fund. One will be replaced in Fiscal Year 2021 (\$210,771), the other in Fiscal Year 2023 (\$225,000). A 2015 Ford F550 will be replaced in Fiscal Year 2022, at the cost of \$100,000 from the Highway Equipment Fund. Additional project expenditures include:

- Replace 2017 Ford F-350: \$45,000 in Fiscal Year 2026
- Replace 2017 International: \$230,000 in Fiscal Year 2026
- Replace 2016 JD Backhoe: \$122,100 in Fiscal Year 2026
- Replace 2007 JD Grader: \$410,000 in Fiscal Year 2027
- Replace trailer: \$3,000 in Fiscal Year 2028
- Replace 2009 Komatsu Loader: \$142,000 in Fiscal Year 2030
- Replace 2013 Mobark Chipper: \$8,000 in Fiscal Year 2033

The Town also has fuel storage tanks and a salt-storage shed located at the Garage. These facilities are adequate for the present level of service.

### **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 resources for the community, including free Wi-Fi and computers for public use. The library adequately meets 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 394 gallons per minute and 568,000 gallons per day. Water is stored in two 250,000 gallon reservoirs known respectively as the Boulevard Reservoir and the Gaiko Reservoir. 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 GW Plastics. This construction project included installation of new water mains connecting the reservoir to the well located across the road from the school. The Boulevard storage tank was inspected in the fall of 2019 to verify the structural integrity of the concrete construction, and some deterioration was found. The tank will need to be polycoat sealed, at a cost of about \$130,000. A scope of work was developed and is slated to be implemented in the summer of 2021. Funding for this project is part of a \$2.8 million package that the Town received from the state's Revolving Loan Fund. The Gaiko storage tank was inspected in August 2016, and was found to be in good shape; no major work is slated for the near future.

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. 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 Map 3 (Utilities, Facilities, and Education).

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. However, the Town needs 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. Most of the aforementioned \$2.8 million funding package will be dedicated to Main Street improvements. Project work will begin in the spring of 2020 and is expected to finish by the end of the year. The Main Street project is slated to run from the intersection of Route 107 & Route 12 to 69 North Main Street. The following side streets are included: Clifford, Cushing, Densmore, Avon Drive, and Livery Stable. The project also includes upgrades in telecommunications to both reservoirs and a sampling station to be located at 224 Pleasant Street.

Many of the historic downtown structures have not had sprinkler systems installed, and future rehabilitation efforts will need appropriately sized and accessible mains. As the buildings are being rehabilitated, sprinkler systems are being installed. As part of the aforementioned Main Street project, the main service line will be expanded to 8", which should facilitate an adequate water supply for future needs in the downtown. 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 in 2019 was 177,524.7 gallons per day. Approximately 352 households are connected to the system and use 124,887 gallons per day or 70.35% 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. The Town has determined that the financial benefits of installing meters would not be outweighed by the cost to purchase and install the water meters. Rates are calculated based on number of gallons pumped annually, annual operating costs, and the number of Reserved Equivalent Units.

The Town continues to maintain its system in accordance with state permit requirements. 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. The Town's 2017-2020 CIP notes that no significant capital improvements are required for the wastewater system.

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 now contracts out transporting its bio-solids to the city of Montpelier for final disposal.

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 it closed in 1993 and was capped in accordance with State closure and monitoring standards. The current landfill certification is updated through 2020. Recertification by the state happens every 2 years.

In 1993, the two Towns designed and constructed a new facility for this site, which is in operation today as the White River Alliance. The facility serves the founding towns of Bethel and Royalton, as well as the following towns by contractual arrangement: Barnard, Granville, Hancock, Pittsfield, Rochester, and Stockbridge. It aggregates and ships municipal solid waste, recyclables, and a variety of hazardous waste materials. The facility is certified by the state through 2024. The most recent improvements to the facility were completed using revenue generated in-house. These include:

- Purchase of a new excavator and a new bucket loader (2017)
- Replacement of the old lighting system with LED lights (in the transfer station and tip station), which will conserve energy and cut costs (2019)
- Repair of the tip station floor (2019)
- Purchase of new compactor for recycling (2019)

- Purchase of new dumpster (2019)
- Purchase of plow for bucket loader (2019)

The facility accepts bulk waste, recyclables, and organic waste. In conjunction with neighboring Towns comprising the White River Alliance, the Transfer Station hosts a household hazardous waste collection 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 Selectboards of Bethel and Royalton. Oversight was reorganized and a joint Board of Directors appointed from interested residents of Bethel and Royalton. This Board reports to the Selectboards of the governing Towns, and has responsibility for managing personnel, operations, certifications, grant applications and management, and accounting.

The White River Alliance's Solid Waste Implementation Plan (SWIP) was adopted and approved in May 2016. The Town of Bethel 2017-2020 CIP does not address the needs of the Transfer Station facility. Business has grown steadily, and the facility plans to hire additional staff within the next couple years in order to meet those growing needs. Salary costs will likely increase by about \$80,000. The facility will have need of additional equipment in the near future, but most of those needs are still undefined. By 2029, the bucket loader and excavator will need to be replaced (roughly \$250,000 total), as will the LED lights (no cost estimate available). All these future costs will likely be financed through generated revenue. The facility also anticipates a future need for paving between the transfer station and the tip station, though costs and financing for that improvement project have not yet been determined.

## **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 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, which appoints a Cemetery Foreman.

Recently implemented projects include a new traffic routing for the newest section of Fairview Cemetery and an improved record-keeping/management system. At the time of this Plan's writing, a stone wall is being repaired at Cherry Hill cemetery. The Selectboard recognizes the need for acquisition of land for additional cemetery space, but no plans have yet been made.

## **F. 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 on Sand Hill, giving residents who use AT&T as their carrier excellent coverage within range of the tower. In 2019, Verizon co-located a transmitter on the new tower, greatly improving Verizon users' coverage. The more rural areas of Bethel are not as well served by any cellular communications. 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 Consolidated 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. Consolidated has a switching station in Bethel Village, which gives DSL access to residents on Routes 12 and 107 and many other locations in the Town.
- 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** - East Central Vermont Community Fiber (EC Fiber) Network has developed a long-term plan to extend fiber optic cable to towns in the Upper Valley and surrounding areas, including Bethel. 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's service was first extended to the village center and Route 12 in 2011. Since then, service has expanded to include Christian Hill Road, Lilliesville, Lympus, Dartt Hill, and Campbell Road. In 2019, EC Fiber had 24 miles of fiber and 83 connected customers in Bethel, with plans for expansion.

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. Increasing the availability of high-speed Internet in Town would enable more telecommuting and also increase the desirability of homes for new families.

## **G. Electric Utilities**

Electricity is supplied in Bethel by Green Mountain Power. There are two electrical transmission lines that cross the northeastern and southern quadrants of the Town, roughly following VT-12 and VT-107. Three-phase power lines run along VT-12 and VT-107 through the Village area, as well as along parts of Christian Hill Road and Sanders Road. There is one substation in Town, located at the Bethel Mills hydroelectric power generation facility in the Village. Another substation is located just over the Town line in Royalton, on VT-107.

## **H. 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 damages during tropical storm Irene in August of 2011 resulted in the facility's closure for 5 years. The facility has shifted from its original mission of Atlantic salmon restoration in the Connecticut River to focus instead on restoring Atlantic salmon and lake trout populations to Lake Champlain, Lake Erie, and Lake Ontario.

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 the Hatchery or the Ansel Pond property.

The Town recently converted street lights in the Village Center to use more energy efficient bulbs.

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

**Goal 1:** To provide quality public services and public facilities that meet the needs of the community without creating an undue burden on taxpayers.

**Policy a:** It is the policy of the Town to provide residents with safe, efficient, 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.

**Recommendation a.1:** The Selectboard should work with the Planning Commission to find ways to enhance cellular coverage in Town.

**Recommendation a.2:** The Selectboard should continue to support and encourage efforts to increase affordable high-speed internet coverage within Bethel, including the East Central Vermont Fiber Project.

**Recommendation a.3:** The Town should continue to utilize the municipal web site to improve communication and provide residents with access to municipal data.

**Recommendation a.4:** The Town should make meeting the requirements of state solid waste regulations a priority, focusing on cost-effective methods of compliance.

**Recommendation a.5:** 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.

**Policy b:** 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.

**Recommendation b.1:** The Town should support the Selectboard's continuing participation in Public Service Board reviews of telecommunications facilities.

**Policy c:** 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.

**Recommendation c.1:** The Selectboard should regularly update its Capital Improvement Program to guide future investments in infrastructure.

**Policy d:** It is the policy of the Town to ensure that development does not exceed the community's ability to provide adequate public facilities.

**Recommendation d.1:** The Town should continue to consider relevant factors related to this policy in development decisions.

**Policy e:** It is the policy of the Town to implement cost-effective energy savings measures on Town buildings and other facilities.

**Recommendation e.1:** The Town should take steps to assess the energy efficiency of vehicles and the structures and internal loads of Town buildings to reduce their energy use.

## **VII. Emergency Services**

### **A. 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. Firefighters respond to about seventy calls each year, of which less than 11% 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 care for the equipment. A majority of Bethel residents work outside of the community, and because of the added challenge of the many State and Federal requirements for training, it can be difficult to find volunteers. Bethel has 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 1990s. The building has undergone some recent maintenance and continues to be an inviting focal point as visitors and residents enter the village of Bethel.

#### **Equipment**

Emergency vehicles consist of a 2001 E-1 Pumper, 2000 F-550 First Response Truck, a 2013 Kenworth pumper/tanker, a 2018 Pumper/Tanker, two all-terrain vehicles, and a swift water rescue boat. They also have a mini-pumper/tanker that is jointly owned and used by the Barnard Fire Department. In 2019, the Fire Department received \$124,286 in federal grant funding ("Assistance to Firefighters Grant") to purchase 20 air packs and 25 air masks. In 2020, the Department applied to the same grant program for \$100,000 for a compressor and fill station to replenish air bottles. In 2019, the Department received a \$12,350 grant from the Vermont Department of Public Safety to purchase swift water rescue equipment. The Town of Bethel Water Department inspects and repairs all fire hydrants bi-annually, and replaces two hydrants per year.

The Fire Department anticipates the following large equipment expenditures in future:

<u>Fiscal Year</u>	<u>Equipment</u>	<u>Approximate Cost</u>	<u>Possible Funding Source(s)</u>
2025	Replace F-550 First Response Truck	\$165,000	General funds appropriated and reserved by the Town; Revenue from equipment sale
2031	Replace E-1 Pumper	\$450,000	Loan; appropriated/reserved Town funds; Revenue from equipment sale
2035	Replace rescue boat	\$7,000	Appropriated/reserved Town funds; Revenue from equipment sale
2039	Replace Load Rite Trailer and Polaris Ranger	\$22,500	Appropriated/reserved Town funds; Revenue from equipment sale
2041	Replace swift water Trailer	\$15,000	Appropriated/reserved Town funds; Revenue from equipment sale
2044	Replace Back Country Rescue Trailer	\$15,000	Appropriated/reserved Town funds; Revenue from equipment sale
2048	Replace Kenworth pumper/tanker	\$500,000	Loan; appropriated/reserved Town funds; Revenue from equipment sale

## **B. Police Protection Services**

The Town of Bethel does not have a full-time police force. Appointed constables provide limited police security, speed enforcement and traffic control services when needed. The police cruiser is currently a 2014 Ford Interceptor XPL. The Town plans to replace the Ford with another used car in Fiscal Year 2021, and expects the cost will be approximately \$12,000. The cruiser is slated to be replaced again in Fiscal Year 2025, at a cost of approximately \$16,000. If the replacement cars need equipment upgrades, there may be additional costs. There may also be a need for a new laptop within the next year (about \$800) and a new radar unit within the next few years (roughly \$2,500). The purchases will be made using appropriated/reserved Town funds, money made from the sale of old vehicles when they are replaced, and possible grant funds.

Constables also function as Dog Warden, working with the Bethel Country 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.

At the time of the writing of this plan, only the 1<sup>st</sup> Constable position is filled in Bethel. The extensive training and expensive certification costs make recruitment and retention of individuals willing to serve in this capacity difficult.

### **C. Emergency Medical Services**

Emergency medical services are discussed in the Health chapter of this plan.

### **D. Emergency Management Planning**

The impact of expected, but unpredictable natural and human-caused hazard 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 alike. 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 hazard event. Preparing emergency plans for home and business is also a preparedness activity.
- **Response** is the initial emergency response to save life and property during and immediately after the hazard event, and is initiated by local emergency crews, 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 and communication with 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 further if a disaster is severe or widespread. Bethel’s experience with Tropical Storm Irene showed what assistance is available to towns requires a substantial effort at the municipal level, and that homeowners may be left to pay for their own damages without federal assistance.
- **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, then targets activities to reduce the effects of these hazards. Given that one of the largest threats in Vermont is flood related, good mitigation measures include proper road and drainage construction, as well as limiting development in flood-prone

areas. As our changing climate continues to bring stronger and more frequent weather-related hazards, risk management and mitigation will become essential for Bethel.

### **Local Emergency Management Plan**

Bethel, like every town in Vermont, maintains a Local Emergency Management Plan (LEMP). This plan contains contact information that is available to authorized users, but is not available to the public. The Selectboard continues to keep the LEMP up-to-date, and ensures that all parts of municipal government are aware of what is in the plan. This includes the Selectboard, Fire and Rescue, Road Crew, Town office personnel and Shelter coordinators.

The LEMP provides contact information for personnel, businesses and other agencies that may be needed for Bethel's response to a disaster. The Town Manager is the Town's Emergency Management Director and would be assisted by a number of people who have been identified in the LEMP. In such an event, the Emergency Management Director would activate a Municipal Emergency Operations Center to coordinate the efforts of responders, municipal officials, and residents. State assistance may be requested as needed. The Town Office is equipped with backup power so that it can function during an emergency. The LEMP is updated on a continual basis to ensure personnel and roles remain accurate.

In the event an emergency shelter is needed, the White River Unified Middle School, Bethel Campus, will be opened and managed by the Bethel Emergency Shelter committee, with support from the American Red Cross. The facility meets community needs, and no improvements are required at this time. In September of 2013, a generator was installed that is capable of operating the entire middle school building. The Town Hall may also be used as an overnight shelter. Alternative daytime shelters include Bethel White Church and St. Anthony's Catholic Church. Should additional eastern shelters be necessary, alternate locations such as the Grange Hall in East Bethel or shelters in nearby communities (e.g., South Royalton or Randolph) could be utilized.

### **Hazard Mitigation Plan**

Hazard mitigation entails actions to reduce the potential effects of a hazard event and thereby reduce the risk of disaster. For Bethel, the primary hazard is flooding. The Town's Local Hazard Mitigation Plan reviews all potential hazards and identifies mitigation strategies. There are many ways 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 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 emergency responders. The Bethel Unified Bylaw contains provisions

to ensure that development shall be designed to ensure adequate access for emergency services. Fire ponds and/or dry hydrants may be required when determined necessary for water supply by the Bethel Fire Department.

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

**Goal 1:** To ensure the protection and safety of the citizens of Bethel against crime and violations of law.

**Policy a:** It is the policy of the Town to support efforts to decrease response times for emergency services.

**Recommendation a.1:** Town officials who are part of Bethel's emergency management team should receive adequate training in the Incident Command System (ICS).

**Policy b:** It is the policy of the town to continue to ensure that critical public safety and emergency response positions are adequately staffed and resourced to meet the needs of Bethel residents.

**Recommendation b.1:** The Selectboard should update the Local Emergency Management Plan at least once a year, or when key emergency management personnel change.

**Goal 2:** To maintain appropriate fire protection service.

**Policy b:** It is the policy of the town to continue to ensure that critical public safety and emergency response positions are adequately staffed and resourced to meet the needs of Bethel residents.

**Recommendation b.1:** The Selectboard should update the Local Emergency Management Plan at least once a year, or when key emergency management personnel change.

**Policy c:** 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.

**Recommendation c.1:** The Development Review Board should consider ease of emergency access in evaluating proposed developments and require turnaround areas be installed wherever necessary.

**Goal 3:** To proactively plan adaptation and mitigation strategies for the future effects of climate change.

**Policy d:** It is the policy of the Town that the Selectboard maintain an up-to-date Local Emergency Management Plan (LEMP).

**Recommendation d.1:** The Selectboard should designate an annual review of the LEMP by whatever process it deems appropriate.

**Policy e:** It is the policy of the Town to work to properly plan for hazard events.

**Recommendation e.1:** The Selectboard should continue to update its Hazard Mitigation Plan with assistance as needed from the Two Rivers-Ottawaquechee Regional Commission.

**Recommendation e.2:** The town may develop a climate change risk management plan along with the hazard mitigation plan.

**Recommendation e.3:** The Town should provide information about emergency preparedness on its website.

**Policy f:** It is the policy of the Town to ensure the rate of development does not exceed the ability of the Town and the area to provide adequate emergency services.

**Recommendation f.1:** The Development Review Board should consider the ability of current emergency service providers to serve any new developments.

## **VIII. Community Health and Wellness**

### **A. Introduction**

The health and safety of Bethel residents is of the utmost importance. The Town's vision for health, wellness, and safety is that all citizens in the community have access to both healthy and nutritious food and high-quality, affordable, physical and mental health services through local providers; that employers and individuals support healthy lifestyles and environments; that the well-being of children is a central focus; that prevention, personal wellness, and reduction of pain are strong areas of focus from birth to death; that domestic violence and substance misuse are unacceptable in our families and community; that the elderly and disabled citizens have adequate health and wellness support to remain in their homes and remain integrated in their community; and that all residents have access to prompt and effective services in the event of an emergency.

The Town of Bethel seeks to elevate the vitality of its citizens by including a comprehensive element dedicated to health and wellness in its Town Plan. Although the Community Health and Wellness Element is not a state-mandated element, the Town believes that its inclusion in the Plan ensures that public health and wellness remains a top Town priority.

Many other parts of this Town Plan also have an impact on health, including protection of natural resources, promotion of active transportation options, and support for local and healthy food.

### **B. Population Profile**

The health challenges facing the Town of Bethel are similar to those facing many other Vermont communities. As discussed in the Demographics chapter of this Plan, Bethel has an aging population, which creates a need for specific services and amenities in Town. Health data aren't typically available by town, but the state does publish county-level data. Windsor County is roughly on par with statewide figures for the following health concerns:

<u>Health Metric</u>	<u>Adults</u>	<u>Adolescents</u>
Percent of population not getting the recommended amount of aerobic exercise	<b>38% not meeting weekly recommendations</b> <i>(Source Data: 2013, 2015)</i>	<b>75% not meeting daily recommendations</b> <i>(Source data: 2015)</i>
Percent of population not eating at least 5 fruits or vegetables per day	<b>80%</b> <i>(Source Data: 2013, 2015)</i>	<b>77%</b> <i>(Source data: 2015)</i>
Percent of population that smokes cigarettes	<b>19%</b> <i>(Source Data: 2015-2016)</i>	<b>10%</b> <i>(Source data: 2015)</i>
Percent of individuals who are obese	<b>28% of Adults aged 20+</b> <i>(Source Data: 2015-2016)</i>	<b>14%</b> <i>(Source data: 2015)</i>
Percent of adults who have ever had cancer (Source Data: 2015-2016)	<b>8%</b>	<i>Data not available</i>
Percent of adults with cardiovascular disease (Source Data: 2015-2016)	<b>10%</b>	<i>Data not available</i>
Percent of adults with diabetes (Source Data: 2015-2016)	<b>10%</b>	<i>Data not available</i>
Percent of adults with lung disease (asthma or COPD) (Source Data: 2015-2016)	<b>15%</b>	<i>Data not available</i>

**17: Health Statistics for Windsor County, 2013-2016**  
(Source: Vermont Department of Health)

**C. 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 (Bethel Health Center, operated by Gifford Health Care) 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 a tertiary care facility in Lebanon, NH. Veteran health care facilities are located in White River Junction and Rutland. The nearest alcohol and drug treatment/recovery center is the Clara Martin Center in Randolph. Opioid treatment hubs are located in West Lebanon (New Hampshire) and in Rutland.

Gifford Health Care has developed an assisted living facility in nearby Randolph Center, called Morgan Orchards. This medical facility may be expanded in future.

## **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, Hancock, Pittsfield, 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. WRVA's Board of Directors is comprised of representatives from Gifford Medical Center and from each town within WRVA's service area.

### **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. Town Health Officers**

Under state law, every town must have a Town Health Officer who is nominated by the Selectboard and appointed by the Vermont Commissioner of Health. The Town Health Officer's duties include investigating potential public health hazards and taking actions to prevent, remove, or destroy any such hazards, including enforcing health laws, regulations, and permit conditions. The Town of Bethel is served by a Town Health Officer and a Deputy Health Officer.

## **F. Health Impact Assessment**

A Health Impact Assessment (HIA) is a process that can help communities, decision makers, and practitioners make choices that improve public health through community design. An HIA evaluates the potential health effects of a plan, project, or policy before it is built or implemented. It highlights potential positive and negative public health impacts and considerations for decisions and actions that fall outside traditional public health arenas, such as transportation and land use planning. An HIA provides practical recommendations to increase positive health effects and minimize negative health effects. To date, the Town has not undertaken any HIAs, but is interested in pursuing state support to use this tool in future.

## **G. Environmental Quality**

Safe indoor and outdoor environments are fundamental to a healthy community. We can reduce our risk of disease and improve well-being by developing and enforcing environmental regulations to protect our land, air, and water, and by ensuring that our homes, workplaces, and other built environments are free from contaminants (e.g. secondhand smoke, carbon monoxide, allergens, lead, and toxic chemicals) and safety hazards.

In Bethel, outdoor environmental quality is threatened by agricultural runoff, which devastates aquatic ecosystems and gradually depletes cropland health and productivity. Climate change, the global aggregate impact of greenhouse gas emissions, is also stressing the natural systems on which we all rely. Climate change poses numerous human health threats in Vermont, including more frequent extreme heat events, increased incidence of tick- and mosquito-borne illnesses, and an extended pollen allergy season.

Housing is the best-known predictor of health. Lead exposure can lead to significant abnormalities in cognitive development; asbestos and radon exposure can increase the chance of developing lung cancer; uncontrolled moisture, mold, pests, and other triggers cause or exacerbate asthma and other respiratory dysfunction; and inadequate heating systems can lead to use of inappropriate heating sources potentially resulting in fires or carbon monoxide poisoning. The risk of falls for older adults is of particular concern in homes with uneven floors, poorly maintained or narrow stairs, or other potentially hazardous structural features.

The aforementioned health hazards are most commonly found in older housing stock, such as is found in Bethel. According to the 2015 *Vermont Housing Needs Assessment*, 75% of renter-occupied units and 66% of owner-occupied units in Windsor County contained lead paint. From 2013 to 2016 in Windsor County, the percent of children (tested before age 3) who had elevated blood lead levels was slightly higher than the statewide percentage. In 2016, 3% of tested children in Windsor County were affected, compared to 2% statewide (Vermont Department of Health, 2013-2016).

Radon data are limited for the Town of Bethel. Of the 34 residences tested between 1994 and 2016, 5.9% had elevated radon levels (Vermont Department of Health & Vermont Department of Environmental Conservation, 2016).

Bethel residents can make their homes healthier by accessing energy improvement and home repair services provided by organizations like Southeastern Vermont Community Action or Efficiency Vermont.

## **H. Healthy Lifestyles**

To promote healthy lifestyles in our community, it is necessary to understand the ways in which the Town's infrastructure, services, and social networks work together to support or restrict our individual and household lifestyle choices.

## Healthy Food Access

Food access is not simply a health issue but also a community development and equity issue. For this reason, access to healthy, affordable, and culturally appropriate food is a key component not only in a healthy, sustainable local food system, but also in a healthy, sustainable community. The Bethel Farmer's Market, which operates once a week from June through October, is an important source of healthy and local food. Bethel residents can also access local food by subscribing with community supported agriculture operations (CSAs) in the region. Senior residents of Bethel can obtain healthy, prepared meals from the South Royalton Area Senior Citizen Center (via home delivery or at meal sites in South Strafford and Royalton). The elementary and middle school lunch program strives to serve locally-sourced and healthy food, including produce grown on-site in the school greenhouse. The Bethel Food Shelf is a resource for those facing income and food security issues; fresh and shelf stable foods are available for Bethel, Barnard, Stockbridge and Pittsfield residents.

## Substance Misuse Prevention

Town-level data are not available for substance misuse, but county-level data help to paint a picture of the challenges facing local communities. In its 2018 *Regional Prevention Partnerships Windsor County Profile*, the Vermont Department of Health reports:

- In 2017, 15% of adolescents in Windsor County reported that they binge drank in the past 30 days. In 2016, 41% of young adults (ages 18-25) in the County reported that they binge drank in the past 30 days.
- In 2017, 5% of adolescents reported having misused a prescription drug in the past 30 days. In 2016, 9% of young adults reported non-medical use of prescription pain relievers within the past year.
- In 2017, 16% of adolescents in the County reported having driven under the influence of marijuana in the past 30 days. In 2016, 14% of young adults in the County reported having done so.
- In 2017, 10% of adolescents in the County reported having driven under the influence of alcohol in the past 30 days. In 2016, 4% of young adults in the County reported having done so.

Substance misuse estimates are not available by county for older adults. In 2016, 23% of Vermont adults aged 65 or older reported drinking alcohol in quantities that pose health risks (Vermont Department of Health, 2016).

Building a positive town culture and strong support networks that promote healthy behaviors can significantly reduce risky behaviors such as substance misuse. Town policies are an important mechanism for creating healthy culture because citizens, especially youth, get “messages” from what they see in their communities, thereby influencing their choices. With support from the state Department of Health, towns in Vermont are exploring potential policy and ordinance options to tackle substance misuse, for example: restricting consumption of alcohol and marijuana in public places, regulating the location and density of alcohol retail outlets, enhancing social host liability, restricting advertising and promotion of substances

of concern, and enhancing open-container regulations. Policy interventions need to be coordinated with the broader context of support services in the community, including education, counseling and peer support, substance-free community activities, law enforcement, retailer compliance training, and treatment services.

### **Active Living and Active Transportation**

As the built environment has become increasingly car-centric and our economy more service-oriented, levels of physical activity have correspondingly declined. Reduced physical activity has resulted in population weight gains. To counter these trends, it is necessary to make communities more conducive to physical activity once again, particularly active forms of transportation like walking and bicycling. Active transportation also benefits mental health and community cohesion.

Choosing active transportation options to meet daily needs or for recreation requires supportive infrastructure and land use patterns. For example, linking bicycle and pedestrian amenities with transit stops and key destinations can help encourage residents to use active modes of transportation.

Biking and walking is challenging in Bethel because many roads have narrow shoulders and blind curves. Also, bicyclists and pedestrians have concerns about traffic speeds in the Village. Through the Bethel Revitalization Initiative, the Town has experimented with potential street improvements to calm traffic in the Village and thereby create a friendlier and safer environment for bicyclists and pedestrians. The Town will continue exploring opportunities to promote more active transportation by residents. Active transportation facilities like recreational paths could also help to attract more visitors to Bethel.

### **Age-Friendly Environment**

Age-friendly environments cultivate well-being and the participation of people of all ages. Well-being can be promoted through sustainable aging in place, which involves helping older residents remain in their community, while also addressing the long-term economic, social, and health needs of both current and future generations at every age.

The heavy reliance on cars for transportation in Bethel means that senior residents who are no longer able to drive may have difficulty accessing the goods, services, and social time they need for their well-being. Ride services are available to seniors through Stagecoach and the Central Vermont Council on Aging.

Age-friendly environments are important not only for seniors but also for Bethel's youngest residents. Although children do not drive, they do walk and ride bicycles around the village. For their safety and well-being, they need walkable downtown areas with contiguous and well-marked sidewalks.

## **Social Inclusion and Sense of Community**

Social inclusion represents a vision for a “society for all” in which every individual has rights, responsibilities, and an active role to play in the community. Creating accessible and welcoming spaces and networks for people from diverse backgrounds, of diverse ages, and with varying degrees of abilities is imperative to helping create healthy communities. Bethel’s sense of community is continually evolving. The Town is fortunate to have a number of community groups and initiatives, including Bethel University and the Bethel Revitalization Initiative, that are actively working to help residents build stronger relationships, support networks, and sense of place. The new relationships being forged in the wake of the recent school merger will also shape Bethel’s sense of community in the years to come. As a community, we seek to ensure all our community members are safe, supported and thriving, regardless of their race, ethnicity, sex, gender identity, sexual orientation, age, ability or economic access. Bethel will continue to promote community groups and initiatives with a commitment to equity at the forefront.

## **Faith, Wisdom, and Spirituality**

Bethel is a place where a diverse variety of traditions, values, and spiritual practices are welcomed and honored. Residents are able to seek inner peace, meaning, purpose, connectedness, wisdom, and guidance for right action in our own ways. Faith- and values-based communities actively seek to understand and support one another. Many local churches maintain an active public presence and seek out new members through a variety of advertisements and outreach methods.

The following are some of the religious communities that are active in Bethel:

Christ Episcopal Church

Miller Memorial United Methodist Church

United Church of Bethel

St. Anthony’s Catholic Church

Faith Assembly of God

Church of the Sacred Earth

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

**Goal 1:** High-quality medical care should be available to all Bethel residents.

**Policy a:** It is the policy of the Town to support and encourage the development of local health care facilities and counseling services and help residents locate and efficiently access health care as close to home as possible.

**Recommendation a.1:** The Town will continue to work with Stagecoach and White River Ambulance to ensure residents have transportation to health and wellness services.

**Policy b:** It is the policy of the Town to support programs that improve medical services for Bethel residents.

**Recommendation b.2:** The Town should make its facilities and resources available for community health and wellness programs/services, such as health screening days.

**Policy c:** It is the policy of the Town to support the development of assisted living or other medical facilities or services dedicated to supporting seniors in Bethel.

**Recommendation c.1:** The Town should look for opportunities to support residents who wish to age in place.

**Goal 2:** To maintain appropriate ambulance service.

**Policy d:** It is the policy of the Town to support efforts to decrease response times for emergency services.

**Recommendation d.1:** The Town should continue its relationship with WRVA and other community groups.

**Goal 3:** The Town will promote health, safety and wellness for all of its residents.

**Policy e:** It is the policy of the Town to build infrastructure that will promote environmentally safe and healthy lifestyles.

**Recommendation e.1:** Town will develop infrastructure using the Health Impact Assessment process, considering environmental and healthy lifestyle impacts.

**Recommendation e.2:** The Town should support efforts to provide residents with affordable, safe, and efficient heating systems.

**Recommendation e.3:** The Town should consider accessibility when developing public spaces and recreational opportunities.

**Policy f:** It is the policy of the Town to promote healthy lifestyle choices for its residents, including but not limited to healthy food choices, prevention of substance misuse, access to physical exercise and recreation, and promotion of active transportation methods such as walking and biking.

**Recommendation f.1:** The Town should consider ordinances and other regulations prohibiting use and disposal of tobacco, tobacco substitutes, vaping products, and marijuana/cannabis on Town-owned or Town-leased property, or at outdoor events open to the public.

**Recommendation f.2:** The Town should consider establishing point-of-sale restrictions for age-restricted substances.

**Recommendation f.3:** The Town should promote use of parks and recreation facilities.

**Recommendation f.4:** The Town should continue to support healthy eating, local agriculture, and food production through ongoing support of the weekly Bethel Farmers' Market.

**Recommendation f.5:** The Town shall promote and support the efforts of the Bethel Food Shelf in assisting low income and food insecure residents with access to enough healthy and nutritious food to maintain a healthy lifestyle.

## IX. 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. Although recently we have become less dependent on the oil of other nations due to increases in US production, we are still dependent on fossil fuels for nearly every aspect of modern life. When prices of fossil fuels rise, everyday activities such as home heating and travel by car can become burdensome for the average Bethel resident. Prices have fallen from their peaks of a few years ago, but remain unstable and beyond our control. It is difficult for households and businesses to plan when faced with price volatility.

While 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 energy and the need for additional roads can be reduced. Appropriate siting and design of buildings, landscaping, and the selection of energy systems can greatly reduce energy use.

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 economically available supply. Although new technologies have enabled energy providers to extract oil from locations that were previously impossible to reach, there is a finite amount of oil, which means that Bethel, like the rest of the world, should prepare for a much less oil-dependent future.

In addition to the economic reasons to start shifting away from fossil fuels, the use of such fuels and their contribution to climate change is undisputed in any serious way. If we want to have a climate that resembles what we think of as Vermont, then we have to start drastically reducing the emissions from fossil fuels. Even now, our past emissions have led to warmer winters, less snow, and more intense storms. Due to the endurance of greenhouse gases in the atmosphere and the lag time for the warming effect of these to be fully realized, we can expect additional climate change to occur for the foreseeable future. Prudent risk management dictates that we avoid worsening the situation.

### B. Energy Demands

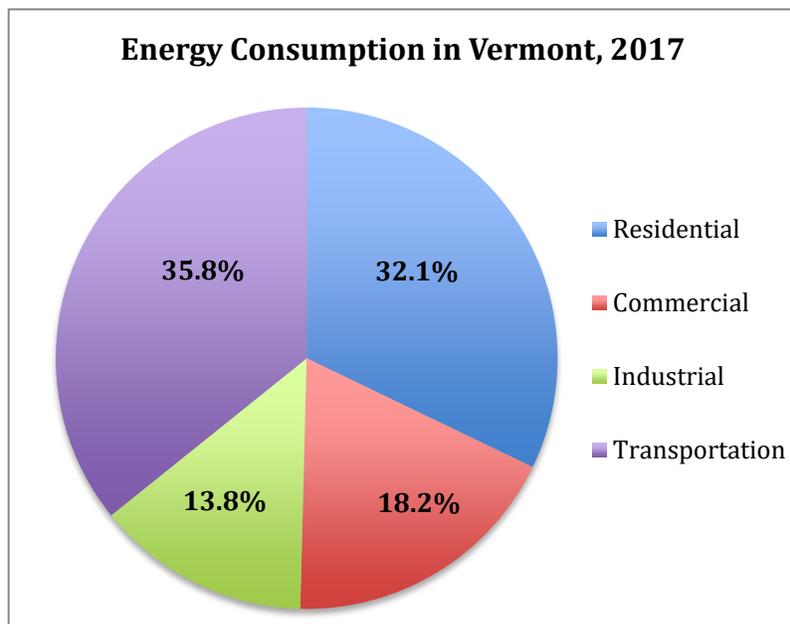
“Energy” as used in this Plan and the state's Comprehensive Energy Plan (CEP) is *not* the same as electricity. It is **all** forms of energy used by people (except food). This is commonly broken down into four sectors: commercial (this involves running machinery, heating and lighting), residential (mainly heating and lighting), industrial (process energy such as smelting or concrete production), and transportation (mainly gasoline and diesel).

For purposes of this Plan, we also will talk about energy use in three focus areas: transportation, thermal energy (cooking, heating and industry), and electricity. Some examples of energy sources are propane for cooking, gasoline for cars, electricity for lighting, and wood for heating. All of these types of energy can be expressed in British Thermal Units (BTUs). A BTU is a measure of the energy content in fuel, and is used in the power, steam generation, heating, and air conditioning industries, and when comparing different energy sources.

According to the 2016 Vermont Comprehensive Energy Plan (CEP), to meet state energy goals, we will need to reduce overall energy use, and we will need to meet that smaller but still significant demand through 90% renewable sources by 2050. This will involve increasing our use of electricity as a form of energy by about 10%, mainly as we move away from fossil fuels to electricity to power our vehicles and run heat pumps in our homes. Most of the increase in electric generation will come from solar photovoltaic (PV) systems. The state and our regional planning commission estimate that by 2050, Bethel needs to be annually generating between 11,397 and 13,930 additional MWh from renewable sources within the Town. For more information about this target, see Appendix B.

The state and Bethel are making progress toward meeting these goals. Statewide demand for energy grew at 1.8% from 1990 to 1999, but was close to 0% for the next 10 years. A combination of state energy efficiency programs and the 2007–2009 recession probably helped to reduce energy demand across most end-use sectors in Vermont. According to the Energy Action Network’s *2018 Annual Progress Report*, the state’s total energy demand has declined 12% since 2010; decreases are being achieved across all of the study’s focus areas: transportation, thermal, and electric.

Figure 18 displays U.S. Energy Information Administration (EIA) data on Vermont’s energy consumption across 4 sectors: residential, commercial, industrial, and transportation. Of these sectors, transportation and residential account for the most energy consumption. EIA’s Vermont data point to motor gasoline as the primary source (75%) of the energy used for transportation. The 2016 Vermont CEP notes that petroleum combustion in the transportation sector is the largest contributor to the state’s greenhouse gas emissions. These facts reinforce the need for clear policies that take into account the transportation implications of land use decisions in this community.



18 - Energy Consumption by Sector in Vermont, 2017  
Source: U.S. Energy Information Administration

<u>Town</u>	<u>Renewable Energy Usage as % of 2016 Total Energy Usage</u>
Bethel	33%
Randolph	30%
Tunbridge	29%
Braintree	28%
Royalton	28%
Barnard	28%
Stockbridge	28%

19 - Percent of Total Energy Usage that Derives from Renewable Energy, by Town  
Source: Energy Action Network, 2016

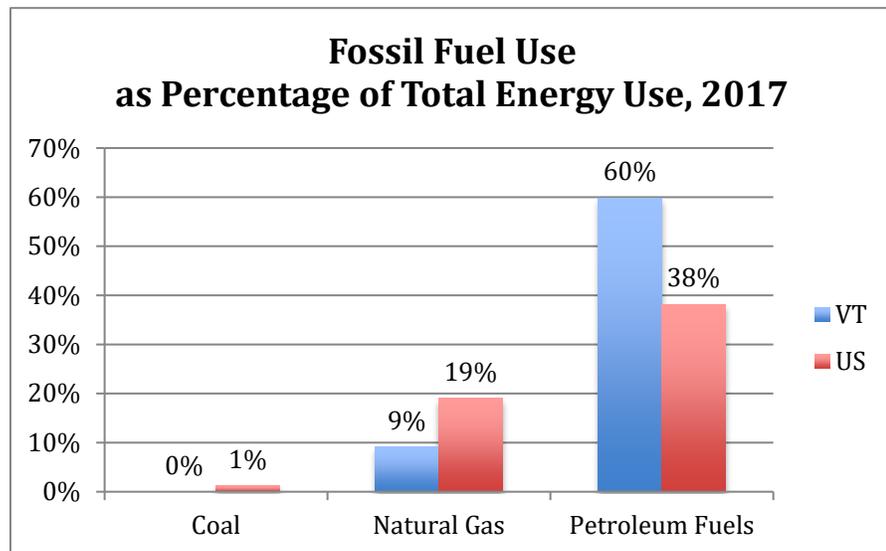
2017 EIA data indicate that in Vermont’s residential sector, the major energy sources are petroleum-based fuels (39%) and wood (29%). Electricity retail sales make up about 16% of Vermont households’ energy usage,

Energy Action Network reports that in 2016, Bethel used a total of 377,828 million BTUs, 33% of which were derived from renewable sources. As shown in Figure 19, Bethel’s renewable energy consumption is slightly higher than that of surrounding towns. For additional Town-specific energy usage data as well as energy targets for Bethel established by the state, see Appendix B.

### 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 Figure 20 below, fossil fuels accounted for about 69% of all energy consumed in Vermont in 2017. This illustrates the daunting challenge of meeting the state’s goal of 90% renewable sources by 2050.



20 - Fossil Fuel Use as Percentage of Total Energy Use in Vermont and the US.  
Source: U.S. Energy Information Administration, 2017

Vermont has a high reliance on distillate fuel oil for heating, similar to much of the northeastern US. Fuel oil accounts for nearly a quarter of Vermont’s residential energy consumption (EIA, 2017), which means a substantial portion of Vermont households are subject to the price and availability instabilities of oil dependency. Fuel oil consumption statistics also point to the scale of change required, as thousands of furnaces and heating systems will need to be replaced. In its *2018 Annual Progress Report*, Energy Action Network estimates that reliance on fossil fuels for residential heating cost Vermonters \$240 million more than it would have cost if our homes were heated entirely by renewable energy. Most of that 2018 excess spending (\$185 million) did not recirculate in the Vermont economy. 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 in Vernon, Vermont began generating electricity in 1971 and closed in 2014. The closure significantly impacted the state's energy portfolio; the facility provided approximately 55% of the electrical generation capacity for the State of Vermont. The loss of this power producer, however beneficial from an environmental or safety standpoint, also puts the state in the position of needing to find other sources of non-fossil fuel based energy.

## **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 in the state include several commercial-scale wind, a few wood chip power plants, an increasing number of solar farms, and landfill and on-farm methane projects.

Bethel has two large renewable energy generators:

- Dartt Hill Solar, Inc ground-mounted solar tracker (capacity: 150 kW)
- Bethel Mills hydroelectric plant (capacity: 525 kW)

## **D. Renewable Energy Resources**

The 2016 Vermont Comprehensive Energy Plan has set the goal for Vermont to utilize 90% renewables by 2050. This is a lofty goal, but one that will benefit all Vermonters if achieved. Not only will our air and water be cleaner and a semblance of our old climate retained, we will save money and keep our dollars circulating within our local economy. 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. State statute forbids the creation of land use regulations that prohibit renewable energy generation.

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 analysis by our regional planning commission (Appendix B) shows that roof-top solar energy production could produce 1,374 MWh of electricity, much less than we need but a meaningful portion of the estimate range of 11,397-13,930 MWh needed by 2050. By installing ground-mounted solar throughout the Town, including sites that are not facing north or have natural resource constraints, we could theoretically generate 662,256 MWhs of power, roughly 50 fold what is needed. The acreage required for such production would be only a few percent of the Town's total area. 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 exempt from local permitting. There is one large (capacity of 150 kW) group net metered solar array in Bethel, owned by Dartt Hill Solar, Inc. Nearly 50 small (i.e., capacities of under 15 kW) net metered solar arrays have been installed in the Town (Energy Action Network, 2019).<sup>2</sup>

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 remote in nature, which reduces adverse impacts on wild lands. Some solar farms even cultivate native grasses and wildflowers between panels to support pollinators. It takes roughly 5-10 acres of fixed, ground mounted solar collectors to produce one megawatt of electricity.

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 glare that could be a hazard to nearby buildings or road traffic.

This plan does not count as energy the direct thermal effect of the sun heating homes and water. Passive heating and lighting through good building and site design are essential to taking advantage of the sun's energy. 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.

---

<sup>2</sup> A list of small net metered solar installations can be obtained from Energy Action Network's Community Energy Dashboard: <https://www.vtenergydashboard.org/energy-atlas>

Solar water heating is another way to use the sun to reduce residential building energy usage. A solar water heater collects heat to power a domestic hot water system. Several such systems have been installed in Bethel.

## **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.

Similar to solar, wind energy is an intermittent resource and its generation fluctuates in response to environmental conditions, however from a supply perspective it can often generate when solar is not generating, evening out the supply available to the grid. The amount of energy produced by a specific wind tower can depend greatly on location, height of the tower and proximity to other obstructions, but they are generally in the 2-5 megawatt maximum capacity range. Most modern wind turbines (when properly sited) can generate electricity much more frequently than solar arrays can, and hence have a higher “capacity factor” (the ratio of actual production to maximum possible production).

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.

The analysis by our regional planning commission (Appendix B) indicates that if all Town’s wind energy potential was harnessed, it would produce 1,863,362 MWh of electricity. This untapped wind potential is over 130 times greater than the state’s 2050 renewable energy target for the Town.

## **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 Energy Action Network, in 2018 11% of Vermont homes were heated with cordwood, 4% with bagged pellets, and 2% with automated wood heat. 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 commercial 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.

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.

## **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. The CEP relies upon a massive increase in the production of biodiesel to meet expected energy demands for heavy vehicle transport.

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) or solar arrays (smaller animals like sheep can graze around panels).

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 and release it generally over a few hours in the morning and evening when power needs are high. Run-of-river systems rely on seasonal rainfall and runoff to produce power, resulting in periods of low and high production that don't match grid needs. Impounding water behind a dam allows for control of the water flow, resulting in electric production that meets grid needs but often creates water quality impacts and barriers to fish passage.

Bethel has one active hydro generation facility, located on the Third Branch of 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. Retrofitting existing in-service 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.

## **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. Towns are prohibited from regulating energy generation facilities, from house-scale to commercial projects, if they connect to the grid (either as commercial generation or as net-metered). But there are two ways that the Town can make its voice heard in the state review process. These facilities require a Certificate of Public Good as part of their Section 248 permitting, and this Plan is considered during the state review. Towns are also empowered to craft a local bylaw with siting standards, though the siting standards cannot have the effect of prohibiting permit issuance under the bylaw; they serve only as a recommendation to the Public Service Board.

## **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, unless these plans have been written to a higher standard, in which case they are afforded “substantial deference.” This Plan has been updated with the intention that the Public Service Board give any clearly stated policies herein “substantial deference” in their proceedings. For policies to have that effect, they cannot be ambiguous or optional, and they can’t be written in such a way that treats energy facilities differently than other types of development or that has the effect of prohibiting renewable energy development needed to meet state energy goals and targets. Accordingly, it is appropriate that this Plan addresses these land uses and provides guidance to Town officials, regulators, and utilities.

### **Preferred Locations for All Commercial Energy Generation Facilities**

The Town supports the placement of new generation and transmission facilities on top of existing buildings, on landfills, on brownfields outside of the village center, on reclaimed quarries or gravel pits, or on sites that were previously covered by structures or impervious cover. The Town, by joint letter of the Planning Commission and Selectboard, may designate a site as preferred if it is not visible in the growing season from town or state highways, is not actively in agriculture, and is not part of a priority or high priority forest block or habitat connector.

It is the policy of the Town that commercial energy generation facilities should comply with all applicable permitting requirements outlined in Bethel’s Unified Bylaw.

## **F. Residential Energy Efficiency**

There are a number of ways that the Town of Bethel can meet its local energy demand with renewable energy sources, first by lowering its overall energy 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 lowers our need for 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.
- Insulate with high R-value (or heat flow resistance) material.
- Use high efficiency windows.
- Install energy efficient appliances like refrigerators, freezers, front loading washing machines, gas heated clothes driers and heating systems without blowers.
- Use high efficiency LED lighting.
- Use gas and/or solar hot water heaters.
- Site buildings to make use of existing wind blocks and natural cooling patterns derived from the landscape's topography.
- Site buildings with maximum southern exposure to capture passive solar energy in winter and plant trees to provide shade in summer.

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 to existing buildings;
- 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 has an energy committee, a volunteer group formed for the purpose of reviewing, facilitating, creating, and informing the community of opportunities, projects, or programs to increase the energy efficiency within Bethel.

### **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. These audits have 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.

### **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. A capital budget outlines the capital projects that are to be undertaken in the coming fiscal years over a five-year period.

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.

The Town of Bethel's current Capital Improvement Program (CIP) guides investments in community infrastructure and equipment for fiscal years 2017 to 2022. Energy efficiency improvements are not specifically discussed in the CIP.

### **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 have 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. With review by the Town's Development Review Board, certain 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 may require design approval by the Town's Development Review Board. 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 establish design review standards that promote energy efficiency, such as requiring that a building be sited to maximize solar gain or requiring that landscaping be designed to reduce thermal loss.

One of the stated purposes of Bethel's Subdivision Regulations is to "to ensure that development employs efficient and economic uses of energy which are consistent with the current technology." Bethel's Subdivision Regulations require that the Development Review Board, when evaluating an application for a major subdivision, consider whether the proposal has adequately considered energy conservation in site planning and layout.

## **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**

**Goal 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.

**Policy a:** 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.

**Recommendation a.1:** Municipal officials should have adequate resources and training to provide input at PSB review meetings.

**Policy b:** 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, including the local road system.

**Recommendation b.1:** Commercial energy generation facilities should comply with the regulations in the Town's Bylaw.

**Policy c:** It is the policy of the Town to prioritize the development and use of renewable energy resources – including but not limited to wind, solar, geothermal, 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 for electricity, heat, and transportation; that increases the energy options available locally; and that avoids undue adverse impacts of energy development on the local community and environment.

**Recommendation c.1:** The Town should consider municipal or community-based renewable energy generation, 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.

**Recommendation c.2:** The Planning Commission should identify areas in Town that are appropriate for large scale energy production.

**Recommendation c.3:** The Town should consider the benefits and/or drawbacks of using regionally available alternative-fuels, such as biodiesel, in municipal vehicles.

**Goal 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.

**Policy d:** The Town should consider resources and infrastructure to support increased use of electric vehicles by residents.

**Recommendation d.1:** The Town should pursue opportunities to develop electric vehicle charging stations at convenient locations throughout the Town.

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

**Policy e:** 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) be located within or in close proximity to the village and shall utilize existing roads whenever possible.

**Recommendation e.1:** The Town should consider proximity to the village center as an important factor in public investment in new facilities and developments.

**Policy f:** 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.

**Recommendation f.1:** Power generation, transmission, and distribution facilities or service areas should comply with existing regulations in the Town's Bylaw.

**Goal 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.

**Policy g:** The Town should publicize and promote state programs that assist homeowners, businesses, and Town facilities with weatherization and efficiency improvement.

**Recommendation g.1:** The Town should invite state programs to conduct outreach at Town-wide events, such as the Forward Festival.

**Recommendation g.2:** 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.

**Recommendation g.3:** The Town should implement energy efficiency measures recommended by energy audits and the 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.

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

**Recommendation g.5:** The Town should develop facility maintenance and operation policies that maximize energy efficiency while maintaining comfort levels for employees and visitors.

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

**Policy h:** 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.

**Recommendation h.1:** The Town should continue to develop its relationship with EC Fiber.

**Policy i:** 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.

**Recommendation i.1:** The Town should explore options for acquiring energy-efficient municipal vehicles when practicable.

**Goal 6:** To promote greater use of existing public transportation services by community members.

**Policy j:** The Town should publicize and promote Stagecoach services.

**Recommendation j.1:** The Town should publish the Stagecoach schedule on its website.

## X. 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. In the 2018 Town survey:

- 90.7% of respondents agreed that environmental impacts should be a high priority in town decision-making.
- 87.7% of respondents agreed that the Town should prioritize preservation of open spaces for conservation and recreational use.

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 ensure that future land use activities are not detrimental to the environment.

### Goals, Policies, and Recommendations

**Goal 1:** To protect the natural, scenic, and historic character of Bethel.

**Policy a:** It is the policy of the Town to protect the natural, scenic and historic character of Bethel's working landscape while meeting other Town goals.

**Recommendation a.1:** The Developmental Review Board should be cognizant of new developments' impacts on the natural, scenic, and historic character of the Town.

**Goal 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.

**Policy b:** It is the policy of the Town to maintain and improve the quality of air, water, wildlife and land, including soil, resources.

**Recommendation b.1:** Bethel will support an active Conservation Commission which will exercise its powers and duties as stated in 24 V.S.A. §§ 4501, et seq.

**Goal 3:** To enhance and maintain Bethel's outdoor environment for recreational, cultural, and educational uses.

**Policy c:** It is the policy of the Town to support efforts to provide, maintain, and improve public spaces for outdoor activities for residents and visitors.

**Recommendation c.1:** The Town should continue to budget for and support parks, recreation, open spaces, and land conservation.

## 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 livelihoods of Bethel residents. 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 (see Map 3, Town Facilities).

The State has the authority under 10 V.S.A. §1424a to designate certain waterways as Outstanding Resource Waters due to their exceptional natural, recreational, cultural, or scenic values. The designation provides specific regulatory protections in order to minimize development impacts on the Outstanding Resource Waters. None of the waterways in Bethel are currently designated as Outstanding Resource Waters, but the main stem of the White River has been proposed for future designation.

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 bring people and communities together to improve the long-term health of the White River and its watershed, which includes monitoring the health of the White River, Third Branch of the White River, and their tributaries in Bethel.

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 include agricultural runoff, streambank erosion, and 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.

In 2013, the White River Partnership and the state Agency of Natural Resources commissioned a stream geomorphic assessment of the Middle White main stem, Third Branch of the White River, and their tributaries within the Town of Bethel. The study showed that many waterways in Bethel have been entrenched, straightened, cut off from their historical floodplains, and routed through undersized structures. As a result of this encroachment on river corridors, Bethel faces heightened risk from flooding and fluvial erosion. Construction or development along shorelines, or removal or disruption of vegetation within these areas, not only exacerbates flooding and erosion but can also result in increased water pollution, higher water temperatures, and loss of fish or wildlife habitats. Riparian buffers are strips of bankside vegetation along waterways that provide a transition zone between water and land use. Damages from Tropical Storm Irene indicated a need for stream buffers, particularly in areas outside of the Flood Hazard Area. Bethel's Unified Bylaw specifies that in all zoning districts, no structures shall be allowed within 50 feet of the top

of the bank of designated permanent streams, except those that by their nature must be located near streams (such as bridges, culverts, and roads). No ground disturbance is allowed within 35 feet of the top of the bank, excepting that incidental to bridge or culvert construction, or permitted bank stabilization. From a regional perspective, Bethel is one of the towns covered by the *White River Basin – Basin 9 2018 Tactical Basin Plan*, which focuses strongly on the restoration of buffers, floodplains, and the geomorphic equilibrium of channels. The plan also calls for the replacement of deficient culverts and bridges in order to better manage runoff and flood volume, promote fish passage, and minimize the discharge of road sediment.

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.

### **Goals, Policies, and Recommendations**

**Goal 1:** To maintain and enhance the quality of drinking-water resources.

**Policy a:** 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.

**Recommendation a.1:** The Town should seek to educate residents about runoff issues and proper disposal of hazardous waste.

**Goal 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.

**Policy a:** 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.

**Recommendation a.1:** The Town should seek to educate residents about runoff issues and proper disposal of hazardous waste.

**Policy b:** 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.

**Recommendation b.1:** The appropriate Town board should coordinate with the Agency of Natural Resources to ensure that large water withdrawals are properly monitored.

**Policy c:** 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 c.1:** The Town should negotiate with new developments to ensure that the Town is compensated for commercial water withdrawal.

**Goal 3:** To consider surface water and groundwater impacts and effects related to proposed or existing uses of land.

**Policy d:** 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.

**Recommendation d.1:** The Town should maintain and update a reliable inventory of existing culverts and structures, coupled with a short- and long-range plan for replacement and upsizing.

**Policy e:** 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.

**Recommendation e.1:** The Development Review Board should be cognizant of the appropriate setbacks for development and should be governed accordingly.

**Goal 4:** To maintain and improve surface water quality.

**Policy f:** It is the policy of the Town that the maintenance and enhancement of water resources for recreation, fisheries, necessary wildlife habitats and quality aesthetics be high priorities.

**Recommendation f.1:** The Town should explore opportunities to assist with the implementation of the water quality protection and improvement strategies outlined in the *White River Basin – Basin 9 2018 Tactical Basin Plan*, in collaboration with other Towns and regional partner organizations as appropriate.

**Recommendation f.2:** The Town should seek to educate residents about runoff issues and proper disposal of hazardous waste.

**Policy g:** It is the policy of the Town that preservation of the natural state of streams should be encouraged by:

- Protection of adjacent wetlands, lakes, ponds, vernal pools, ground waters, unique & fragile biological sites;
- Maintenance of existing stream bank and buffer vegetation including trees, together with wildlife habitat.

**Recommendation g.1:** The Town should seek to educate residents about stream maintenance, buffer zones, and the importance of not removing existing vegetation from streambanks.

## 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 far 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 Vermont's Wetland Rules, if land development can be expected to impact a protected wetland, such activity cannot commence unless it is an allowed use or authorized by a permit, conditional use determination or order issued by the Vermont Agency of Natural Resources (ANR). 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. 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. The Bethel Unified Bylaw's general standards for all zoning districts defer to ANR regulations on development setbacks from wetlands; the latter are typically 100 feet or 50 feet, though the ANR can vary requirements as needed through the permitting process. In some specific instances the bylaw requires a setback of 100 feet, namely for hazardous materials storage or for major subdivisions proposed adjacent to wetlands.

### **Goals, Policies, and Recommendations**

**Goal 1:** To preserve existing wetlands in Bethel.

**Policy a:** It is the policy of the Town to identify existing wetlands.

**Recommendation a.1:** The Town should maintain its wetlands map, and should review and update periodically.

**Goal 2:** To identify and encourage land use development practices that avoid or mitigate adverse impacts on significant wetlands.

**Policy b:** It is the policy of the Town to abide and adhere to state wetlands regulations.

**Recommendation b.1:** The Town should assist residents in identifying wetlands and complying with state regulations.

**Policy c:** 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.

**Recommendation c.1:** The Development Review Board should consider existing wetlands and their relation to any proposed development.

## **D. Floodplains**

Floods are inevitable and uncontrollable natural events that 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

that 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. Floodplains are discussed in further detail on the Flood Resilience chapter of this plan.

## **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.

Healthy forests provide a significant number of benefits to our communities, including environmental benefits (such as clean water supply, clean air, mitigation against climate change, wildlife habitat, and biological diversity), and economic benefits (such as tourism, recreation, and the wood products industry). 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.

### **Habitat Fragmentation**

Habitat fragmentation is the breaking of large, contiguous habitat areas into smaller areas. Since the 1980s, Vermont has experienced “parcelization,” which is the result of larger tracts of land being divided into smaller ownerships or land holdings. The more individuals that own smaller parcels, the more likely that the land will ultimately be developed with infrastructure (such as roads and utilities) and buildings, destroying habitat and creating barriers that interrupt ecological processes and species’ movements.

Habitat fragmentation affects water quality and quantity, fish and wildlife populations, and the biological health and diversity of the forests. 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, land consumption, and climate change, many scientists and conservationists urge governments to preserve large forest blocks and to establish habitat connectors, protected corridors that connect patches of important wildlife habitat. Habitat connectors, 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. Forest blocks and habitat connectors are delineated on Map 5 (Natural Resources).

Additional critical habitat areas include: wetlands, vernal pools, deer-wintering areas, and ecotone (the edge transition zone between two cover types, such as field and forest). The Vermont Natural Heritage Inventory has identified sites in Bethel that are significant natural areas as well as sites that are habitats for rare, threatened, or endangered species (see Map 5, Natural Resources). Development or logging activities in or adjacent to any of these areas should undertake planning to minimize negative environmental impacts, particularly with regard to wildlife.

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 streambeds, 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.

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.

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.

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.

## **Goals, Policies, and Recommendations**

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

**Policy a:** It is the policy of the Town that native wildlife populations and natural diversity should be sustained and enhanced.

**Recommendation a.1:** The Town should facilitate public education about existing rules and regulations.

**Policy b:** 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.

**Recommendation b.1:** The Development Review Board should work with applicants to effectively plan new development consistent with existing resources.

**Goal 2:** To maintain and improve the natural diversity, populations, and migratory routes of wildlife.

**Policy c:** 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.

**Recommendation c.1:** Applicants should be made aware of conservation strategies.

**Policy d:** It is the policy of the Town that development should be concentrated and designed to preserve continuous areas of forestlands and other wildlife habitat, including deer wintering areas, whenever possible. Fragmentation of forestlands and other habitat is discouraged.

**Recommendation d.1:** Efforts should be made to maintain and improve forest blocks as well as connecting links between habitat areas.

**Goal 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.

**Policy e:** It is the policy of the Town that residents should comply with state hunting and fishing regulations.

**Recommendation e.1:** The Town should continue to make informational resources available to residents.

## **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 sugar bush 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.

Insects can also be invasive. The Emerald Ash Borer (EAB) is a beetle from Asia that infests ash trees. An infested tree typically dies within 3 to 5 years. EAB has already killed millions of ash trees across North America, and recently has been found in a number of sites across Vermont. To slow the spread of EAB, the state enforces regulations on the movement and processing of harvested ash wood.

### **Goal, Policy, and Recommendations**

**Goal 1:** Reduce the impact of invasive species on agricultural and forest native ecosystems.

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

**Recommendation a.1:** Town employees and contractors should become familiar with the best management practices to prevent the accidental spread of invasives.

**Recommendation a.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, Policies, and Recommendations**

**Goal 1:** 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.

**Policy a:** 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.

**Recommendation a.1:** The Town should review its existing regulations, with public input.

**Policy b:** 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 air quality, water quality, fish and wildlife habitats, view sheds 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.

**Recommendation b.1:** The Town should work with all interested parties to ensure that extraction activities have the least negative impact possible.

## **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 some 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:

**Bethel's Villages and Hamlets** – Bethel's historic villages and hamlets each have their own architectural and historic significance. These include:

- Village of Bethel (especially Main Street)
- East Bethel
- Lympus Four Corners
- Lilliesville
- Camp Brook
- Gilead Brook
- Christian Hill
- Locust Creek

Many buildings in the designated Historic Village District of Main, Church, and Pleasant Streets, and additional ones on River Street, represent architecture that is unique to various historic periods, lending Bethel its unique character. An example is the Bethel Town Hall, built in 1892 and completely renovated in 2010, has had many important and varied uses, such as Town Meetings and roller-skating, has housed the Bethel Fire Department, the jail, and the library. It now provides a location for Town functions and is available for Selectboard authorized uses by Town and State, public and private activities. It currently also houses the Bethel Historical Society.

In addition to the historic resources listed above, areas near the Second and Third Branches of the White River and areas near the larger streams should be considered archaeologically sensitive. Historic and prehistoric archaeological sites are often found in areas with proximity to water.

**The Rock of Ages Quarry** is a privately-owned quarry that produces the whitest granite in the world, which has been used throughout the world. Although not currently open to the public, it has had an active role in Bethel's history, at one time being its largest employer. More recently the quarry provided waste stone to the State of Vermont and Bethel during the massive Irene recovery effort and continues to supply stone to local Bethel construction projects.

**Bethel Common** – This community gathering place hosts the weekly seasonal Farmer's Market. It also features a historic fountain and a band shell where free concerts are performed every week during the summers. It is also the central site of Bethel's annual celebration, the Community Forward Festival, hosting exhibits and fundraising activities for the various Town committees, school, fire department, churches, and other entities.

**Bethel Recreation Center** – This facility is situated on an eleven-acre parcel within the village limits and connected by roads and hiking trails to the school. Swimming, hiking, parking and picnic facilities are available. The Town envisions to continue re-organizing the site, renovating existing facilities, and constructing new amenities to better meet the recreation needs of the Town.

**Peavine Park** – This Town-owned park lies at the confluence of the Third and Main Branches of the White River. It's a fishing spot for the community and its amenities include picnic tables, a boat launch, and gazebo.

**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.

**White River Watershed Buyout Properties** - The Town of Bethel worked with White River Partnership to convert FEMA buyout properties along the White River and Gilead Brook into public parks and river access points:

- Marsh Meadow Park - 3.4-acre site, loop trail, woodlands, erosion control, river-side park
- Spring Hollow Park - erosion control, open space river-side park, fishing and hunting access
- Gilead Brook Park - 1.8-acre site, 3 miles west of route 12, open natural space
- 15 Miller Drive/River Street - open neighborhood space

The Town was recently gifted an approximately 10-acre lot adjacent to the Third Branch of the White River on Pleasant Street. The property will be left as open space with no permanent structures, preserving flood storage capacity for the Third Branch of the White River and its tributaries. There are plans to plant a 50-foot buffer along the river's edge; allow expansion of the wetland areas; develop trails; facilitate educational, recreational, and agricultural access; and enhance other natural areas on the site.

The Town also owns three Town Forests: Branliere Town Forest (70 acres), Quimby Town Forest (160 acres), and Camp Brook Town Forest (230 acres). Town forests are shown on Map 5 (Natural Resources). These properties are used for hunting and hiking, and have been used periodically for timber harvesting. The Bethel Schools and the Recreation Center also have forests adjacent to their facilities that are actively used by the community.

The Town has no designated scenic roads.

## **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 to be used to assist with the purchase or conservation of property.

Bethel's Conservation Commission has been actively involved in: creating a plan for the properties the Town acquired as a result of the FEMA buyout process, advising the Town, and developing management plans for all Town forests.

## **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 became an active participant in land conservation through the creation of a conservation fund at the 2018 Town meeting. This reserve fund contains funds that can be used for land acquisition, conservation easements, and/or interests in property that achieve the Town's conservation objectives.

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, and 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**

**Goal 1:** To identify those natural, scenic, cultural, and historic resources that are unique to Bethel and make it special.

**Policy a:** The Conservation Commission will continue to work with the Town to identify important natural, scenic, cultural, and historic resources.

**Recommendation a.1:** In order to better protect the valued scenic areas in the Town, these should be inventoried and prioritized and consideration given as to how to best protect these with district-specific policies or standards.

**Goal 2:** To preserve and protect Bethel's important cultural, historic, scenic, and natural resources for future generations.

**Policy b:** It is the policy of the Town to protect unique resources through careful planning.

**Recommendation b.1:** The Conservation Commission should continue to consider how to 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.

**Recommendation b.2:** The Town should continue to support a conservation fund to be administered by the Conservation Commission for the purposes of natural resource protection and land preservation.

**Goal 3:** To allow for compatible development without sacrificing important cultural, historic, scenic, and natural resources.

**Policy c:** It is the policy of the Town to ensure careful review of all development projects to minimize the impact on Bethel's natural, scenic, historic, and cultural resources.

**Recommendation c.1:** The Development Review Board should consider the impact on natural, scenic, historic, and cultural resources in its review of proposed development projects.

## **XI. Flood Resilience**

### **A. Background**

Vermont has experienced more than twenty statewide and regional floods since 1973. Many 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.

Following the impact of Tropical Storm Irene in 2011, the Vermont Legislature added a requirement that all communities address flood resilience as part of their municipal plans. Interpreted broadly, “resilience” means that an entity—a person, neighborhood, town, state, region, or society—when faced with a situation or event, could effectively return to its previous state or adapt to change(s) resulting from the situation or event without undue strain. As such, “resilience” is an overall preparedness for a future event. For the purposes of this chapter, flood resilience will mean the ability of Bethel to effectively understand, plan for, resist, manage, and recover in a timely manner from flooding. Resilience must be evaluated in the context of climate change, which is increasing the frequency and intensity of local storms, changing floodplain boundaries, and increasing the Town’s vulnerability to flood and fluvial erosion.

### **Types of Flooding**

There are two types of flooding that impact communities in the state of Vermont: inundation and flash flooding. Inundation flooding occurs when rainfall over an extended period and over an extended area of a river’s basin leads to flooding along the river and its major tributaries. This type of flooding occurs slowly, but flood waters can cover a large area. Inundation flooding is slow and allows for emergency management planning if necessary. However, it may take days or weeks for inundation flood waters to subside from low areas, which may severely damage property.

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

The collecting of water in channels in steep areas also causes fluvial channel erosion, which can severely damage roads and public and private property. Fast moving water in the stream channel may undermine roads and structures and change the river channel itself, predisposing other roads and structures to future flooding damage. Flash floods can also mobilize large amounts of debris, plugging culverts and leading

to even greater damage. In Vermont, most flood-related damage is caused by flash flooding and fluvial erosion (erosion of stream banks). Due to its topography, Bethel is vulnerable to flash flooding and fluvial erosion.

## **Causes of Flooding**

Severe storms with particularly heavy precipitation can create flash flood conditions. However, over an extended period of time, severe storms may also cause inundation flooding due to the cumulative effects of continuous rain, saturated soils, and high-water table/high aquifer levels.

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

## **Historic Flood Events**

One of the worst flood disasters to hit the Town of Bethel, as well as the surrounding region and the State of Vermont, occurred on November 3, 1927. This event was caused by up to 10 inches of heavy rain from the remnants of a tropical storm that fell on frozen ground. A more recent flood event that devastated the region and the state was the result of Tropical Storm Irene, which occurred on August 28, 2011. Record flooding was reported across the state and was responsible for several deaths, as well as hundreds of millions of dollars of home, road, and infrastructure damage. Regional damage was severe enough to warrant a federal disaster declaration. In Bethel, there was major damage to property and infrastructure throughout the Town, including 8 businesses, 75 private dwellings, and 9 mobile homes.

It is thought that the flooding that occurred because of Tropical Storm Irene was close to or equal to a 500-year flood, or a flood that has a 0.2% chance of occurring every year. Many of Bethel's roads were damaged by the storm, including parts of Brink Hill, Byam Road, Camp Brook Road, Charlie Wilson Road, Cleveland Brook Road, Dartt Hill Road, Dearing Road, Dunham Road, Findley Bridge Road, Gilead Brook Road, Hooper Hollow, Lilliesville Brook Road, North Road, Peavine

Boulevard, Whittier Road, Wright's Road, and Vermont Routes 12 and 107. The county-wide damages for Windsor County totaled over \$32.5 million. Recovery costs in Bethel included \$6,060,521 in Federal Emergency Management Agency (FEMA) projects and \$1,377,204 in Federal Highway projects. The State of Vermont and FEMA coordinated buy-outs of four properties in the Town.

## **B. Flood Hazard and River Corridor Areas in Town**

### **Flood Hazard and River Corridor Areas**

There are two sets of official maps that govern development in floodplains in Vermont. They are FEMA's Flood Insurance Rate Maps (FIRMs) and VT Agency of Natural Resources (ANR) River Corridor area maps. FEMA has calculated the floodplain on the FIRMs to show the 100-year flood boundary, or a flood that has a 1% chance of occurring in any given year. This area of inundation is called the Special Flood Hazard Area (SFHA). FIRMs may also show expected base flood elevations (BFEs) and floodways (smaller areas that carry more current). FIRMs are only prepared for larger streams and rivers. Bethel has FEMA FIRMs that are used in the administration of their flood hazard regulations (described in more detail below). FEMA FIRMs were last updated for the Town of Bethel on September 28, 2007. FEMA FIRMs are available for the Main, Second, and Third Branches of the White River. Approximately 667 acres in Bethel lie within the mapped flood hazard area.

Historically, landowners and local government have relied on the standards and the FIRMs 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, recent studies have shown that a significant portion of flood damage in Vermont occurs outside of the FEMA mapped areas along smaller upland streams, as well as along road drainage systems that fail to convey the amount of water they are receiving. Since FEMA maps are only concerned with inundation, and these other areas are at risk from flash flooding and erosion, these areas are often not recognized as being flood-prone. Property owners in such areas outside of SFHAs are not required to have flood insurance. Flash flooding in these reaches can be extremely erosive, causing damage to road infrastructure, threatening topographic features including streambeds and the sides of hills and mountains, and creating landslide risk. The presence of undersized or blocked culverts can lead to further erosion and streambank/mountainside undercutting. Change in these areas may be gradual or sudden. As climate change progresses, increasing frequency and intensity of local storms will heighten the flood risks faced by areas outside the mapped SFHAs.

FIRMs and NFIP standards also fail to recognize the danger present in unstable channels that may be undergoing a physical adjustment process. The streambed may be eroding or it may be actively aggrading due to erosion occurring upstream. Special mapping and geomorphic assessments can identify erosion areas along rivers, more comprehensively defining high-hazard areas. The Vermont Agency of Natural Resources (ANR) has developed River Corridor maps showing the areas where rivers and streams will move over time to meander; these areas are at risk to erosion due to the river or streams' lateral movement. Elevation or flood proofing alone may not be protective in these areas as erosion can undermine structures. Rivers, streams, and brooks that have ANR-mapped River Corridors include the Main Branch of the White River, Lilliesville Brook, Locust Creek, Cleveland Brook, Camp Brook, Gilead Brook, and the Second and Third Branches of the White River. For smaller streams, the River Corridor designation consists of a 50-foot setback.

According to state data, there are 36 structures located in the SFHA, meaning they have a 1% chance of flooding every year. Bethel's most recent (2015) Local Hazard Mitigation Plan reported that 40 residential and 11 commercial, industrial, or public structures (including 5 critical facilities) were located

within the 500-year floodplain, meaning they have a 0.2% chance of flooding every year. Climate change is increasing the risk of flooding and changing floodplain boundaries. To help reduce the risk to health, structures, and road infrastructure, it is important to restore and improve the flood storage capacity of existing floodplains and to increase the overall area for retention of floodwaters in Bethel.

A significant portion of the damage from Irene was not located in the 100-year floodplain mapped by FEMA or in the ANR-mapped River Corridor areas. Instead, the floodwaters 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.

### **Flood Hazard Regulations**

The Town of Bethel integrated flood hazard regulations into its Unified Bylaw that was adopted on June 12, 2017. The Floodplain Overlay District regulations apply to land located within River Corridors (as delineated by the Vermont Agency of Natural Resources) and within Special Flood Hazard Areas (areas that have a 1% chance of flooding annually, delineated by FEMA). New structures are prohibited in the floodway and in the SFHA outside of the Village District. New structures are conditional uses within River Corridors and in parts of the SFHA that lie inside the Village District.

### **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 consider the impact of ice dams or debris, and may, therefore, underestimate the areas that are subject to flooding damage.

As previously mentioned, FEMA has prepared FIRMs for the Town of Bethel. They are on file at the Town Office and at the Two Rivers-Ottawaquechee Regional Commission. They can also be found online through FEMA's website and the Vermont Agency of Natural Resources. The SFHA and floodway are indicated in Map #2, Future Land Use.

Mortgage lending institutions require as a prerequisite to financing that flood insurance be purchased on property subject to flooding. FEMA administers the National Flood Insurance Program, which provides flood hazard insurance at subsidized rates for property owners in affected areas. To qualify for federal insurance, towns must adopt and retain a bylaw to control land development within these areas. Minimum standards must be included and approved by FEMA. Coverage is only available to landowners if a town elects to participate in the program. The Town of Bethel incorporates flood hazard regulations into its

Bylaw, and has been a participating community in the National Flood Insurance Program since it first enrolled on August 5, 1991.

## **C. Promoting Flood Resilience**

### **Flood Hazard Regulation**

The following changes to the Floodplain Overlay District regulations would help protect the citizens of Bethel from further damages from a severe flooding event:

1. Discourage all new development in the SFHA, which is also called the 100- year floodplain, or the area that has a 1% chance of flooding every year.<sup>3</sup>
2. Require the elevation of existing structures in the SFHA to be elevated at least 2 feet above base flood elevation.
3. Discourage new development in the mapped River Corridor Area.
4. The best and most appropriate uses within the Flood Hazard Area along rivers and streams are those that are recreational and agricultural (using the state's Accepted Management Practices). 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.
5. Expand the Floodplain Overlay District to regulate development within the 500-year floodplain.

Any revisions to Bethel's flood hazard regulations would require input from the community regarding the level of regulation it believes is necessary to protect citizens and their buildings from severe flood hazard events. Provided that all parts of their flood hazard regulations continue to meet the minimum requirements of the NFIP, communities have a broad range of flexibility in regulating areas that are vulnerable to flooding and fluvial erosion.

---

<sup>3</sup> Prohibition on new development in the SFHA or River Corridor Area should not apply to small out-buildings or similar accessory structures provided they are properly flood-proofed and meet the thresholds required by the National Flood Insurance Program for flood hazard regulation. The prohibition should 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.

## Non-regulatory approaches

### Easements

Bethel could pursue riparian easements to protect floodplain from development and preserve flood storage.

### Culvert Maintenance

Bethel maintains an up-to-date list of culverts and culvert condition, and completed a comprehensive culvert inventory in 2014. As part of this process, priority projects were identified, and cost estimates were generated to prioritize culvert upgrades for damaged and undersized structures. The process of upgrading culverts is ongoing. Culvert specifications are detailed in the Town Road and Bridge Standards, which are annually adopted by the Town and based on state standards. VTrans makes culvert maps publicly available at [vtculverts.org](http://vtculverts.org).

### Preparedness and Response

Flood preparedness and response planning is accomplished through the Local Emergency Management Plan, which is described in more detail in the Emergency Services chapter of this Plan.

## D. Goals, Policies, and Recommendations

**Goal 1:** Enhance and maintain use of flood hazard areas and River Corridors (fluvial erosion hazard areas) as open space, greenways, non-commercial recreation and/or agricultural land.

**Policy a:** It is the policy of the Town that the preferred uses for SFHA and River Corridor areas should be for open space, greenbelts, pastureland, recreational, and agricultural uses.

**Recommendation a.1:** The Planning Commission should consider revising Bethel's Unified Bylaw to avoid new development within the SFHA and River Corridors, with the exception of open space, recreational, and agricultural uses.

**Goal 2:** Maintain and enhance flood storage capacity to minimize potential negative impacts. These impacts include the loss of life and property, damage to historic structures, disruption of commerce, and demand for extraordinary public services and expenditures that result from flood damage.

**Policy b:** It is the policy of the Town that any land use activity (filling, or removal of earth or rock) within the SFHA, floodway, or River Corridors which would result in net loss of flood storage or increased or diverted flood levels or increased risk to adjacent areas should be discouraged.

**Recommendation b.1:** New development in the SFHA and River Corridors, including renewable energy generation facilities, shall comply with existing Bylaw requirements

that such uses do not impede flood flows, trap debris, or increase the danger of flooding or erosion on or off site.

**Policy c:** It is the policy of the Town that floodplains, wetlands, riparian areas, and upland forested areas should be protected and restored in order to attenuate and moderate flooding and fluvial erosion.

**Recommendation c.1:** Encourage property owners to maintain vegetated buffer strips in riparian zones bordering streams and rivers. Rock rip-rap and retaining walls should only be used to the minimum extent necessary and when bioengineering techniques may not be adequate to prevent significant loss of land or property.

**Goal 3:** Protect municipal infrastructure and critical facilities from the potential of flood damage.

**Policy d:** 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, bridges, other municipal services) may be located within the SFHA or River Corridors 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.

**Recommendation d.1:** Encourage permit applicants to consider siting in less hazardous areas.

**Recommendation d.2:** Town administration should consider safer alternative siting locations whenever possible.

**Policy e:** It is the policy of the Town that solar energy generation shall not be located in floodways, and that the SFHA and River Corridors are generally unsuitable for such facilities, but should be evaluated individually.

**Recommendation e.1:** The DRB should work with permit applicants to ensure consistency with bylaw regulations.

**Goal 4:** Continue working to address flood impacts within hazard mitigation plans and emergency preparedness and recovery procedures.

**Policy f:** It is the policy of the Town to maintain its membership in the National Flood Insurance Program (NFIP).

**Recommendation f.1:** The Planning Commission should ensure that Bethel's Unified Bylaw continues to meet the standards required by the Federal Emergency Management Agency so that Bethel may continue to participate in the NFIP.

**Recommendation f.2:** FEMA shall maintain maps that reflect as accurately as possible the flood hazard areas to assist in appropriate land use decisions.

## **XII. Agriculture and Forestry**

### **A. Background**

Agriculture and forestry define the character of Vermont and in the past have been major industries in the region. Economic changes in these industries have led to instability, and climate change is putting additional stress on working lands. 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. In 2018, there were 17,174 acres of land in Bethel enrolled in the Current Use Program, amounting to roughly 59% of Bethel's total acreage.

#### **Climate Change**

Climate change is expected to bring more episodic droughts that stress forest health, as well as more frequent and intense storms that damage trees and crops. Rising summer temperatures are already changing growing seasons and the types of crops that thrive in our region. Heat stress for cows may prove

a significant challenge to Vermont’s dairy industry. With warmer winters there will be shorter windows of time when the ground is frozen, creating challenging conditions for logging operations. Sugaring seasons are shortening, impacting maple syrup production.

### C. Agricultural Trends

An analysis of the United States Census of Agriculture data between 2002 and 2017 (2017 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 2017, the number of farms in Vermont increased by 3.6%. The average size of farms decreased from 189 acres to 175 acres between those years. In 2017, 33% of Vermont’s farms 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, farms with fewer than 50 acres of land only produce about 5.5% of Vermont’s total agricultural income.

Despite this decrease in farm size, in recent decades 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 2017, USDA data indicated the estimated agricultural revenue in Vermont to be nearly \$787 million per year.

Many other businesses in Vermont depend on the “farm economy.” According to the 2018 Farm to Plate Annual Report, in 2017 there were a total of 65,174 jobs in the state’s various farm and food sector businesses, ranging from farm workers to wholesale distributors and food processing/manufacturing operations, to food service and food/beverage stores.

In Bethel, as in the rest of Vermont, the scale and style of farming has changed. The most recent Census of Agriculture (2017) reports that within the 05032 zip code area, there are 38 farm operations. About 71% of these operations utilize 50 or more acres of land. Products grown or produced on farms within the zip code include berries, hay, corn, maple syrup, vegetables, fruit and tree nuts, Christmas trees, beef and dairy cattle, horses, chickens, pigs, and sheep and goats.

*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.

In the 2018 Town survey, roughly 53% of respondents agreed that the Town’s agricultural character was very important to Bethel’s future.

## **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 that 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. According to the Vermont Department of Labor, statewide employment in forestry and logging increased only 0.1% between 2000 and 2016. During that same time period, wood product manufacturing employment decreased 3.7%, and paper manufacturing employment decreased 5.3%. The Department of Labor has projected employment losses in all of these sectors between 2016 and 2026. 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 588,165 acres of land as of June 2018. These lands include a number of properties 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**

**Goal 1:** Encourage the conservation, wise use, and management of the Town's agricultural and forestry resources, to maintain and improve the environmental integrity of those resources, and to protect its unique and fragile natural features.

**Policy a:** 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.

**Recommendation a.1:** The Town should continue to provide for appropriate zoning for rural areas.

**Policy b:** 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.

**Recommendation b.1:** 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 for the public.

**Recommendation b.2:** The Town will continue to explore opportunities for technical assistance, grants, and low-interest loans for new or improved farm and forest operations or practices.

**Goal 2:** Protect the Town's rural agricultural character, scenic landscape, and recreational resources.

**Policy c:** 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 the long-term productivity of such resources by preventing fragmentation and sprawling settlement patterns.

**Recommendation c.1:** The Town should continue to provide for appropriate zoning for rural areas.

**Policy d:** 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.

**Recommendation d.1:** The Town should work with stakeholders to find appropriate placement for residential, commercial, and industrial activities.

**Policy e:** It is the policy of the Town that the construction of utilities, roads or other physical modifications should skirt tracts of productive agricultural and forest land rather than divide them.

**Recommendation e.1:** The Development Review Board should prioritize conservation of productive agricultural and forest land.

**Policy f:** It is the policy of the Town to preserve recreational and scenic access by ensuring that logging operations meet state standards.

**Recommendation f.1:** The Town's zoning should classify violations of the state's accepted silvicultural practices as municipal zoning violations.

**Goal 3:** To encourage the economic growth of agricultural and forest operations at a scale that is appropriate for Bethel.

**Policy g:** It is the policy of the Town to support the manufacture and marketing of value-added farm and forestry products, including wood as a heating fuel.

**Recommendation g.1:** The Town should continue to support local agricultural and forestry businesses through its revolving loan fund.

**Policy h:** It is the policy of the Town to continue to support the use of locally-grown food products.

**Recommendation h.1:** The Town should continue to support the Bethel Farmer's Market.

**Recommendation h.2:** The Town should support the school in its farm-to-table health initiatives.

### **XIII. 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**

**Bethel Recreation Center (115 Pleasant Street)** - This facility is situated on an eleven-acre parcel within the village limits and within walking distance of the school. Through the development of a Master Plan starting in 2012, a new pool house facility was completed in July 2016. In addition, a better parking lot was established and a hiking/biking trail has been completed between the Center and the school. Picnic tables and grills have been added. The Center is now in compliance with the Americans with Disabilities Act. During the summer, the Center offers American Red Cross swim lessons for all ages, mid-afternoon activities, and programming of all kinds for families and community members on Friday nights. Future plans for the facility include a skateboard park, tennis courts, and a basketball court / ice skating rink. A total cost estimate is not available. Funding is expected to come from fundraising, Town budget allocations, and grants. The Town hopes to build the skateboard park, which is expected to cost roughly \$80,000, in 2020. Following that effort, the Town will begin work on the tennis courts and basketball court.

**Bethel 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. Bethel’s annual Community Forward Festival, celebrating the Town’s strengths, is held there each fall.

**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** - 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.

There is also 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.

## **B. Municipal Properties**

In addition to the above recreational facilities, the Town owns three municipal forests. These are: Branliere Town Forest (70 acres located east of Bethel Village), Quimby Town Forest (160 acres near Lilliesville), and Camp Brook Town Forest (230 acres). These forests are frequently used by the public for hiking, hunting, and related activities. 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. The Town has converted these properties into public parks and river access points.

## **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 the 2018 Town survey, 87.7% of respondents agreed that the Town should prioritize preservation of open spaces for conservation and recreational use.

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. According to a 2017 report by the Outdoor Industry Association, outdoor recreation annually generates roughly \$5.5 billion in consumer spending throughout the state, produces \$505 million in state and local tax revenue, and directly supports 51,000 jobs. While tourists drive much of this economic activity, locals also contribute; the Association estimates that 72% of Vermont residents participate in outdoor recreation annually.

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 Town's more rural areas 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 so that the Town has adequate facilities and amenities to meet the current and future physical activity and recreation needs of its residents and visitors.

**Policy a:** It is the policy of the Town to encourage the development of outdoor recreational opportunities, including recreational business development.

**Recommendation a.1:** The Town should consider creating a long-range recreation plan that utilizes citizen input and good planning practices.

**Policy b:** It is the policy of the Town to encourage patterns of land use that maintain and enhance the opportunity for outdoor recreation.

**Recommendation b.1:** The Conservation Commission should continue developing proposals for the best and most productive use of municipal properties.

**Recommendation b.2:** Through the development review process, the Town should identify, provide, and protect public access to non-commercial outdoor recreational opportunities, such as water bodies and hiking trails, wherever appropriate.

**Recommendation b.3:** The Town's development review process should discourage fragmentation of undeveloped land in rural areas.

**Recommendation b.4:** Promote active transportation through walking and biking.

**Recommendation b.5:** Consider accessibility when developing public spaces for recreation.

**Policy c: Promote use of parks and recreation facilities for human-powered recreation.**

**Recommendation c.1:** The Town should continue to promote and expand Town-sponsored recreational programs and activities.

## **XIV. 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 recent decades, 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 Designated 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, namely Bethel's Core Business Area, Village Area, and Hamlets;
2. Maintain the historic settlement pattern of compact community centers separated by rural countryside.
3. Ensure that the rate of development does not exceed the community's ability to provide adequate public facilities and services.
4. Promote the economic viability and revitalization of the Designated Village Center;

5. Conserve the natural environment by judicious use of natural resources;
6. Protect the character of rural areas and their natural resources by avoiding scattered development and incompatible land uses;
7. Channel public investments and municipal infrastructure into existing or planned settlement areas to avoid sprawl and preserve undeveloped lands; and
8. 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. This pattern came into being before cars were invented, and now requires enormous amounts of energy to sustain. The more that development can occur in ways that utilize transit services or walking for transportation needs, the lower the energy needs will be for Bethel and the easier it will be to meet our energy goals. 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 well for industrial development and for use of transit and rail. However, the topography of the community is such that there aren't many developable areas that are near the village and that have good access to transportation corridors. Current Land Use is shown on Map 1.

### **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 Town has established the following Land Use Areas:

- Core Business Area
- Village Area
- Hamlet Area
- Medium Density Development Area
- Rural Development Area
- Resource Conservation Area
- Floodplain Area (Overlay District)
- Wellhead Protection Area (Overlay District)

Each land use area is intended to further the Overall Land Use Goals of this chapter as outlined in section B. Future Land use areas are delineated on Map 2.

## **Core Business Area**

The Core Business Area includes areas historically considered to be Bethel's primary commercial and civic center. It is a small subset of the entire village, marked by multi-story, interconnected buildings with storefronts on the first floor and mixed use commercial on the upper floors.

The purpose of the Core Business Area is to provide a high-density commercial center in the Town that accommodates a broad range of mixed use development including primary retail and personal service shops, professional and government offices, child care facilities, and other supportive, compatible commercial uses such as restaurants and inns. Residential uses that add interest and vitality to the area and accommodate those who desire high-density housing is encouraged.

## **Goal, Policy, and Recommendations**

**Goal 1:** To facilitate the development of a concentrated hub of diverse commercial activity in the Core Business Area and in the Village Area.

**Policy a:** It is the policy of the Town to promote high-density mixed use development within the Core Business Area, at a scale and pace that does not negatively impact Bethel's ability to provide services or the overall character of the area.

**Recommendation a.1:** Minimum lot area for all uses shall be 10,000 square feet, with the exception of multifamily, which requires 3000 square feet per unit.

**Recommendation a.2:** The Town should not permit development projects that promote or exacerbate strip development along Town Highways.

## **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.

As the Village Area and Core Business Area have access to sewer and water, density should be highest there. High-density multi-family residential development that is in character with the Village Area should be encouraged to locate in this area. Maintaining a core of residents in the Village Area will support a variety of businesses and transit service. Development should remain mixed use, with appropriately scaled commercial (including primary retail, child care facilities, and personal service shops) and civic uses existing with residential. Light industrial uses 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, Policies, and Recommendations

**Goal 2:** To encourage the growth of Bethel’s Village Center in keeping with the rural character of the community.

**Policy b:** It is the policy of the Town that all development within the village areas must be consistent with the existing character of the neighborhood.

**Recommendation b.1:** The Town should ensure that proposed development within the Village Center be consistent with existing structures within the neighborhood.

**Goal 3:** To provide a location for higher density residential and commercial development at a scale and pace that does not negatively impact Bethel’s ability to provide services or the rural and natural character of the area.

**Policy c:** It is the policy of the Town that the establishment of higher density multi-family housing and commercial uses in the Village Center be encouraged.

**Recommendation c.1:** For most uses, a lot can be as small as 20,000 square feet. For multifamily developments, 7,500 square feet of lot area are required per unit.

**Recommendation c.2:** The Town should ensure that development projects do not promote or exacerbate strip development along Town Highways.

**Policy d:** 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 Core Business Area, Village Area, or Hamlet Areas.

**Recommendation d.1:** The Town should ensure that primary retail establishments adhere to the lot area minimums and setbacks as outlined in Bethel’s Unified Bylaw.

### Hamlet Area

Bethel has two Hamlet Areas (East Bethel and Locust Creek), 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 for small, clustered locations of mixed residential, civic,

### 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 restrict retail to certain land use areas. 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.

and commercial uses outside of the Village Center with a moderate density. Commercial operations are limited to those that contribute to and support residential communities.

### **Goal, Policies, and Recommendations**

**Goal 4:** To provide a location for residential development to exist in harmony with neighborhood-scale civic and commercial development.

**Policy e:** It is the policy of the Town that the Hamlet Area should support a mix of single and multi-family housing.

**Recommendation e.1:** The Town will ensure that the Hamlet District will provide for small areas of mixed housing types and limited commercial uses.

**Policy f:** It is the policy of the Town that all development, including commercial uses, within the Hamlet Areas must be at a scale and intensity that is consistent with the existing character of the neighborhood.

**Recommendation f.1:** Minimum lot area for most uses should be one acre, with the exception of multi-family (20,000 square feet per unit) and light industrial (2 acres).

**Policy g:** 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 g.1:** The Town should ensure a 1-acre minimum lot size for retail establishments in accordance with Bethel's Unified Bylaw.

### **Medium Density Development Area**

The purpose of the Medium Density Development Area is to allow additional residential development, including multi-family residential, in areas of the community that are outside of the Village Center Area but are well served by existing roads and private utilities.

Although residential development is intended to be the principal type of development in this area, the Medium Density Development Area would be an appropriate location for small-scale businesses that are consistent with the traffic and development character and scale that already exists in the area. Examples include home occupations, small service businesses, small professional offices and inns. Retail development within this area would be limited to secondary retail. Outdoor recreation and agriculture are encouraged in the Medium Density Development Area.

### **Goal, Policies, and Recommendations**

**Goal 5:** To provide a location for medium density development with good access to local roads while preserving the rural character of the community.

**Policy h:** It is the policy of the Town that the establishment of medium density single and multi-family housing, and other uses as appropriate, be encouraged in areas with good access to Town roads.

**Recommendation h.1:** The minimum lot area for all uses is 4 acres, with the exception of multifamily, which requires 2 acres per unit. Smaller lot sizes are allowed if they will facilitate the preservation of working lands or scenic areas.

**Policy i:** It is the policy of the Town that all commercial development within the Medium Density Development Area must be consistent with the existing character of the neighborhood and should be clustered whenever possible in order to prevent the formation of strip development.

**Recommendation i.1:** The Town should not permit development projects that promote or exacerbate strip development along Town highways.

**Policy j:** 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 j.1:** The Town should ensure that secondary retail establishments meet all setbacks and off-street parking requirements specified in Bethel's Unified Bylaw.

## **Rural Development Area**

The purpose of the Rural Development Area is to provide a rural location for low-density residential development, while allowing for continued agricultural, forestry, recreation, and conservation uses. The Rural Development Area is intended to remain rural in nature.

Town services such as road maintenance and school busing are provided on a more limited and intermittent basis than in the Medium Density Residential Area. Multi-family development is allowed in this area as a conditional use. The types of commercial development that are appropriate in this area would include home occupations and, provided that conditional use criteria are met, small service businesses, small professional offices, childcare facilities, and earth and mineral resource extraction operations. 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, Policies, and Recommendations**

**Goal 6:** To maintain and preserve the rural areas of Bethel and encourage the continued vitality of the working landscape while allowing appropriate residential growth.

**Policy k:** It is the policy of the Town to encourage a mix of residential, agricultural, forestry, conservation, and recreational uses in this area.

**Recommendation k.1:** The Development Review Board should prioritize the conservation of large, contiguous tracts of productive agricultural and forest land.

**Recommendation k.2:** Lot area should be no less than 10 acres.

**Policy l:** It is the policy of the Town that primary retail development is inappropriate for this area.

**Recommendation l.1:** The Town should ensure primary retail development is located in the Core Business Area, Village Area, or Hamlets.

**Policy m:** 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.

**Recommendation m.1:** The Town should ensure that all commercial development is consistent with existing structures and densities within the Rural Development Areas.

## **Resource Conservation Area**

This land use area represents the most rural topography in Town; it lacks direct access to year-round public roads and utilities, and public services are commonly unavailable, additionally, the land within this area represents a substantial amount of the available wildlife habitat in Town. Bethel's highest priority interior forest blocks and habitat connectivity blocks (see Map 5, Natural Resources) lie within the Resource Conservation Area. Accordingly, the purpose of this land use area is to allow residential development at a scale that protects existing natural resources including undeveloped land, water resources, wildlife habitat, commercially productive forestland, and recreational and scenic areas.

Low density residential development, conservation, agriculture, forestry, and outdoor recreation should be the primary uses with some commercial, including small-scale home occupations, small service businesses, small professional offices, childcare facilities, and earth and mineral resource extraction operations. Commercial businesses or home occupations that require the trucking of goods should be discouraged from this rural area. Primary retail development is not allowed.

## **Goal, Policies, and Recommendations**

**Goal 7:** To maintain and preserve the rural areas of Bethel by limiting the density and scale of development.

**Policy n:** 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, land usage and preserve open land.

**Recommendation n.1:** The minimum lot area in this District is 20 acres. Smaller lot sizes are allowed if they will facilitate the preservation of undeveloped lands, working lands, or scenic areas.

**Policy o:** 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.

**Recommendation o.1:** Development permitting in the Resource Conservation Area should prioritize the preservation and improvement of forest blocks and habitat

connectivity blocks, in order to minimize fragmentation and promote the ecological health and function of Bethel's natural resources.

**Policy p:** It is the policy of the Town that primary retail development is inappropriate for this area.

**Recommendation p.1:** The Town should ensure primary retail development is located in the Core Business Area, Village Area, or Hamlets.

**Policy q:** It is the policy of the Town that all commercial development within the Resource Conservation Areas must be consistent with the existing character of the area.

**Recommendation q.1:** The Town should ensure that all commercial development is consistent with existing structures and densities within the Resource Conservation Area.

## **Floodplain Area**

Some lands adjacent to the White River as well as its tributaries are at risk of periodic flooding and fluvial erosion. Development restrictions are necessary in floodplains and River Corridor areas due to the high potential for loss of 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 these hazardous areas, refer to the Flood Resilience chapter in this Plan.

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, the Town's flood hazard regulations (incorporated into the Bethel Unified Bylaw) have been designed to meet the minimum standards set by the Federal Emergency Management Agency (FEMA) and the National Flood Insurance Program (NFIP). They apply to lands located in River Corridors (as delineated by the Vermont Agency of Natural Resources) and within Special Flood Hazard Areas (areas that have a 1% chance of flooding annually, delineated by FEMA). The Town's regulations prohibit new structures in the floodway and in Special Flood Hazard Areas located outside of the Village District. New structures are conditional uses within River Corridors and in Special Flood Hazard Areas that lie inside the Village District.

For goals, policies, and recommendations relating to Bethel's Floodplain Area, refer to the Flood Resilience chapter.

## **Wellhead Protection Area**

The purpose of this land use area is to maintain a quality source of public water to the citizens of Bethel, accommodate development surrounding wellheads, protect the Town's investment in the water system, and implement the Town's Source Protection Plan (as described in the Utilities and Facilities Chapter of this Plan.)

To prevent permanent groundwater contamination, the following uses are prohibited in the Wellhead Protection Area:

- Commercial storage of liquid petroleum products
- Commercial salvage yards or junkyards
- Manufacture, use or storage of toxic chemicals exceeding 50 gallons or 250 pounds of dry weight
- Uncontained storage of animal manure
- Landfills or waste transfer stations
- Industrial uses that discharge process waste on-site.

Other uses may be permitted in this area if it can be demonstrated that the development will not adversely affect Bethel's groundwater or public water supplies. The boundaries of the Wellhead Protection Area are delineated on the Town Facilities Map (Map 3).

## **Goal, Policies, and Recommendations**

**Goal 8:** To maintain and preserve Bethel's water quality.

**Policy r:** It is the policy of the Town to ensure adequate protection of the resource.

**Recommendation r.1:** The Town should ensure that uses are compatible with water quality protection per the regulations in Bethel's Unified Bylaw.

**Recommendation r.2:** The Town should consider regulating use and storage of fertilizers within the Wellhead Protection Area.

## XV. 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

Town 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 2 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	0.892
Class 2	11.89
Class 3	56.22
Class 4	34.54
<b>Total Town Roads</b>	<b>103.54</b>

21 - Miles of roads in Bethel  
(Source: VTrans, 2018)

Main St., Church St. and a portion of Pleasant St. are Class

1. A little over eleven percent (11.5%) of Bethel's Town highway miles are Class 2, including Camp Brook, Factory Hill Road, Randolph Center Road, North Road, and Peavine Boulevard. 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 (54.3%) of Bethel's Town highway miles are Class 3.

About 33% of Bethel's Town highway miles are Class 4. Class 4 highways are not regularly maintained. Limited 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 include the local tax base, state and federal gas tax receipts, state and federal allocations, vehicle registration fees and state grants. 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.

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.

Bethel has incorporated transportation equipment and infrastructure needs into its Capital Planning, and has created an Equipment Committee to recommend equipment purchases and a schedule for those purchases for the Road Department. The Town’s two Freightliner tandem dump trucks are the same model year and will need to be replaced. The Equipment Committee is hoping to replace one truck in 2020 (approximately \$225,000) and replace the other in another three years or more, depending on the repair costs. The Town has several equipment needs and the Committee has just started work on creating a new plan for future purchases. Purchases will be financed largely through reserve funds and loans. There is an ongoing need for pavement maintenance and infrastructure work. The Town is working on updating their pavement schedule and in their FY2021 budget has started saving money in their capital fund for bridge maintenance. Funding of these projects will come partly from state grants; additional financing needs to be identified and secured. Near-term priority projects are slope stabilization on Peavine Boulevard (cost estimate \$267,249, funded through FEMA) and Watershed Road Bridge maintenance (about \$30,000 in grant funding).

## 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	11.29
Interstate Highways	2.93
<b>Total State/Federal Roads</b>	<b>14.22</b>

22 - Miles of State/Federal roads in Bethel (Source: VTrans, 2018)

## C. Class 4 & Trails

Class 4 roads and Legal Trails (categories designated by VTrans) 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 and very little development has occurred along these roads. Class 4 roads are only maintained by the Town in cases of necessity, when resources allow, or when maintenance is required by state regulations on stormwater runoff. The Town 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.

The Town has a number of trails that have not been formally designated by VTrans but that are actively maintained by various public or private groups. The Town recently created a trail connecting the Recreation Center and the school. A loop trail exists at Marsh Meadow Park, one of the Town's FEMA buyout properties. The Branliere Town Forest also has a walking trail.

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

The Town annually adopts Town Road rules and regulations based on state standards. This policy details standards for construction, maintenance, and repair of Town roads and bridges. Also included are standards relating to culverts and other stormwater conveyances, guardrails, driveway access, streambank stabilization and other in-stream work. The responsibility of policy 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**

Bicycling and walking are extremely energy-efficient, use no fossil fuels directly, and bring health benefits. 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. Most areas of the village are served by sidewalks, but there are some notable gaps that pose risks to pedestrian safety. In the more rural areas of Town, bicycle and pedestrian travel is reasonably safe along road edges with

adequate shoulders. 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 the Vermont Association of Snow Travelers (VAST) and Vermont ATV Sportsman's Association (VASA).

## **Public Transportation**

Transit services reduce energy use and greenhouse gas emissions, provide transportation at a fraction of what driving a car for the same trip would be, and improve community health. Bethel is fortunate to have access to a small regional public transportation system, Tri-Valley Transit (dba Stagecoach, Inc.). Most routes offer deviations up to  $\frac{3}{4}$  of a mile, by prior arrangement. Hours and days of operation are fairly restricted on all routes. The Woodstock, 2<sup>nd</sup> Friday Shopper, and Saturday Shopper routes connect Bethel's village with West Lebanon, but of those, only the Saturday Shopper provides regular weekly service. The 89er South route runs for a few hours during the morning and evening commutes, Monday through Friday, between Bethel and the Lebanon/Hanover area. Other routes connect Bethel with Randolph, Stockbridge, Rochester, Hancock, and Chelsea. From Randolph, riders can transfer to Stagecoach routes that serve Berlin and Montpelier.

Stagecoach also offers demand-responsive public transportation for individuals who are elderly, have disabilities, or have low incomes. Services are free or subsidized depending upon user eligibility. Stagecoach's "Ticket to Ride" Program offers free rides to people over the age of 60 and those with disabilities, provided they don't have access to any other transportation options. Ticket to Ride is available for a broad array of destinations, such as medical services, work, shopping, errands, and social purposes. Stagecoach also provides free non-emergency medical transportation to those who are enrolled in Medicaid and who do not have access to a car.

Given that Bethel's elderly population is growing, the need for affordable and regular public transportation services remains important. In the 2018 Town survey:

- 44% of respondents stated that access to public transportation was very important to them, and 44% stated that it was somewhat important to them.
- A majority of respondents (54%) stated that the Town was "doing so-so" with regard to access to public transportation. 21% of respondents said they felt the Town was doing well, and 25% felt the Town was doing poorly.

## **Rail Facilities**

Bethel is traversed by the New England Central Railroad (NECR) which goes from New London, Connecticut, through White River Junction to East Alburgh, VT. The NECR has approximately four (4)

miles of single track within the Town's boundaries with two customer tracks. In recent years, track upgrades have significantly reduced travel time and improved fuel efficiency.

The NECR line serves both freight and Amtrak passenger traffic (the "Vermont" route). Currently Amtrak does not stop in Bethel. The nearest passenger station is in Randolph, which is also a major hub for public transit operated by Stagecoach (as described in the previous section). As Amtrak currently only runs two trains per day (one northbound and one southbound), passengers use the Vermont route more for tourism than for commuting. Between 2011 and 2017, Vermont route ridership declined nearly 4 % across the region. A possible extension of the Vermont route to connect Boston and New Haven to Montreal is under study. NECR's freight service transports pulp/paper and lumber, agricultural products, petroleum products, and various other raw, semi-finished, and finished materials. The nearest freight rail interchange point is in White River Junction. The NECR delivers lumber to Bethel Mills and feed ingredients to Green Mountain Feeds.

## **Air Travel**

Bethel residents have access to two small public airports within roughly a half-hour drive: Edward F. Knapp State Airport in Berlin and Lebanon Municipal Airport in New Hampshire. Neither airport has a transit stop, although Stagecoach buses do connect Bethel with the Berlin and Lebanon areas. There is likewise no direct connectivity with rail networks, but there are Amtrak stations in White River Junction and Montpelier. Private airports are located in Warren and Post Mills. There are regional airports in Rutland and Manchester. Burlington International Airport is over an hour away by car. Upper Valley residents often access Logan International Airport in Boston via the privately-operated Dartmouth Coach service out of Lebanon.

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

**Goal 1:** To provide and maintain a safe, convenient, energy-efficient and well-maintained transportation network in a cost-effective manner, integrating all modes of travel (auto, pedestrian, bicycle, rail, and public transit) so that they are mutually supportive, and meeting the needs of the public in a manner consistent with the other goals, policies, and recommendations of this Town Plan.

**Policy a:** It is the policy of the Town to maintain the existing road system, while discouraging the expansion or addition of new roads and supporting efforts to sustain and expand alternative modes of transportation, especially public transportation.

**Recommendation a.1:** The Town should work to address not only automobile but also pedestrian, bicycle, and public-transit-related transportation infrastructure needs.

**Recommendation a.2:** The Town should ensure that its development regulations support increased use of electric vehicles by community residents and visitors.

**Policy b:** 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.

**Recommendation b.1:** Decisions about maintenance should be considered in publicized Town forums.

**Policy c:** It is the policy of the Town 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.

**Recommendation c.1:** The Town should evaluate Vermont Department of Transportation data and seek public input when making decisions regarding paving roads.

**Policy d:** 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.

**Recommendation d.1:** The Selectboard should utilize resources such as rural road maintenance software to maintain roads and drainage systems.

**Policy e:** 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.

**Recommendation e.1:** The Town should follow zoning policies that limit access points during new development.

**Policy f:** 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 the region's transportation system is developed in a well-coordinated manner that recognizes and balances the needs and desires of each community.

**Recommendation f.1:** Continue participation in the Regional Transportation Advisory Commission as well as the TRORC Road Foreman's meeting program.

**Policy g:** 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 whenever feasible.

**Recommendation g.1:** The Town should consider opportunities for accommodating bicycle traffic in all road improvement projects whenever feasible.

**Recommendation g.2:** The Town should continue to provide adequate law enforcement resources for enforcing town speed limits.

**Policy h:** It is the policy of the Town to retain Class 4 roads, trails, and other public rights-of-way as public resources.

**Recommendation h.1:** The Town should seek public input prior to reclassifying or otherwise changing policies regarding public rights of way.

**Policy i:** 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.

**Recommendation i.1:** The Development Review Board should consider town access standards in approving any new development on private roads.

**Policy j:** 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 VTTrans to reduce vehicle lane size to safely accommodate bicycle traffic on roadways.

**Recommendation j.1:** The Town should be an active participant in any improvements to state routes within the Town.

**Policy k:** 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.

**Recommendation k.1:** The Selectboard should utilize resources such as rural road maintenance software to maintain roads and drainage systems.

**Goal 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.

**Policy l:** 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 prioritizing transportation improvements in areas where development already exists and where growth is desired.

**Recommendation l.1:** The Town should continue working to minimize the need for trips and associated greenhouse gas emissions by coordinating land use and transportation, and by integrating transit into large projects.

**Recommendation l.2:** The Town should avoid building or extending roads across undeveloped lands, especially productive agricultural and forest land.

**Policy m:** It is the policy of the Town to consider the relationship of a road to surrounding features of the landscape when planning improvements are needed to safely accommodate increasing traffic.

**Recommendation m.1:** The Town should examine the rural and scenic character of the surrounding landscape and be an active participant in any improvements to state routes within the Town.

**Policy n:** It is the policy of the Town to consider accessibility in the downtown.

**Recommendation n.1:** The Town should look at the current regulations regarding the proper number of accessible parking spaces and maintain it.

**Recommendation n.2:** The Town should apply for grants when available, to fund a study to increase amenities in the downtown to make it more accessible.

## XVI. 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 Unified Bylaw (zoning and subdivision) adopted in 2012. The pattern of development promoted by the Barnard Town Plan along Bethel's border is consistent with 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 2017. 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 zoned as "Rural District I" on the Braintree side, which allows a minimum lot size of 10 acres. Part of the land on the Bethel side is zoned as "Rural Development District," which mirrors the density of Braintree's "Rural District I." Most of the land on Bethel's side of the border is designated as "Resource Conservation District," which has lower density (20 acres). Despite the density difference, there are unlikely to be a conflicts between the Bethel and Braintree Plan. The uses allowed on each side of the Town line are similar and compatible.
- **Randolph** – The Town of Randolph has a Municipal Plan (adopted in 2019) and Land Use Regulations (last updated in 2019) that include 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 Development" and "Resource Conservation" Districts. On Route 12, Randolph has designated an Industrial District which abuts Bethel's "Resource Conservation District" and "Medium Density Development District". This does have the potential for conflict because Bethel's abutting districts do not permit industrial uses and there are significant density differences across the Town line. 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 1970s. 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 the minimum density along most of Bethel’s side of the border (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 purposes of Bethel’s Rural Development and Resource Conservation Districts – namely, 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 (2015) and flood hazard regulations (2007). 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. Along and just north of the VT-107 corridor, there is potential for conflict due to significant density differences and use differences. Along 107, Bethel’s “Village District” meets Royalton’s “Agricultural/Residential Area,” which means that high-density development (minimum lot area 20,000 square feet) abuts a low-density area. To the north, Bethel’s “Medium Density Development District” (density: 4 acres) abuts Royalton’s “Resource Conservation Area” (density: 20 acres), which means that commercial uses are allowed on Bethel’s side of the border, but not on Royalton’s side.

**Stockbridge** – The Town of Stockbridge has an adopted Town Plan (2015) 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. Along Route 107, Bethel allows for a density of 4 acres, while Stockbridge allows for a higher density of 1 acre. Along most of the shared border, Bethel’s “Resource Conservation District” abuts Stockbridge’s “Rural Residential District.” This results in a very great difference in densities (20 acres in Bethel, 1 acre in Stockbridge). Moreover, Stockbridge allows a wider array of commercial uses in its “Rural Residential District.” These juxtapositions create the potential for conflict.

## **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 July 2017. It will remain in effect for a period of five years. The Regional 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: Regional Center, Town Centers, Village Settlements, Hamlet Areas, Rural Areas, Conservation and Resource Areas, and Interchange Areas. Delineation of each land use area is mapped or charted.

The Regional Commission is in the process of consulting with its member Towns for the purpose of updating its Regional Plan. This Town Plan is by and large consistent with the 2017 Regional Plan, with one significant difference: the Town has recently designated the area around the intersection of VT-12 and VT-107 as a hamlet. The Regional Future Land Use map, which currently marks that intersection as a Rural Area, will be updated accordingly. With that change, no further conflicts are anticipated between the forthcoming Regional Plan and Bethel's Town Plan.

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

**Goal 1:** To work with neighboring Towns and the region to encourage good land use and environmental policy that benefits the citizens of Bethel.

**Policy a:** It is the policy of the Town to encourage continued communication and cooperation between Bethel and its neighboring Towns.

**Recommendation a.1:** The Town should maintain active interest and awareness in policy and planning changes in surrounding Towns.

**Policy b:** It is the policy of the Town to continue participation in the Two Rivers-Ottawaquechee Regional Commission.

**Recommendation b.1:** The Town should ensure that the Commissioner post is filled and should encourage the Commissioner to keep the Town informed of regional developments.

**Policy c:** It is the policy of the Town to exchange planning information and development data with neighboring communities.

**Recommendation c.1:** The Town should continue participating in the Regional Transportation Advisory Commission and the TRORC Road Foreman's meeting program.

**Recommendation c.2:** The Town should explore opportunities to assist with the implementation of the water quality protection and improvement strategies outlined in the *White River Basin – Basin 9 2018 Tactical Basin Plan*, in collaboration with other Towns and regional partner organizations as appropriate.

## XVII. 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, including (but are not limited to) the following:

<b>Regulatory</b>	<b>Non-Regulatory</b>
Zoning & Subdivision Regulations	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 Hazard 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, flood hazard, and subdivision regulations. Examples of potential implementation tools include:

#### Zoning Regulations

Zoning regulations 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’s Unified Bylaw includes zoning regulations that establish districts or zones with different sets 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 any changes to zoning regulations that are proposed in this Plan.

As an alternative to conventional methods, a Town may implement a set of measurable performance standards for specific uses instead of creating zoning 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. Another option is to implement "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 now incorporated into the Town's Unified Bylaw and are administered by the Zoning Administrator 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 Regulations**

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 regulations have been established and incorporated into the Unified Bylaw in order to minimize potential for flood damage and to maintain use of agricultural land within the limits of the 100-year floodplain and state-designated River Corridors. As noted in the Flood Resilience chapter 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 can only be obtained for properties in Bethel if the Town has in effect flood hazard regulations. Bethel presently has flood hazard regulations 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 qualifying "development" or "subdivision" is subject to a rather large and involved set of definitions. Some examples include: commercial and industrial projects on more than 10 acres of land; construction of 10 or more units of housing; subdivision of land into 10 or more lots; construction of a telecommunication tower extending 50 or more feet above ground-level; and development over 2,500 feet in elevation.

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 projected 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 Planning Commission. One criterion that needs to be addressed is whether the proposed 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 annually adopts Town Road rules and regulations, based on state standards, which set forth the standards and conditions for construction, maintenance, and repair of Town highways. In addition, the Town has adopted formal policies 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.

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

### **Capital Budget & Program**

A capital budget and program is a financing approach that benefits a 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 expenditures will be needed 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.

Bethel has developed and adopted a Capital Improvement Plan that outlines capital needs/projects between 2017 and 2022.

### **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. These groups 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 variety of active committees; the Conservation Commission, Recreation Committee, and Energy Committee all contributed to this Plan update.

### **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
- 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-1970s, the Vermont Community Development Program (VCDP) has made grant funds available to towns for community projects. Historically, the major focus of the program has been on housing rehabilitation and affordable housing projects benefiting low and moderate-income families, 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 Planning 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. 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 recommendation, the responsible party, and the expected implementation timeframe. 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

**PC** = Planning Commission

**SB** = Selectboard

**AO** = Administrative Officer

## APPENDIX A: Implementation Plan

Chapter	Action Item	Responsibility & Timeframe
<b>Economic Development</b>	The Town will be an active participant in regional economic development planning efforts.	Responsibility: SB Timeframe: Ongoing
		Responsibility: DRB Timeframe: Ongoing
	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, PC, DRB Timeframe: Ongoing
	The Town of Bethel should periodically review its zoning standards to ensure that home businesses are encouraged and permitted.	Responsibility: PC Timeframe: Every 5 years
	It is recommended that the Town apply to renew the Village Center designation and maintain compliance with requirements of the program.	Responsibility: SB Timeframe: 2024, 8 year cycle thereafter
	The Town will inform existing and new businesses about the benefits provided by the Village Center Designation program.	Responsibility: Town Manager, AMP Timeframe: Ongoing
	The Town will continue to encourage farmer's markets and local events by Bethel Council on the Arts.	Responsibility: AMP Timeframe: Ongoing
	The Development Review Board should review applications for new development with careful attention to availability of resources and access.	Responsibility: DRB Timeframe: Ongoing
	The Development Review Board should review applications for new development with an eye to preventing sprawl.	Responsibility: DRB Timeframe: Ongoing
<b>Housing</b>	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.	Responsibility: AMP 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 Timeframe: Next 5 years

<b>Chapter</b>	<b>Action Item</b>	<b>Responsibility &amp; Timeframe</b>
<b>Housing</b>	The Town should encourage compliance with the state’s Residential Building Energy Standards (RBES) for new construction by educating residents about those standards and the need to file appropriate compliance certification (RBES Certificate or Owner/Builder Disclosure Statement) with the Town Clerk. The Town should also work with non-profits and others to improve energy efficiency in existing homes to reduce long-term costs and energy needs.	Responsibility: Energy Committee Timeframe: Ongoing
	The Town should work with non-profits and others to improve energy efficiency in existing homes to reduce long-term costs and energy needs.	Responsibility: Energy Committee Timeframe: Ongoing
	The Town should encourage residents and business owners to apply for historic-preservation grants.	Responsibility: PC Timeframe: Ongoing
<b>Education</b>	The Town will endeavor to be responsive to individuals seeking to establish themselves as childcare providers, and to the extent that it is able, it will assist them in overcoming barriers toward licensing and registration.	Responsibility: Town Manager, AMP Timeframe: Ongoing
	The Town should provide links on the Town’s website to the Department of Children and Family Bright Futures Child Care Information System.	Responsibility: AMP Timeframe: 1 year
	The Town should remain engaged through regular communication with local child care providers for ongoing assessment of needs and resources that the Town could provide.	Responsibility: AMP Timeframe: Ongoing
	The Town will seek to consider the financial impact on the educational system of all large-scale development decisions.	Responsibility: DRB Timeframe: Ongoing
	The Town should support Bethel schools in accessing state assistance to plan and implement energy projects, through the School Energy Management Program.	Responsibility: Energy Committee Timeframe: Next 5 years
	The Town will maintain regular engagement and communication with school administration and the Supervisory Union to make sure that the Town and the school are collaborating to identify needs and maximize educational opportunities.	Responsibility: All AMPs Timeframe: Ongoing
	The Town will continue to work with local community groups on providing space and support for adult education programs.	Responsibility: SB Timeframe: Ongoing

Chapter	Action Item	Responsibility & Timeframe
<b>Utilities and Facilities</b>	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 high-speed 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, Solid Waste Management Program Board representatives Timeframe: Ongoing
	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: Ongoing
	The Town should support the Selectboard's continuing participation in Public Service Board reviews of telecommunications facilities.	Responsibility: SB Timeframe: Ongoing
	The Selectboard should regularly update its Capital Improvement Program to guide future investments in infrastructure.	Responsibility: SB Timeframe: Next 2 years, every 4 years thereafter
	In development decisions, the Town should continue to consider factors related to ensuring that development does not exceed the Town's ability to provide adequate public facilities.	Responsibility: DRB, PC Timeframe: Ongoing
	The Town should take steps to assess the energy efficiency of vehicles and the structures and internal loads of Town buildings to reduce their energy use.	Responsibility: Energy Committee, all Town Depts. Timeframe: Next 5 years
<b>Emergency Services</b>	Town officials who are part of Bethel's emergency management team should receive adequate training in the Incident Command System (ICS).	Responsibility: Emergency Planning Committee Timeframe: Next 2 years
	The Selectboard should update the Local Emergency Management Plan (LEMP) at least once a year, or when key emergency management personnel change.	Responsibility: SB Timeframe: Annually
	The Development Review Board should consider ease of emergency access in evaluating proposed developments and require turnaround areas be installed wherever necessary.	Responsibility: DRB Timeframe: Ongoing

<b>Chapter</b>	<b>Action Item</b>	<b>Responsibility &amp; Timeframe</b>
<b>Emergency Services</b>	The Selectboard should designate an annual review of the LEMP by whatever process it deems appropriate.	Responsibility: SB Timeframe: Annually
	The Selectboard should continue to update its Hazard Mitigation Plan with assistance as needed from the Two Rivers-Ottawaquechee Regional Commission.	Responsibility: SB, PC, AMPs Timeframe: Next 2 years, every 4 years thereafter
	The town may develop a climate change risk management plan along with the hazard mitigation plan.	Responsibility: PC Timeframe: Next 5 years
	The Town should provide information about emergency preparedness on its website.	Responsibility: Emergency Planning Committee Timeframe: 1 year
	The Development Review Board should consider the ability of current emergency service providers to serve any new developments.	Responsibility: DRB Timeframe: Ongoing
<b>Community Health and Wellness</b>	The Town will continue to work with Stagecoach and White River Ambulance to ensure residents have transportation to health and wellness services.	Responsibility: SB Timeframe: Ongoing
	The Town should make its facilities and resources available for community health and wellness programs/services, such as health screening days.	Responsibility: SB, AMPs Timeframe: Ongoing
	The Town should look for opportunities to support residents who wish to age in place.	Responsibility: SB, PC Timeframe: Ongoing
	The Town should continue its relationship with White River Valley Ambulance.	Responsibility: SB Timeframe: Ongoing
	Town will develop infrastructure using the Health Impact Assessment process, considering environmental and healthy lifestyle impacts.	Responsibility: DRB, PC Timeframe: Ongoing
	The Town should support efforts to provide residents with affordable, safe, and efficient heating systems.	Responsibility: Energy Committee, SB Timeframe: Ongoing
	The Town should consider accessibility when developing public spaces and recreational opportunities.	Responsibility: All AMPs Timeframe: Ongoing
	The Town should consider ordinances and other regulations prohibiting use and disposal of tobacco, tobacco substitutes, vaping products, and marijuana/cannabis on Town-owned or Town-leased property, or at outdoor events open to the public.	Responsibility: SB Timeframe: Next 5 years
	The Town should consider establishing point-of-sale restrictions for age-restricted substances.	Responsibility: SB Timeframe: Next 5 years

<b>Chapter</b>	<b>Action Item</b>	<b>Responsibility &amp; Timeframe</b>
<b>Community Health and Wellness</b>	The Town should promote use of parks and recreation facilities.	Responsibility: Recreation Committee, Conservation Commission Timeframe: Ongoing
	The Town should continue to support healthy eating, local agriculture, & food production through ongoing support of the weekly Bethel Farmers' Market.	Responsibility: SB Timeframe: Ongoing
	The Town should work with the Bethel Food Shelf to ensure the Town's food insecure and low income residents have enough food to maintain a healthy lifestyle.	Responsibility: SB Timeframe: Ongoing
<b>Energy</b>	Municipal officials should have adequate resources and training to provide input at PSB review meetings.	Responsibility: SB Timeframe: Ongoing
	Commercial energy generation facilities should comply with existing the regulations in the Bylaw.	Responsibility: DRB Timeframe: Ongoing
	The Town should consider municipal or community-based renewable energy generation, 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.	Responsibility: SB, Energy Committee Timeframe: Next 10 years
	The Planning Commission should identify areas in Town that are appropriate for large scale energy production.	Responsibility: PC Timeframe: Next 5 years
	The Town should consider the benefits and/or drawbacks of using regionally available alternative-fuels, such as biodiesel, in municipal vehicles.	Responsibility: SB, Energy Committee Timeframe: Next 5 years
	The Town should pursue opportunities to develop electric vehicle charging stations at convenient locations throughout the Town.	Responsibility: Energy Committee, SB Timeframe: Next 5 years
	The Town should consider proximity to the village center as an important factor in public investment in new facilities and developments.	Responsibility: SB, PC Timeframe: Ongoing
	Power generation, transmission, and distribution facilities or service areas should comply with existing regulations in the Town's Bylaw.	Responsibility: DRB Timeframe: Ongoing

Chapter	Action Item	Responsibility & Timeframe
<b>Energy</b>	The Town should invite state programs to conduct outreach at Town-wide events, such as the Forward Festival.	Responsibility: Energy Committee Timeframe: Ongoing
	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: Energy Committee Timeframe: Ongoing
	The Town should implement energy efficiency measures recommended by energy audits and the 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 Timeframe: Ongoing
	The Town, with help from the Energy Committee, should develop municipal procurement and purchasing that emphasize products that are energy efficient (e.g., Energy Star® rated).	Responsibility: Energy Committee, all Town Departments Timeframe: Ongoing
	The Town should develop facility maintenance and operation policies that maximize energy efficiency while maintaining comfort levels for employees and visitors.	Responsibility: Energy Committee, all Town Departments Timeframe: Ongoing
	The Town should continue to develop its relationship with EC Fiber.	Responsibility: SB Timeframe: Next 5 years
	The Town should explore options for acquiring energy-efficient municipal vehicles when practicable.	Responsibility: SB Timeframe: Next 5 years
	The Town should publish the Stagecoach schedule on its website.	Responsibility: AMP Timeframe: 1 year, updated as needed
	<b>Natural, Scenic, &amp; Cultural Resources</b>	The Developmental Review Board should be cognizant of new developments' impacts on the natural, scenic, and historic character of the Town.
Bethel will support an active Conservation Commission which will exercise its powers and duties as stated in 24 V.S.A. §§ 4501, et seq.		Responsibility: SB, CC Timeframe: Ongoing
The Town should continue to budget for and support parks, recreation, open spaces, & land conservation.		Responsibility: SB Timeframe: Ongoing
The Town should seek to educate residents about runoff issues and proper disposal of hazardous waste.		Responsibility: CC Timeframe: Ongoing

Chapter	Action Item	Responsibility & Timeframe
<b>Natural, Scenic, &amp; Cultural Resources</b>	The appropriate Town board should coordinate with the Agency of Natural Resources to ensure that large water withdrawals are properly monitored.	Responsibility: AMP Timeframe: As needed
	The Town should negotiate with new developments to ensure that the Town is compensated for commercial water withdrawal.	Responsibility: SB, DRB Timeframe: As needed
	The Town should maintain and update a reliable inventory of existing culverts and structures, coupled with a short- and long-range plan for replacement and upsizing.	Responsibility: AMP Timeframe: Next 5 years
	The Development Review Board should be cognizant of the appropriate setbacks for development and should be governed accordingly.	Responsibility: DRB Timeframe: Ongoing
	The Town should explore opportunities to assist with the implementation of the water quality protection and improvement strategies outlined in the <i>White River Basin – Basin 9 2018 Tactical Basin Plan</i> , in collaboration with other Towns and regional partner organizations as appropriate.	Responsibility: SB, CC Timeframe: Next 10 years
	The Town should seek to educate residents about stream maintenance, buffer zones, and the importance of not removing existing vegetation from streambanks.	Responsibility: CC, all AMPs Timeframe: Ongoing
	The Town should maintain its wetlands map, and should review and update periodically.	Responsibility: CC, PC Timeframe: Ongoing
	The Town should assist residents in identifying wetlands and complying with state regulations.	Responsibility: PC, CC, DRB Timeframe: Ongoing
	The Development Review Board should consider existing wetlands and their relation to any proposed development.	Responsibility: DRB Timeframe: Ongoing
	The Town should facilitate public education about existing rules and regulations.	Responsibility: PC, DRB Timeframe: Ongoing
	The Development Review Board should work with applicants to effectively plan new development consistent with existing resources.	Responsibility: DRB Timeframe: Ongoing
	Applicants should be made aware of conservation strategies.	Responsibility: CC, DRB, PC Timeframe: Ongoing
	Efforts should be made to maintain and improve forest blocks as well as connecting links between habitat areas.	Responsibility: PC, DRB, CC Timeframe: Ongoing

<b>Chapter</b>	<b>Action Item</b>	<b>Responsibility &amp; Timeframe</b>
<b>Natural, Scenic, &amp; Cultural Resources</b>	The Town should continue to make [hunting and fishing] informational resources available to residents.	Responsibility: CC Timeframe: Ongoing
	Town employees and contractors should become familiar with the best management practices to prevent the accidental spread of invasive species.	Responsibility: CC, SB,AO Departments Timeframe: Ongoing
	The Town should time roadside mowing to minimize and reduce the spread of invasive species.	Responsibility: SB, AO Departments Timeframe: Ongoing
	The Town should review its existing [gravel extraction] regulations, with public input.	Responsibility: DRB, SB, PC Timeframe: Ongoing
	The Town should work with all interested parties to ensure that [gravel] extraction activities have the least negative impact possible.	Responsibility: DRB, CC Timeframe: Ongoing
	In order to better protect the valued scenic areas in the Town, these should be inventoried and prioritized and consideration given as to how to best protect these with district-specific policies or standards.	Responsibility: PC, CC Timeframe: Next 5 years
	The Conservation Commission should continue to consider how to 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.	Responsibility: CC Timeframe: Next 10 years
	The Town should continue to support a conservation fund to be administered by the Conservation Commission for the purposes of natural resource protection and land preservation.	Responsibility: SB, CC Timeframe: Ongoing
	The Development Review Board should consider the impact on natural, scenic, historic, and cultural resources in its review of proposed development projects.	Responsibility: DRB Timeframe: Ongoing
<b>Agriculture and Forestry</b>	The Town should continue to provide for appropriate zoning for rural areas.	Responsibility: PC Timeframe: Ongoing
	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 for the public.	Responsibility: CC, private entities Timeframe: Ongoing

<b>Chapter</b>	<b>Action Item</b>	<b>Responsibility &amp; Timeframe</b>
<b>Agriculture and Forestry</b>	The Town will continue to explore opportunities for technical assistance, grants, and low-interest loans for new or improved farm and forest operations or practices.	Responsibility: CC, PC, SB Timeframe: Ongoing
	The Town should work with stakeholders to find appropriate placement for residential, commercial, and industrial activities.	Responsibility: DRB, PC Timeframe: Ongoing
	The Development Review Board should prioritize conservation of productive agricultural and forest land.	Responsibility: DRB Timeframe: Ongoing
	The Town’s zoning should classify violations of the state’s accepted silvicultural practices as municipal zoning violations.	Responsibility: PC Timeframe: Next 3 years
	The Town should continue to support local agricultural and forestry businesses through its revolving loan fund.	Responsibility: SB, CC Timeframe: Ongoing
	The Town should continue to support the Bethel Farmer’s Market.	Responsibility: SB Timeframe: Ongoing
	The Town should support the school in its farm-to-table health initiatives.	Responsibility: CC, AMP Timeframe: Ongoing
<b>Recreation</b>	The Town should consider creating a long-range recreation plan that utilizes citizen input and good planning practices.	Responsibility: PC, Recreation Committee Timeframe: Next 5 years
	The Conservation Commission should continue developing proposals for the best and most productive use of municipal properties.	Responsibility: CC Timeframe: Next 5 years
	Through the development review process, the Town should identify, provide, and protect public access to non-commercial outdoor recreational opportunities, such as water bodies and hiking trails, wherever appropriate.	Responsibility: DRB Timeframe: Ongoing
	The Town’s development review process should discourage fragmentation of undeveloped land in rural areas.	Responsibility: DRB Timeframe: Ongoing
	Promote active transportation through walking and biking.	Responsibility: Recreation Committee, other AMPs Timeframe: Ongoing
	Consider accessibility when developing public spaces for recreation.	Responsibility: Recreation Committee, DRB Timeframe: Ongoing
	The Town should continue to promote and expand Town-sponsored recreational programs and activities.	Responsibility: Recreation Committee Timeframe: Ongoing

Chapter	Action Item	Responsibility & Timeframe
<b>Land Use</b>	Minimum lot area for all uses [in the Core Business Area] shall be 10,000 square feet, with the exception of multifamily, which requires 3000 square feet per unit.	Responsibility: DRB, AO Timeframe: Ongoing
	The Town should not permit development projects that promote or exacerbate strip development along Town Highways.	Responsibility: DRB, AO Timeframe: Ongoing
	The Town should ensure that proposed development within the Village Center be consistent with existing structures within the neighborhood.	Responsibility: DRB, AO Timeframe: Ongoing
	For most uses [in the Village Area], a lot can be as small as 20,000 square feet. For multifamily developments, 7,500 square feet of lot area are required per unit.	Responsibility: DRB, AO Timeframe: Ongoing
	The Town should ensure that primary retail establishments adhere to the lot area minimums and setbacks as outlined in Bethel’s Unified Bylaw.	Responsibility: DRB, AO Timeframe: Ongoing
	The Town will ensure that the Hamlet District will provide for small areas of mixed housing types and limited commercial uses.	Responsibility: PC, DRB, AO Timeframe: Ongoing
	Minimum lot area [in the Hamlet Areas] for most uses should be one acre, with the exception of multi-family (20,000 square feet per unit) and light industrial (2 acres).	Responsibility: DRB, AO Timeframe: Ongoing
	The Town should ensure a 1 acre minimum lot size for retail establishments [in Hamlet Areas], in accordance with Bethel’s Unified Bylaw.	Responsibility: DRB, AO Timeframe: Ongoing
	The minimum lot area [in Medium Density Development Areas] for all uses is 4 acres, with the exception of multifamily, which requires 2 acres per unit. Smaller lot sizes are allowed if they will facilitate the preservation of working lands or scenic areas.	Responsibility: DRB, AO Timeframe: Ongoing
	The Town should ensure that secondary retail establishments meet all setbacks and off-street parking requirements specified in Bethel’s Unified Bylaw.	Responsibility: DRB, AO Timeframe: Ongoing
	The Development Review Board should prioritize the conservation of large, contiguous tracts of productive agricultural and forest land.	Responsibility: DRB Timeframe: Ongoing

<b>Chapter</b>	<b>Action Item</b>	<b>Responsibility &amp; Timeframe</b>
<b>Land Use</b>	Lot area [in Rural Development Areas] should be no less than 10 acres.	Responsibility: DRB, AO Timeframe: Ongoing
	The Town should ensure primary retail development is located in the Core Business Area, Village Area, or Hamlets.	Responsibility: PC, DRB, AO Timeframe: Ongoing
	The Town should ensure that all commercial development is consistent with existing structures and densities within the Rural Development Areas.	Responsibility: DRB, AO Timeframe: Ongoing
	The minimum lot area in [the Resource Conservation Area] is 20 acres. Smaller lot sizes are allowed if they will facilitate the preservation of undeveloped lands, working lands, or scenic areas.	Responsibility: DRB, AO Timeframe: Ongoing
	Development permitting in the Resource Conservation Area should prioritize the preservation and improvement of forest blocks and habitat connectivity blocks, in order to minimize fragmentation and promote the ecological health and function of Bethel's natural resources.	Responsibility: DRB, AO Timeframe: Ongoing
	The Town should ensure that all commercial development is consistent with existing structures and densities within the Resource Conservation Area.	Responsibility: DRB, AO Timeframe: Ongoing
	The Town should ensure that uses are compatible with water quality protection per the regulations in Bethel's Unified Bylaw.	Responsibility: DRB, AO Timeframe: Ongoing
	The Town should consider regulating use and storage of fertilizers within the Wellhead Protection Area.	Responsibility: PC, SB Timeframe: Ongoing
	The Town should work to address not only automobile but also pedestrian, bicycle, and public-transit-related transportation infrastructure needs.	Responsibility: SB Timeframe: Ongoing
	The Town should ensure that its development regulations support increased use of electric vehicles by community residents and visitors.	Responsibility: PC, SB, Energy Committee Timeframe: Ongoing
	Decisions about maintenance should be considered in publicized Town forums.	Responsibility: SB, Public Works Department Timeframe: Ongoing

<b>Chapter</b>	<b>Action Item</b>	<b>Responsibility &amp; Timeframe</b>
<b>Transportation</b>	The Town should evaluate Vermont Department of Transportation data and seek public input when making decisions regarding paving roads.	Responsibility: SB, Public Works Department Timeframe: Ongoing
	The Selectboard should utilize resources such as rural road maintenance software to maintain roads and drainage systems.	Responsibility: SB, Public Works Department Timeframe: Ongoing
	The Town should follow zoning policies that limit access points during new development.	Responsibility: DRB, AO Timeframe: Ongoing
	Continue participation in the Regional Transportation Advisory Commission as well as the TRORC Road Foreman’s meeting program.	Responsibility: SB, Public Works Department Timeframe: Ongoing
	The Town should consider opportunities for accommodating bicycle traffic in all road improvement projects whenever feasible.	Responsibility: PC, DRB, Public Works Department Timeframe: Ongoing
	The Town should continue to provide adequate law enforcement resources for enforcing town speed limits.	Responsibility: SB Timeframe: Ongoing
	The Town should seek public input prior to reclassifying or otherwise changing policies regarding public rights of way.	Responsibility: SB Timeframe: Ongoing
	The Development Review Board should consider town access standards in approving any new development on private roads.	Responsibility: DRB Timeframe: Ongoing
	The Town should be an active participant in any improvements to state routes within the Town.	Responsibility: SB, Public Works Department Timeframe: Ongoing
	The Selectboard should utilize resources such as rural road maintenance software to maintain roads and drainage systems.	Responsibility: SB, Public Works Department Timeframe: Ongoing
	The Town should continue working to minimize the need for trips and associated greenhouse gas emissions by coordinating land use and transportation, and by integrating transit into large projects.	Responsibility: PC, DRB Timeframe: Ongoing
	The Town should avoid building or extending roads across undeveloped lands, especially productive agricultural and forest land.	Responsibility: PC, DRB Timeframe: Ongoing
	The Town should examine the rural and scenic character of the surrounding landscape and be an active participant in any improvements to state routes within the Town.	Responsibility: SB, DRB, Public Works Department Timeframe: Ongoing

Chapter	Action Item	Responsibility & Timeframe
<b>Flood Resilience</b>	The Planning Commission should consider revising Bethel's Unified Bylaw to avoid new development within the SFHA and River Corridors, with the exception of open space, recreational, and agricultural uses.	Responsibility: PC Timeframe: Next 5 years
	New development in the SFHA and River Corridors, including renewable energy generation facilities, shall comply with existing Bylaw requirements that such uses do not impede flood flows, trap debris, or increase the danger of flooding or erosion on or off site.	Responsibility: DRB, AO Timeframe: Ongoing
	Encourage property owners to maintain vegetated buffer strips in riparian zones bordering streams and rivers. Rock rip-rap and retaining walls should only be used to the minimum extent necessary and when bioengineering techniques may not be adequate to prevent significant loss of land or property.	Responsibility: Conservation Commission, DRB Timeframe: Ongoing
	Encourage permit applicants to consider siting in less hazardous areas.	Responsibility: DRB Timeframe: Ongoing
	Town administration should consider safer alternative siting locations whenever possible.	Responsibility: SB, all AMPs Timeframe: Ongoing
	The DRB should work with permit applicants to ensure consistency with bylaw regulations.	Responsibility: DRB Timeframe: Ongoing
	The Planning Commission should ensure that Bethel's Unified Bylaw continues to meet the standards required by the Federal Emergency Management Agency so that Bethel may continue to participate in the NFIP.	Responsibility: PC Timeframe: Ongoing
	FEMA shall maintain maps that reflect as accurately as possible the flood hazard areas to assist in appropriate land use decisions.	Responsibility: Federal Emergency Management Agency Timeframe: Ongoing

Chapter	Action Item	Responsibility & Timeframe
<b>Relationship to Other Plans</b>	The Town should maintain active interest and awareness in policy and planning changes in surrounding Towns.	Responsibility: PC, SB Timeframe: Ongoing
	The Town should ensure that the TRORC Commissioner post is filled and should encourage the Commissioner to keep the Town informed of regional developments.	Responsibility: SB Timeframe: Ongoing
	The Town should continue participating in the Regional Transportation Advisory Commission and the TRORC Road Foreman’s meeting program.	Responsibility: SB, Public Works Department Timeframe: Ongoing
	The Town should explore opportunities to assist with the implementation of the water quality protection and improvement strategies outlined in the <i>White River Basin – Basin 9 2018 Tactical Basin Plan</i> , in collaboration with other Towns and regional partner organizations as appropriate.	Responsibility: SB, CC Timeframe: Next 10 years

## Municipal Template - Energy Data

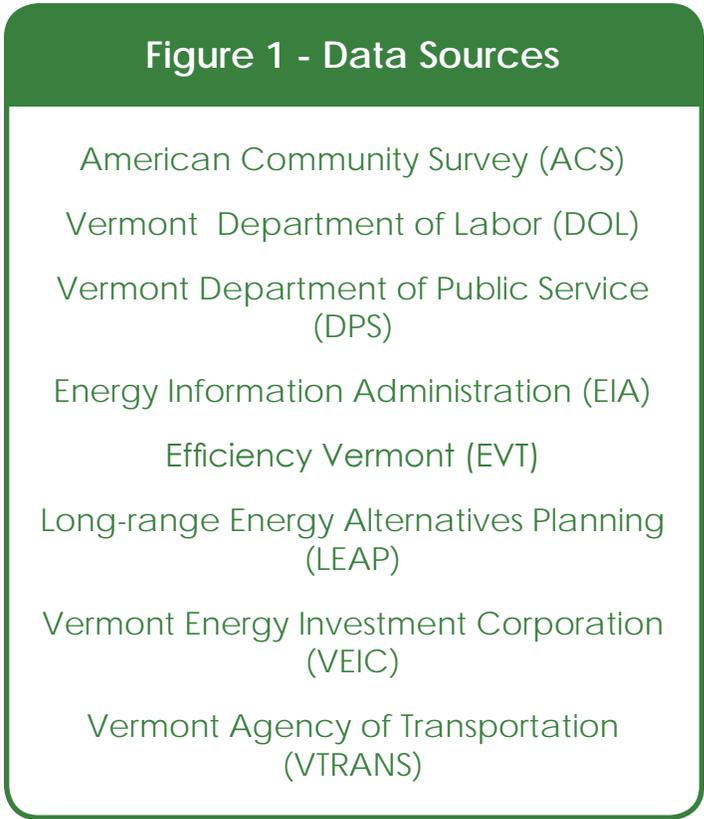
The following is an explanation of the information displayed in the Municipal Template for Bethel.

The intent of the Municipal Template is to provide the municipality with data that can be used to ensure compliance with the requirements of Act 174 and “Enhanced Energy Planning” (24 V.S.A. 4352). The spreadsheet contains data that estimates current energy use and provides targets for future energy use across all sectors (transportation, heating, and electricity). It also sets a target for renewable energy generation within the municipality.

This data is meant to be a starting point for the municipality to begin planning its energy future and to talk about the changes that may need to occur within the municipality to ensure that local, regional and state energy goals are met. This includes the goal that 90% of all energy demand be met by renewable sources by 2050.

Estimates of current energy use consist primarily of data available from the American Community Survey (ACS), the Vermont Agency of Transportation (VTrans), the Vermont Department of Labor (DOL), and the Vermont Department of Public Service (DPS). Targets for future energy use are reliant upon the Long-range Energy Alternatives Planning (LEAP) analysis for the region completed the Vermont Energy Investment Corporation (VEIC). Targets for future energy generation have come from the regional planning commission and DPS. Targets for both future energy use and energy generation have been generally developed using a “top down” method of disaggregating regional data to the municipal level. This should be kept in mind when reviewing the template. It is certainly possible to develop “bottom up” data. For those municipalities interested in that approach, please see the Department of Public Service’s Analysis and Targets Guidance.

There are some shortcomings and limitations associated the data used in the Municipal Template. For instance, assumptions used to create the LEAP analysis are slightly different than assumptions used to calculate current municipal energy use. Regardless, the targets established here show the direction in which change needs to occur to meet local, regional and state energy goals. It is important to remember that the targets established by LEAP represents only on way to achieve energy goals. There may several other similar pathways that a municipality may choose to take in order to meet the 90x50 goal.



Below is a worksheet by worksheet explanation of the Municipal Template spreadsheet:

## 1. Municipal Summary

The Municipal Summary worksheet summarizes all data that is required to be in the Municipal Plan if the plan is to meet the “determination” standards established by the Vermont Department of Public Service.

### 1A. Current Municipal Transportation Energy Use

Transportation Data	Municipal Data
Total # of Vehicles (ACS 2011-2015)	1,359
Average Miles per Vehicle (VTrans)	11,356
Total Miles Traveled	15,432,804
Realized MPG (VTrans)	18.6
Total Gallons Use per Year	829,721
Transportation BTUs (Billion)	100
Average Cost per Gallon of Gasoline (RPC)	2
Gasoline Cost per Year	1,916,655

This table uses data from the American Community Survey (ACS) and Vermont Agency of Transportation (VTrans) to calculate current transportation energy use and energy costs.

### 1B. Current Municipal Residential Heating Energy Use

Fuel Source	Municipal Households (ACS 2011-2015)	Municipal % of Households	Municipal Square Footage Heated	Municipal BTU (in Billions)
Natural Gas	0	0.0%	0	0
Propane	148	17.4%	16,352,040,000	16
Electricity	27	3.2%	2,581,140,000	3
Fuel Oil	398	46.8%	37,768,740,000	38
Coal	0	0.0%	0	0
Wood	264	31.1%	30,390,840,000	30
Solar	0	0.0%	0	0
Other	13	1.5%	1,374,900,000	1
No Fuel	0	0.0%	0	0
<b>Total</b>	<b>850</b>	<b>100.0%</b>	<b>88,467,660,000</b>	<b>88</b>

This table displays data from the ACS that estimates current municipal residential heating energy use.

## 1C. Current Municipal Commercial Energy Use

	Commercial Establishments in Municipality (VT DOL)	Estimated Thermal Energy BTUs per Commercial Establishment (in Billions) (VDPS)	Estimated Thermal Energy BTUs by Commercial Establishments in Municipality (in Billions)
Municipal Commercial Energy Use	54	.725	39

The table uses data available from the Vermont Department of Labor (VT DOL) and the Vermont Department of Public Service (DPS) to estimate current municipal commercial establishment energy use in the municipality.

## 1D. Current Electricity Use \*

Use Sector	Current Electricity Use
Residential (kWh)	2,603,492
Commercial and Industrial (kWh)	2,836,367
Total (kWh)	5,439,859

\*This table displays current electricity use within the municipality with data from the ACS, DPS, and VT DOL. More accurate data will be available soon from Efficiency Vermont (EVT).

## 1E. Residential Thermal Efficiency Targets

	2025	2035	2050
Residential - Increased Efficiency and Conservation (% of municipal households to be weatherized)	33%	67%	100%

This table displays targets for thermal efficiency for residential structures based on a methodology developed by DPS using data available from the regional Long-range Energy Alternatives Planning (LEAP) analysis and ACS. The data in this table represents the percentage of municipal households that will need to be weatherized in the target years.

## 1F. Commercial Thermal Efficiency Targets

	2025	2035	2050
Commercial - Increased Efficiency and Conservation (% of commercial establishments to be weatherized)	6%	9%	18%

This table shows the same information as Table 1E, but sets a target for commercial thermal efficiency. Information from the VT DOL is required to complete this target.

### 1G. Thermal Fuel Switching Targets (Residential and Commercial) - Wood Systems

	2025	2035	2050
New Efficient Wood Heat Systems (in units)	0	0	0

This target was calculated using data from LEAP and ACS. This table provides a target for new wood heating systems for residential and commercial structures in the municipality for each target year. Due to the LEAP model forecasting a large decrease in wood use resulting in a negative number of targets we have put zero in for this section. Towns are encouraged to use efficient wood heat.

### 1H. Thermal Fuel Switching Targets (Residential and Commercial) - Heat Pumps

	2025	2035	2050
New Heat Pumps (in units)	87	228	479

This table provides a target for new heat pump systems for residential and commercial structures in the municipality for each target year. This target was calculated using data from LEAP and ACS.

### 1I. Electricity Efficiency Targets

	2025	2035	2050
Increase Efficiency and Conservation	-0.6%	5.7%	9.9%

Data in this table displays a target for increased electricity efficiency and conservation during the target years. These targets were developed using regional LEAP analysis. Towns are encouraged to consider increased efficiency targets.

### 1J. Use of Renewables - Transportation

	2025	2035	2050
Renewable Energy Use - Transportation	9.6%	23.1%	90.3%

This data displays targets for the percentage of transportation energy use coming from renewable sources during each target year. This data was developed using the LEAP analysis.

### 1K. Use of Renewables - Heating

	2025	2035	2050
Renewable Energy Use - Heating	50.7%	62.9%	92.4%

This data displays targets for the percentage of heating energy use coming from renewable sources during each target year. This data was developed using information from the LEAP analysis.

### 1L. Use of Renewables - Electricity

	2050
Renewable Energy Use - Electricity (MWh)	11,397- 13,930

This data displays the target for electricity generation coming from renewable sources within the municipality for 2050. This data was developed using information from the regional planning commission and DPS. This data is the same as the data in Table 1Q.

### 1M. Transportation Fuel Switching Target - Electric Vehicles

	2025	2035	2050
Electric Vehicles	126	892	1,855

This tables displays a target for switching from fossil fuel based vehicles (gasoline and diesel) to electric vehicles. This target is calculated on Worksheet 2 by using LEAP and ACS data.

### 1N. Transportation Fuel Switching Target - Biodiesel Vehicles

	2025	2035	2050
Biodiesel Vehicles	221	416	703

This tables displays a target for switching from fossil fuel based vehicles to biodiesel-powered vehicles. This target is calculated on Worksheet 2. by using LEAP and ACS data.

## 1O. Existing Renewable Generation

Renewable Type	MW	MWh
Solar	0.08	98
Wind	0.00	4
Hydro	0.33	1156
Biomass	0.00	0
Other	0.00	0
<b>Total Existing Generation</b>	<b>0.41</b>	<b>1258</b>

Table 1O shows existing renewable generation in the municipality as of 2015, in MW and MWh, based on information available from the Vermont Department of Public Service.

## 1P. Renewable Generation Potential

Renewable Type	MW	MWh
Rooftop Solar	1	1,374
Ground-mounted Solar	540	662,256
Wind	608	1,863,362
Hydro	0	291
Biomass and Methane	0	0
Other	0	0
<b>Total Renewable Generation Potential</b>	<b>1,149</b>	<b>2,527,282</b>

Renewable generation potential is based on mapping completed by the regional planning commission that is based on the Municipal Determination Standards and associated guidance documents developed by DPS. The renewable generation potential is expressed in MW and MWh by the type of renewable resource (solar, commercial wind, hydro, etc.).

## 1Q. Renewable Generation Target

	2050
Total Renewable Generation Target (in MWh)	11,397-13,930

Renewable generation target for municipalities was developed by the town's population percentage within the region.

## 1R. Sufficient Land

	Y/N
Renewable Sources	Y
Surplus of Generation	19858%

This table shows whether or not there is sufficient land in the municipality to meet the renewable generation targets based on the renewable generation potential in the municipality.

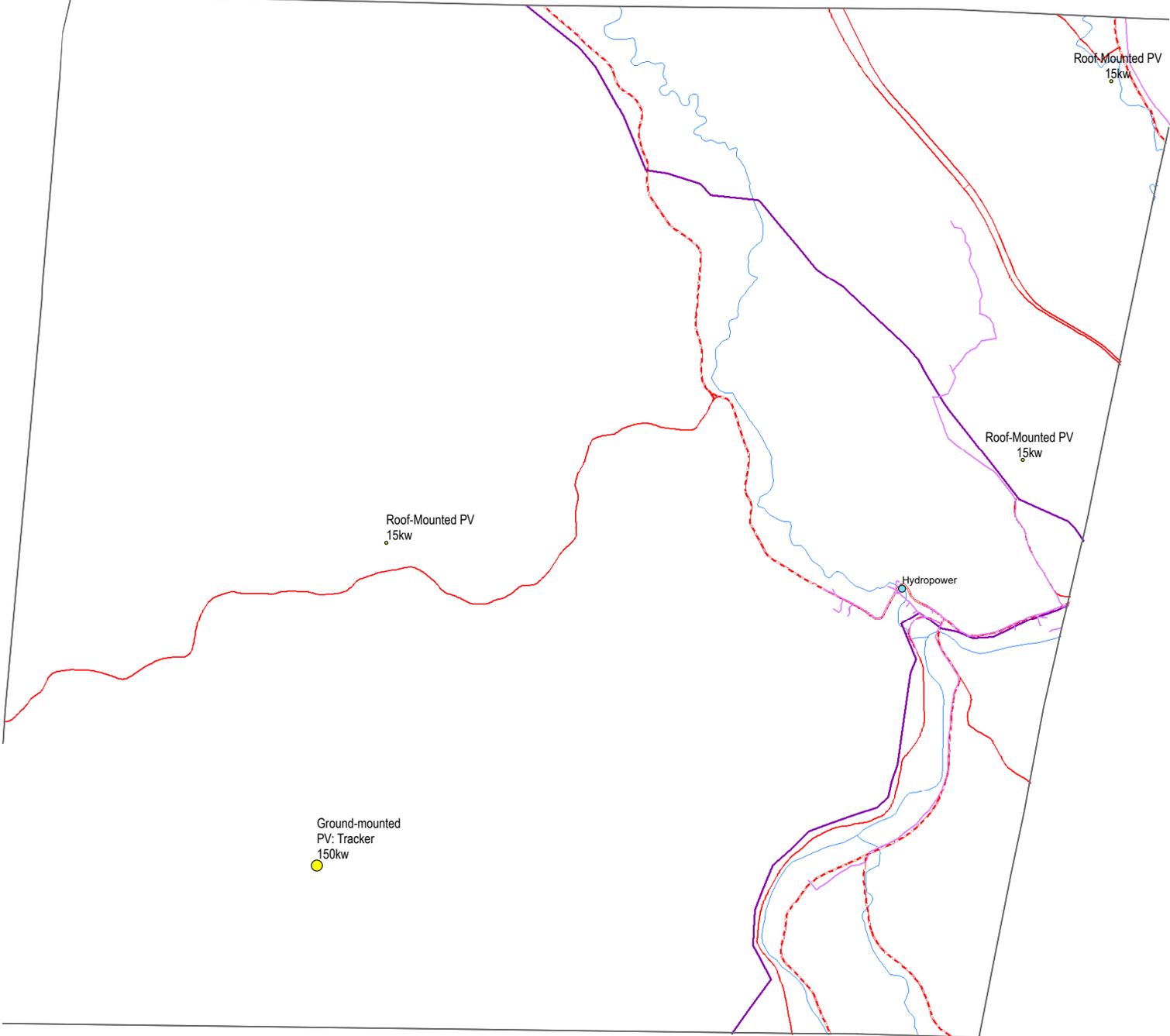
# Existing Energy Generation

This map was created as part of a Regional Energy Planning Initiative being conducted by the Two Rivers-Ottawaquechee Regional Commission, and the Vermont Public Service Department.

Created: 2020

## BETHEL

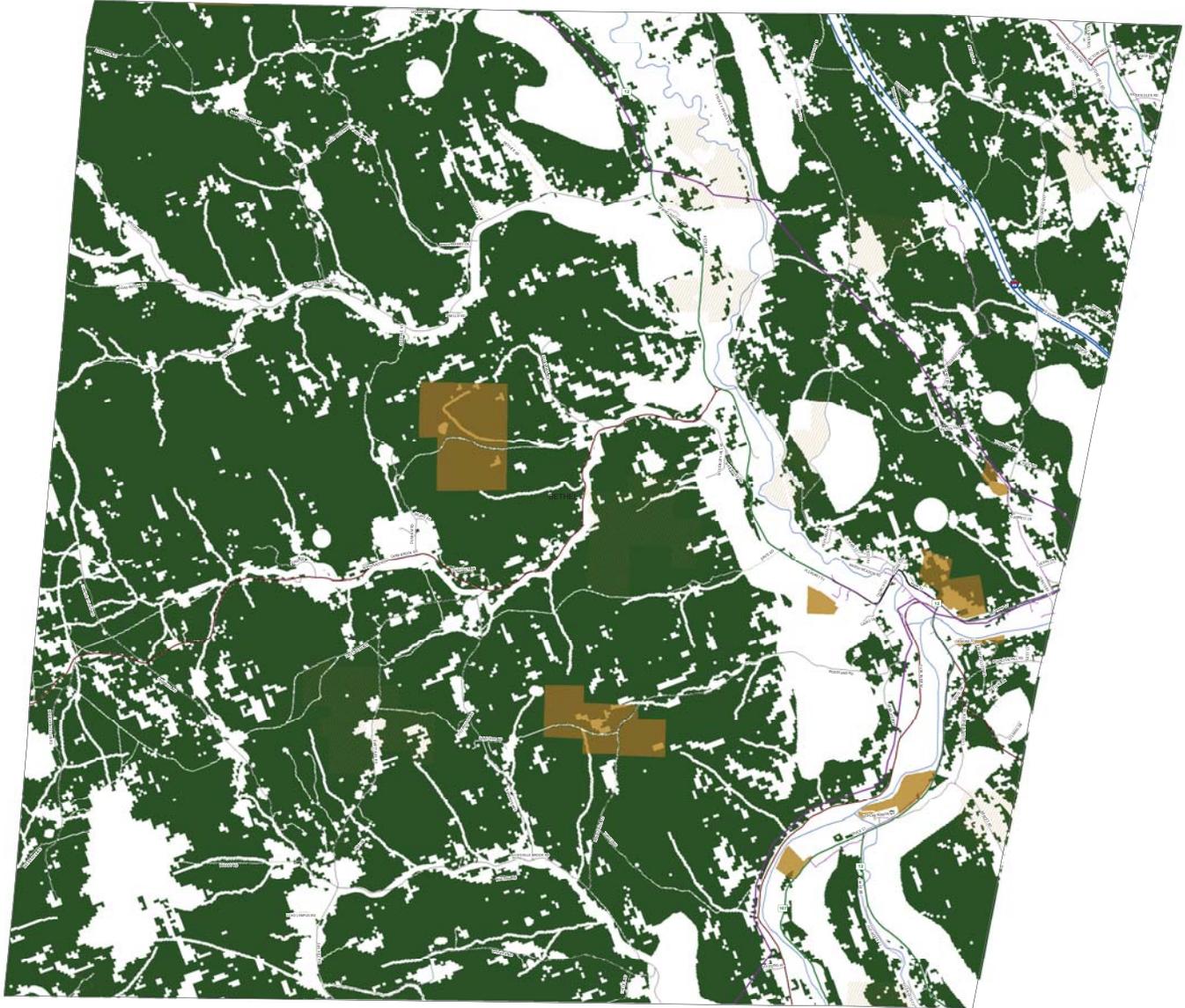
- BIOMASS KW**
  - 19
  - 20 - 375
- HYDRO KW**
  - 15 - 100
  - 101 - 500
  - 501 - 2000
  - 2001 - 37400
- Capacity\_k**
  - 15 - 25
  - 26 - 100
  - 101 - 500
  - 501 - 2200
- Substations
- 3 Phase Power Lines
- Transmission Lines
- Lakes/Ponds



# BIOMASS Energy Potential

This map was created as part of a Regional Energy Planning Initiative.  
Created: 2017

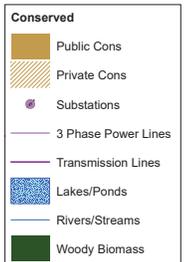
## BETHEL



### Biomass

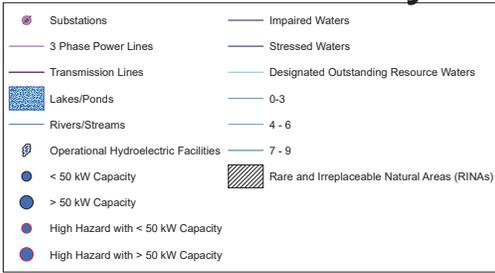
**Methodology:** This map shows areas of potential for woody biomass production and harvest. The map also illustrates other conditions that may limit the feasibility of extensive harvesting of wood for energy use. These limiting factors are referred to as constraints. The map does not show areas where other types of biomass, such as biomass from grasses or agricultural residue, could be grown/harvested.

**Constraints:** Physical features or resources that make extensive harvesting infeasible are considered Level 1 constraints. Level 1 constraints include: FEMA floodways, river corridors, federal wilderness areas, rare and irreplaceable natural areas (RINAs), vernal pools, and class 1 and 2 wetlands. These areas have been removed and are not shown in any way on this map.



# Hydroelectric Energy Potential BETHEL

This map was created as part of a Regional Energy Planning Initiative.  
Created: 2017



**Hydroelectric Methodology:** This map shows areas of resource potential for renewable energy generation from hydroelectric facilities. Sites identified are existing dams that could be developed for hydroelectric generation as well as active hydroelectric facilities. Information on existing hydroelectric facilities was obtained from the Vermont Dam Inventory and data on potential hydroelectric sites was obtained from a study conducted by Community Hydro in 2007-. Potential hydroelectric generation capacity for several of the larger dams are noted below.

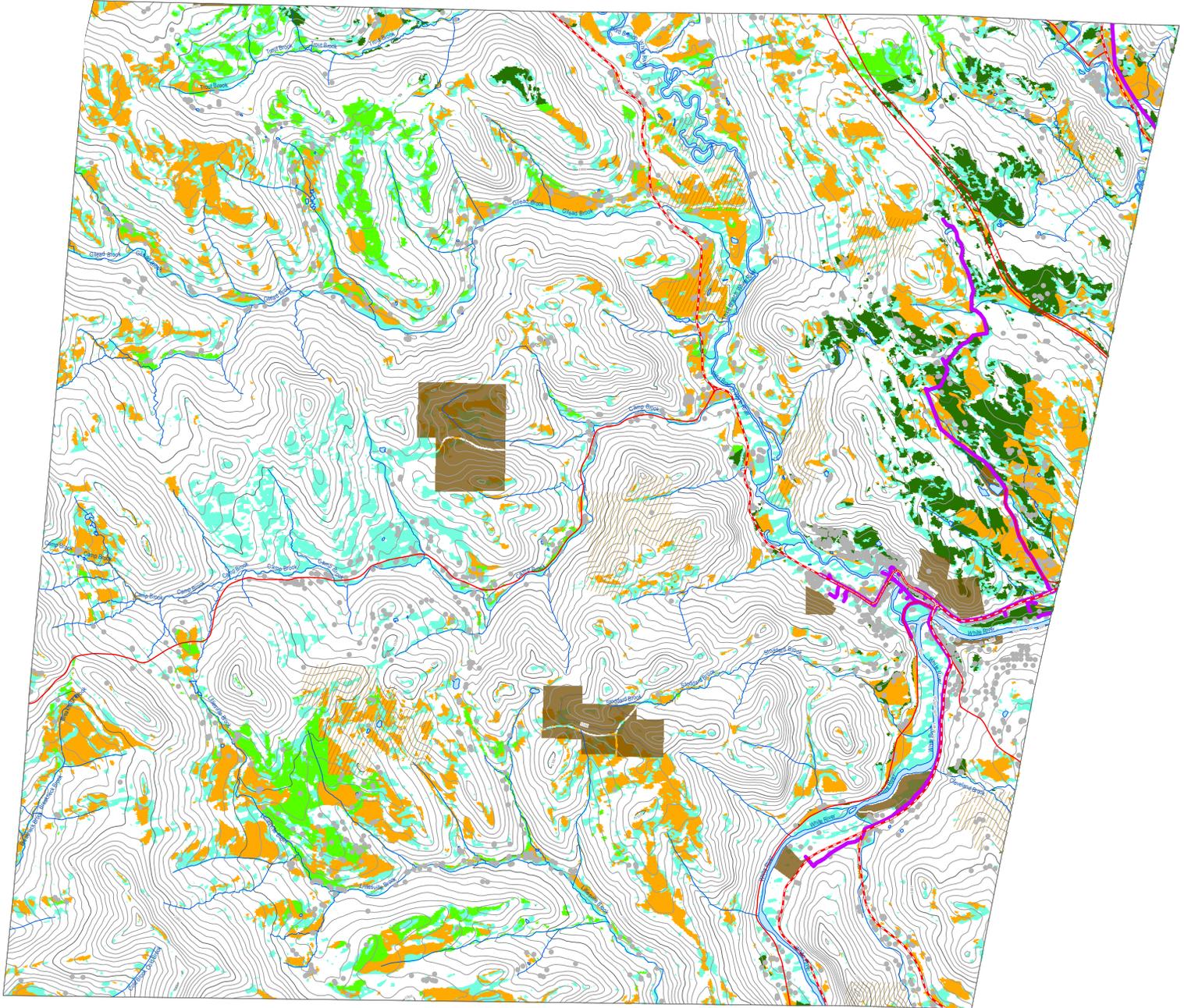
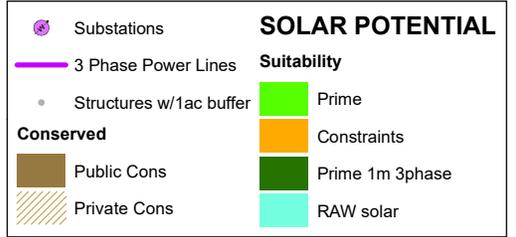


**Hydroelectric Constraint Description**  
\* Rare and Irreplaceable Natural Areas (RINAs) are significant natural communities. They do not include the following rank descriptions: uncommon to common breeder in VT, common to very common in VT, not applicable, unrankable, unrankable breeding population, and extirpated.

# Solar Energy Potential

This map was created as part of a Regional Energy Planning Initiative.  
Created: 2020

## BETHEL



### Solar

This map shows areas of potential electricity generation from solar energy. It includes areas with good access to solar radiation and also considers other conditions that may limit the feasibility of solar energy development. These limiting factors are referred to as constraints. Areas of prime solar potential exist where the natural conditions make development feasible and no constraints are present.

These maps are designed to initially identify areas and follow-up on-site work is required to verify the areas are feasible for projects. They are subject to revision and are NOT intended to green-light or fast-track projects.

**DARK GREEN Prime:** No Constraints within 1 mile 3 phase power  
**GREEN Prime:** No Constraints no known or possible constraints present  
**ORANGE Constraints:** no known but at least one or more possible constraints  
**BLUE GREEN Raw potential:** with constraints

**Known Constraints**  
 Vernal Pools (confirmed and unconfirmed layers)  
 DEC River Corridors  
 FEMA Floodways  
 State-significant Natural Communities and Rare, Threatened, and Endangered Species  
 Wilderness Areas, including National Wilderness Areas  
 Class 1 and Class 2 Wetlands (VSWI and advisory layers)

**Possible Constraints**  
 Agricultural Soils (VT Agriculturally Important Soil Units)  
 FEMA Special Flood Hazard Areas  
 Protected Lands (Updated 07/26/2016)  
 Act 250 Agricultural Soil Mitigation areas  
 Deer Wintering Areas  
 ANR's Vermont Conservation Design Highest Priority Forest Block Datasets  
 Forest Blocks - Connectivity  
 Forest Blocks - Interior  
 Forest Blocks - Physical Land Division  
 Hydric Soils

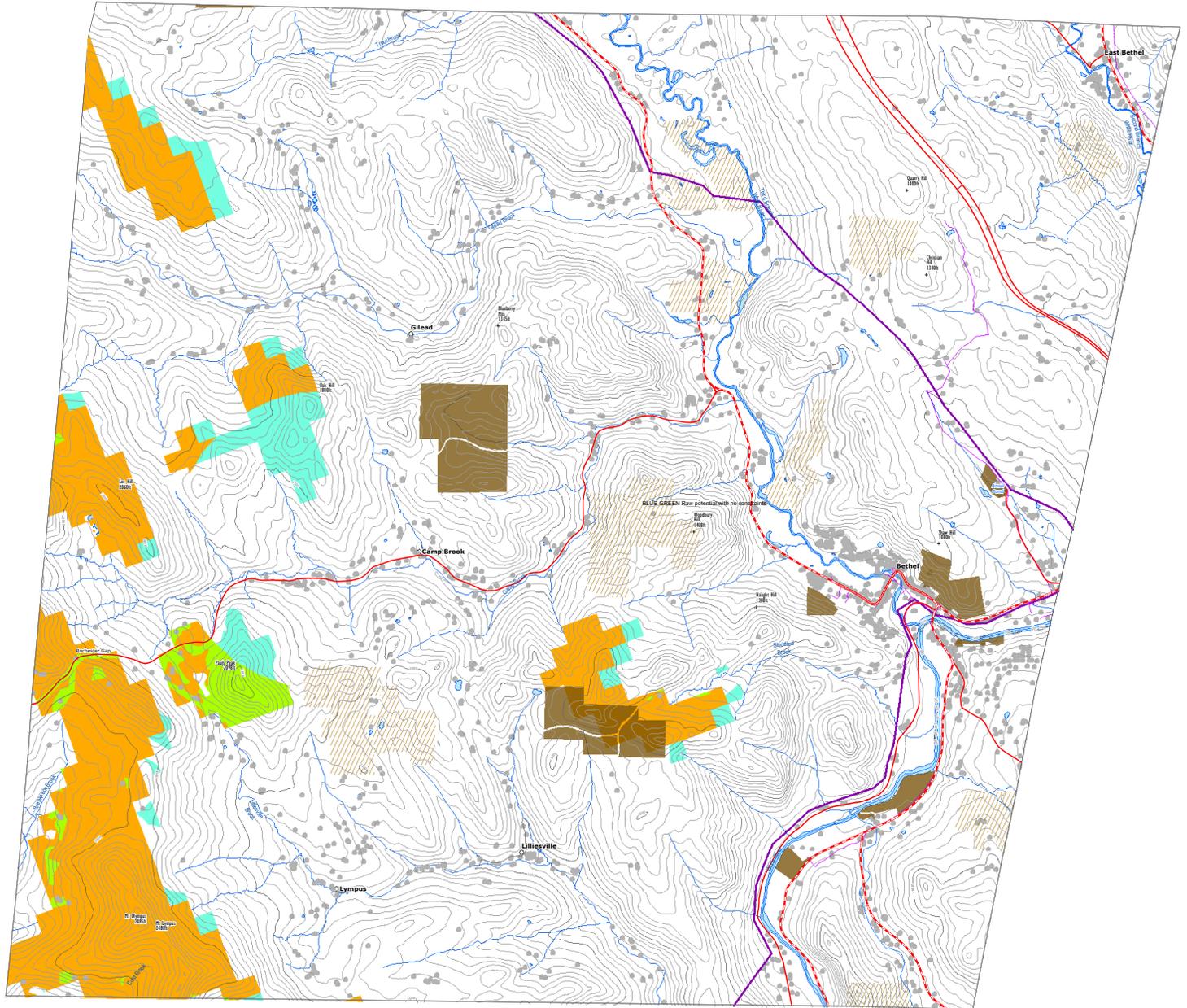
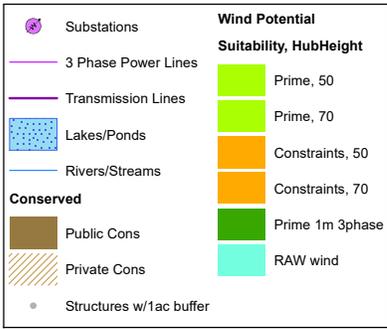
**TRORC Unsuitable areas (included in known constraints)**  
 FEMA Floodways  
 Wilderness Areas, including National Wilderness Areas  
 Class 1 Wetland



# Wind Energy Potential

This map was created as part of a Regional Energy Planning Initiative.  
Created: 2020

## BETHEL



**Wind**  
This map shows areas of potential wind energy development. It includes areas with good access to wind resources and also considers other conditions that may limit the feasibility of wind energy development. These limiting factors are referred to as constraints. Areas of prime wind potential exist where the natural conditions make development feasible and no constraints are present.

These maps are designed to initially identify areas and follow-up on-site work is required to verify the areas are feasible for projects. They are subject to revision and are NOT intended to green-light or fast-track projects.

**DARK GREEN Prime:** No Constraints within 1 mile 3 phase power  
**GREEN Prime:** No Constraints no known or possible constraints present  
**ORANGE Constraints:** no known but at least one or more possible constraints  
**BLUE GREEN Raw potential:** with constraints

**Known Constraints**  
 Vernal Pools (confirmed and unconfirmed layers)  
 DEC River Corridors  
 FEMA Floodways  
 State-significant Natural Communities and Rare, Threatened, and Endangered Species  
 Wilderness Areas, including National Wilderness Areas  
 Class 1 and Class 2 Wetlands (VSWI and advisory layers)

**Possible Constraints**  
 Agricultural Soils (VT Agriculturally Important Soil Units)  
 FEMA Special Flood Hazard Areas  
 Protected Lands (Updated 07/26/2016)  
 Act 250 Agricultural Soil Mitigation areas  
 Deer Wintering Areas  
 ANR's Vermont Conservation Design Highest Priority Forest Block Datasets  
 Forest Blocks - Connectivity  
 Forest Blocks - Interior  
 Forest Blocks - Physical Land Division  
 Hydric Soils

TRORC Unsuitable areas (included in known constraints)  
 FEMA Floodways  
 Wilderness Areas, including National Wilderness Areas  
 Class 1 Wetland

