

BRIDGEWATER

MUNICIPAL PLAN

2013

Adopted September 24, 2013

This Plan was developed by the Bridgewater Planning Commission with assistance from The Two Rivers-Ottawaquechee Regional Commission in Woodstock, Vermont with funding from the Vermont Agency of Commerce and Community Development.

TABLE OF CONTENTS

- **INTRODUCTION..... 1**
 - THE TOWN SETTING 1
 - TOWN HISTORY 1
 - RECENT DEVELOPMENTS..... 4
- **MUNICIPAL PLANS IN VERMONT 9**
 - THE BRIDGEWATER MUNICIPAL PLAN 9
- **MUNICIPAL BYLAWS..... 10**
- **TOWN SERVICES AND FACILITIES..... 11**
 - MUNICIPALLY OWNED BUILDINGS..... 11
 - SEWAGE FACILITIES 12
 - SOLID WASTE 12
 - EMERGENCY SERVICES..... 14
 - RECREATION..... 15
 - SNOWMOBILE TRAILS AND TRAVEL..... 15
 - EDUCATION 16
 - CHILDCARE..... 17
- **ECONOMY 18**
 - EMPLOYMENT CHARACTERISTICS..... 18
 - INCOME OF POPULATION..... 19
- **HOUSING..... 21**
 - BACKGROUND 21
 - HOUSING AFFORDABILITY 23
- **THE USE OF LAND IN BRIDGEWATER..... 26**
 - SETTLEMENT AND LAND USE PATTERNS 26
 - PROPOSED LAND USE IN BRIDGEWATER..... 26
 - PROPOSED LAND USE MAP..... 27
 - GENERAL VILLAGE AND HAMLET SETTLEMENT PATTERNS 28
 - BRIDGEWATER VILLAGE 28
 - THE HAMLETS 30
 - RURAL AREAS 31
 - CHATEAUGUAY – DAILEY HOLLOW AREA 33
 - AGRICULTURAL AND FORESTRY RESOURCES..... 37
 - EARTH RESOURCES EXTRACTION 39
 - PLANNED RESIDENTIAL DEVELOPMENT..... 40
- **CRITICAL NATURAL AREAS..... 41**
 - STEEP SLOPES..... 41
 - HIGH ELEVATIONS 41
 - SHALLOW AND WET SOILS..... 42
 - FLOOD-PRONE AREAS 42
 - SURFACE WATERS 43
 - WETLANDS 45
 - CRITICAL WILDLIFE HABITAT 46
- **CRITICAL SCENIC AND HISTORIC AREAS..... 47**

- APPALACHIAN TRAIL CORRIDOR..... 47
- THE CHATEAUGUAY – DAILEY HOLLOW AREA 47
- HISTORIC BUILDINGS 47
- EXISTING HIGHWAY AND ROADS 49
- FUNCTIONAL CLASSIFICATION OF TOWN ROADS..... 50
- ACCESS MANAGEMENT 50
- TOWN HIGHWAYS..... 52
- U.S. ROUTE 4 53
- BICYCLE AND PEDESTRIAN FACILITIES 53
- VERMONT SCENIC BYWAYS 54
- PLACES OF WORK..... 55
- PUBLIC TRANSPORTATION 57
- ROAD AND CULVERT MANAGEMENT 59
- SAFETY PLANNING AND ENFORCEMENT 59
- **ENERGY PLANNING AND CONSERVATION..... 61**
 - BACKGROUND 61
 - ENERGY DEMANDS 61
 - CURRENT ENERGY SOURCES 63
 - RENEWABLE ENERGY RESOURCES 65
 - PERMITTING CONSIDERATIONS 69
 - RESIDENTIAL ENERGY EFFICIENCY 70
 - MUNICIPAL ROLE IN ENERGY EFFICIENCY 72
 - ENERGY AND LAND USE POLICY 73
 - ENERGY AND TRANSPORTATION POLICY 73
 - ENERGY ASSURANCE PLANNING 74
 - GOALS, POLICIES AND RECOMMENDATIONS 74
- **PLANNING FOR TELECOMMUNICATIONS FACILITIES..... 78**
 - BACKGROUND 78
- **AESTHETICS AND OUTDOOR LIGHTING..... 81**
 - ISSUES AND OPPORTUNITIES..... 81
- **BRIDGEWATER'S PLANNING AND ITS RELATIONSHIP TO OTHER PLANNING ACTIVITIES
84**
 - KEEPING THE PLAN REALISTIC AND RELEVANT 84
 - NEIGHBORING TOWN PLANNING ACTIVITIES 84
 - REGIONAL PLANNING ACTIVITIES 87
- **PLAN IMPLEMENTATION..... 88**
 - REGULATORY METHODS..... 88
 - NON-REGULATORY METHODS..... 89
- **TOWN PLAN MAPS..... 92**

LIST OF FIGURES AND TABLES

- FIGURE 1: BRIDGEWATER POPULATION GROWTH..... 3
- FIGURE 2: POPULATION GROWTH IN BRIDGEWATER, NEARBY TOWNS & THE STATE OF VERMONT 5
- FIGURE 3: PERCENT POPULATION CHANGE IN BRIDGEWATER, NEARBY TOWNS & THE STATE OF VERMONT..... 5
- FIGURE 4: POPULATION DISTRIBUTION BY AGE GROUP 6
- FIGURE 5: REAL ESTATE OWNERSHIP 6

FIGURE 6: TAX RETURNS BY INCOME RANGE.....	7
FIGURE 7: TAX RETURNS BY INCOME RANGE.....	8
FIGURE 8: BRIDGEWATER TAX BASE COMPONENTS	8
FIGURE 9: PERCENT OF EMPLOYED BRIDGEWATER RESIDENTS BY INDUSTRY.....	18
FIGURE 10: ADJUSTED GROSS INCOME IN SELECTED TOWNS	20
FIGURE 11: CHANGE IN TOTAL HOUSING UNITS FOR BRIDGEWATER	21
FIGURE 12: CHANGE IN TOTAL HOUSING UNITS FOR SELECTED TOWNS.....	22
FIGURE 13: BRIDGEWATER HOUSING OCCUPANCY.....	23
FIGURE 14: PERCENT OF SEASONAL, RECREATIONAL & OCCASIONAL USE HOUSING UNITS	23
FIGURE 15: CROSS SECTION OF APPALACHIAN TRAIL CORRIDOR FROM WOODSTOCK TO BARNARD	47
FIGURE 16: RELATIONSHIP OF TRAFFIC MOBILITY TO LAND.....	51
FIGURE 17: STATE AND TOWN HIGHWAY MILEAGE.....	52
FIGURE 18: MODE OF TRAVEL TO WORK.....	55
FIGURE 19: COMMUTERS <i>TO</i> BRIDGEWATER.....	56
FIGURE 20: COMMUTERS <i>FROM</i> BRIDGEWATER	56
FIGURE 21: TRAVEL TIME TO WORK	57
FIGURE 22: VERMONT ENERGY USE BY SECTOR	62
FIGURE 23: AVERAGE ANNUAL RESIDENTIAL ENERGY CONSUMPTION (KWH).....	63
FIGURE 24: VERMONT PRIMARY ENERGY CONSUMPTION ESTIMATES.....	63
FIGURE 25: POTENTIAL WIND DEVELOPMENT ACREAGE IN BRIDGEWATER	66

PURPOSE & OBJECTIVES OF THIS PLAN

It is the intent and purpose of this Plan to encourage the appropriate development of all lands in the Town of Bridgewater in a manner which will promote the public health, safety, prosperity, comfort, convenience, efficiency, economy, and general welfare; and to provide means and methods for the future elimination of such land development problems as may presently exist or which may come to exist.

In addition, this Plan shall further the following specific objectives:

- To protect the rural residential environment of Bridgewater;
- To preserve and protect areas and sites of historic interest;
- To promote the beautification and landscaping of all residential areas;
- To protect steep slopes, soils, forests, water, and other natural resources and provide open spaces for wildlife habitat;
- To provide areas for commercial and light industrial use;
- To ensure the availability for adequate parks and public facilities;
- To encourage the healthful and reasonable distribution of population and employment opportunities;
- To protect residential, agricultural and other areas from undue concentrations of population and from traffic congestion, inadequate parking and invasion of through traffic; and
- To encourage the conservation of energy resources and the development of alternative, natural sources of energy supplies.

• INTRODUCTION

THE TOWN SETTING

The Town of Bridgewater is situated in the central portion of Windsor County, Vermont. It comprises an area of approximately 28,657 acres or 44.8 square miles. Bridgewater is bounded by seven towns: Barnard and Pomfret to the north; Woodstock to the east; Reading and Plymouth to the south; and, Killington and Stockbridge to the west.

Bridgewater is located within two physiographic areas. The major portion of the Town is between the Northern New England Uplands, which rise out of the Connecticut River Valley, and the Green Mountains that rise to the west of Town. This area is known as the Intermountain/Valleys and Foothills Area and is characterized by mountainous terrain, narrow valleys, and a few peaks with elevations over 2,500 feet. A small part of the Town, to the east of the ridge formed by Pinnacle, Montague, and Ohio Hills, is within the Uplands Area and is characterized by a more subdued terrain, where the valleys are less narrow, and the slopes less steep.

In the northern part of the Town, north of Bridgewater Center, is a large area of very little development. Houses there are more likely to be camps than permanent homes, and the forest dominates the scene. There are a few open fields left from the days when this was an active farming area, but now this section is an unusually natural scenic place where the activities of people seldom intrude into the wildness that has taken over from the 19th century farms. Through this section of the Town, the Appalachian Trail crosses from Killington through Bridgewater to Barnard and Pomfret. This area is highly valued by local people as a special place for outdoor activities such as hunting, fishing, hiking, cross-country skiing, and snowmobiling.

Geologic maps show most of the Town to be covered with glacial till, while there are more than ample places where bedrock appears at the surface. Along the river valleys are fertile soils and in these places, the thriving farms of Bridgewater's past were located. Along Route 4 near Bridgewater Corners, along the North Branch from Route 4 to Bridgewater Center, and along Route 100A south from Bridgewater Corners, one can still find excellent examples of agriculturally valuable soils and fields.

Near the southern edge of the Town flows the Ottauquechee River, from west to east. It rises several miles away in Killington, and flows through Bridgewater, Woodstock, Hartford, and Hartland on its way through the famous Quechee Gorge and into the Connecticut River. Almost all of Bridgewater, except for the northeastern section, is drained by this river and the streams that run into it.

TOWN HISTORY

Prior to the King granting the lands that would become Vermont to both New Hampshire and New York, the Green Mountains were inhabited by Native Americans for at least 10,000 years.

While there have been no archaeological sites found in Bridgewater, it is clear that the Ottauquechee River served as a route between the Connecticut River and the mountain pass north of Killington (now used by Route 4).

The major Native American communities in Vermont were along the Upper Connecticut River and along the shores of Lake Champlain. However, the hills and valleys of what is now Bridgewater were used as part of the hunting grounds of the Algonkian speaking peoples and it is likely that there were several hunting camps here, probably along the Ottauquechee.

During the Seven Years War - also called the French and Indian War - Vermont served as a minor battlefield at several times during the struggle to determine whether most of North America would be French or British. The Lake Champlain - Lake George - Hudson River route was heavily fought over as the French tried to isolate the New England colonies from the rest of the British colonies to the south. The Connecticut River was used as a warpath by the French and their Indian allies in raids against Massachusetts throughout this war, and some of the warring parties traveled into the interior of Vermont, but not into Bridgewater as far as we know.

Until the 1763 peace treaty following this war, settlement in Vermont was too fraught with danger to allow permanent settlement, and ownership of the land was clearly not practical nor was it contested. Following the war, however, soldiers returning to southern New England told their neighbors about the lands to be found west of the Upper Connecticut River. The Governor of New Hampshire, Benning Wentworth, was able to start selling off the lands he had been given by the King.

Bridgewater received its Royal Charter from Governor Wentworth on July 10, 1761, along with Hartland and Woodstock. Sixty-seven Proprietors' Shares were issued to Seth Field and his associates at that time. Actual settlement of the new town did not begin actively until nine years later in 1770. Because of its original land grant, Bridgewater was one of the few towns in this part of Vermont that was not disputed and claimed by the (then) Colony of New York.

In 1779, Deacon Asa Jones of Woodstock began the first survey in town in the area now known as the Mendall District north of the present Village. With his family, he soon settled there. Another settler, Amos Mendall, married one of the Deacon's daughters and their child, Lucy, became the firstborn in Bridgewater. Settlement generally continued slowly. 1783 saw Isaiah Shaw and Cephas Sheldon settle with their families. A year later, Richard Southgate settled in the area that would later become Bridgewater Village. In 1785, there were finally enough residents to organize and hold their first Town Meeting. Deacon Jones was the first Moderator and Mr. Southgate the first Selectman.

The first census (1791) recorded a population of 293 people in 50 families (there had been about seven families in 1780). As early as 1816 - the year of killing frosts in every month, the year called "1800-and-froze-to-death" - people from Bridgewater and the rest of Vermont began to migrate to the west. While newcomers kept arriving from the southern New England states until nearly the middle of the 1800's, the people living here found that many of their children wanted to move away.

The population of Bridgewater reached its peak of 1,363 in 1840 and slowly declined through 1930, after which the population has fluctuated between 800 and 1,000 residents.

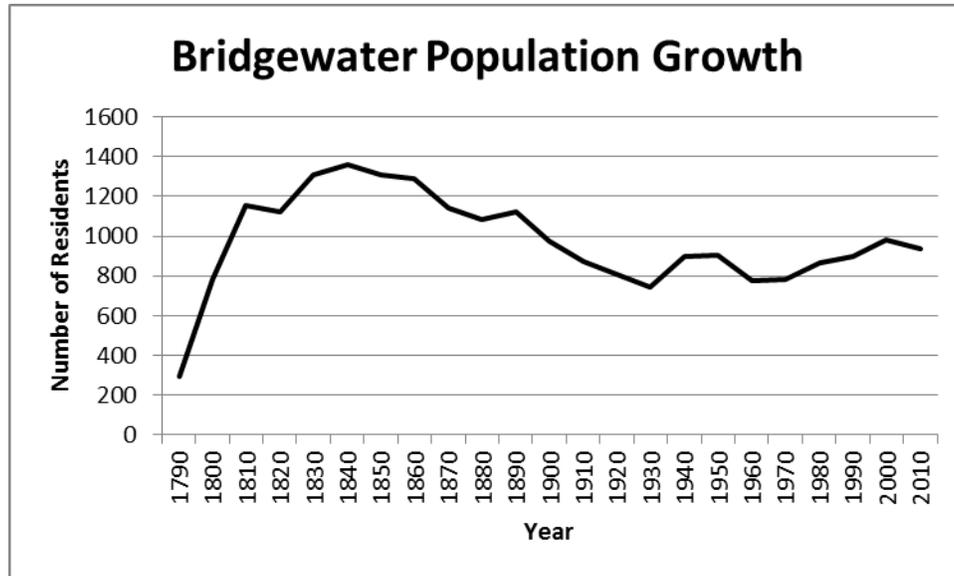


Figure 1: Bridgewater Population Growth

Source: U.S. Census

During the 19th century, agriculture and manufacturing were the main pursuits. During the middle and late 1880's, a brief and frenzied interest over gold developed in Dailey Hollow and Chateauguay. Extensive mining of the precious metal took place for a few years, although no great fortune was made by any of the gold-seekers.

Local manufacturing was based on wool and lumber, two readily available commodities in 19th century Bridgewater. The Bridgewater Woolen Company - owner of the large mill building in the Village - operated throughout most of the Town's history until the 1973 flood, combined with competition from southern mills and a changed national market, caused it to cease operations. It has since been renovated into many retail shops and is now called "The Marketplace at Bridgewater Mill." Today, businesses include a furniture builder, an antique center, Ramunto's Pizza, Sustainable Thrift Store, as well as many other retail shops. The post office for the village is also located here.

Most of the people in Town, from its beginning until well into the 20th century, lived and worked on farms as was the case in the rest of the state. They lived off the land, producing most

of what they needed, and sold a few of their surplus crops to get the things they could not coax from the local hillsides and shallow soils.

During the first three quarters of the 1800's, sheep were the major livestock, but they were slowly replaced by dairy cows after the Civil War. With the coming of trains to the lower Ottauquechee in the 1870's, farm produce, and especially milk, butter and cheese, could be shipped to the urban markets of Boston, Southern New England and New York.

As automobiles replaced horses in the early 20th century, people moved away from the old hill farms and moved closer to the hamlets and villages. Agriculture remained a common activity until recently; it now seems to be seriously threatened as an economically viable occupation. There are only a few dairy farms left, and some hillside fields are growing back into young forests throughout the Town.

Throughout the 19th and 20th centuries, the people of Bridgewater enjoyed an active social life, especially in the village and hamlets. Amateur theatricals were given at Union and Josselyn Halls. There was a splendid Coronet Band, and the Bridgewater Baseball Team was one of the finest in the county. Religious life exerted a strong influence then, as it does now. A Congregational Church is located in the village, a Mennonite Church located at the Corners, and a Christian Community Church is located in Bridgewater Center.

The restoration of the historic Capt. Richard Southgate House (1797) by the Town in the 1970's, the creation of a splendid recreation field, and the rehabilitation of the old Village School Building into a community recreation and meeting center in the 1980's, have brought new life and a new sense of community to the Town.

RECENT DEVELOPMENTS

Similar to neighboring towns, Bridgewater's population grew steadily during the 1980's and 1990's; however, it began to decline after the year 2000. Since 2000, Bridgewater, Barnard, Pomfret, and Woodstock have seen declines in their respective populations, while Stockbridge and Plymouth have seen increases.

Bridgewater's *rate* of population growth (expressed as the percent of population change) has fluctuated over the past few decades. The population grew slowly (by 3.2%) between 1980 and 1990 and then more quickly (by 9.5%) between 1990 and 2000. However, after the year 2000, Bridgewater's population began to decline or experience negative growth (it declined by -4.5% between the years 2000 and 2010). The negative growth rate is likely due to the lack of available land.

POPULATION IN SELECTED TOWNS & THE STATE OF VERMONT

TOWN	1980	1990	2000	2010
Barnard	790	872	958	947
Bridgewater	867	895	980	936
Plymouth	405	440	555	619
Pomfret	856	874	979	904
Stockbridge	508	618	674	736
Woodstock	3,214	3,212	3,232	3,048
Vermont	511,466	562,767	608,827	625,741

Figure 2: Population Growth in Bridgewater, Nearby Towns & the State of Vermont
 Source: U.S. Census

PERCENT POPULATION CHANGE IN SELECTED TOWNS & THE STATE OF VERMONT

Town	1980-90	1990-2000	2000-2010
Barnard	10.4%	9.9%	- 1.1%
Bridgewater	3.2%	9.5%	- 4.5%
Plymouth	8.6%	26.1%	11.5%
Pomfret	2.1%	12.0%	- 7.7%
Stockbridge	21.7%	9.1%	9.2%
Woodstock	- 0.1%	0.6%	- 5.7%
Vermont	10.0%	8.2%	2.8%

Figure 3: Percent Population Change in Bridgewater, Nearby Towns & the State of Vermont
 Source: U.S. Census

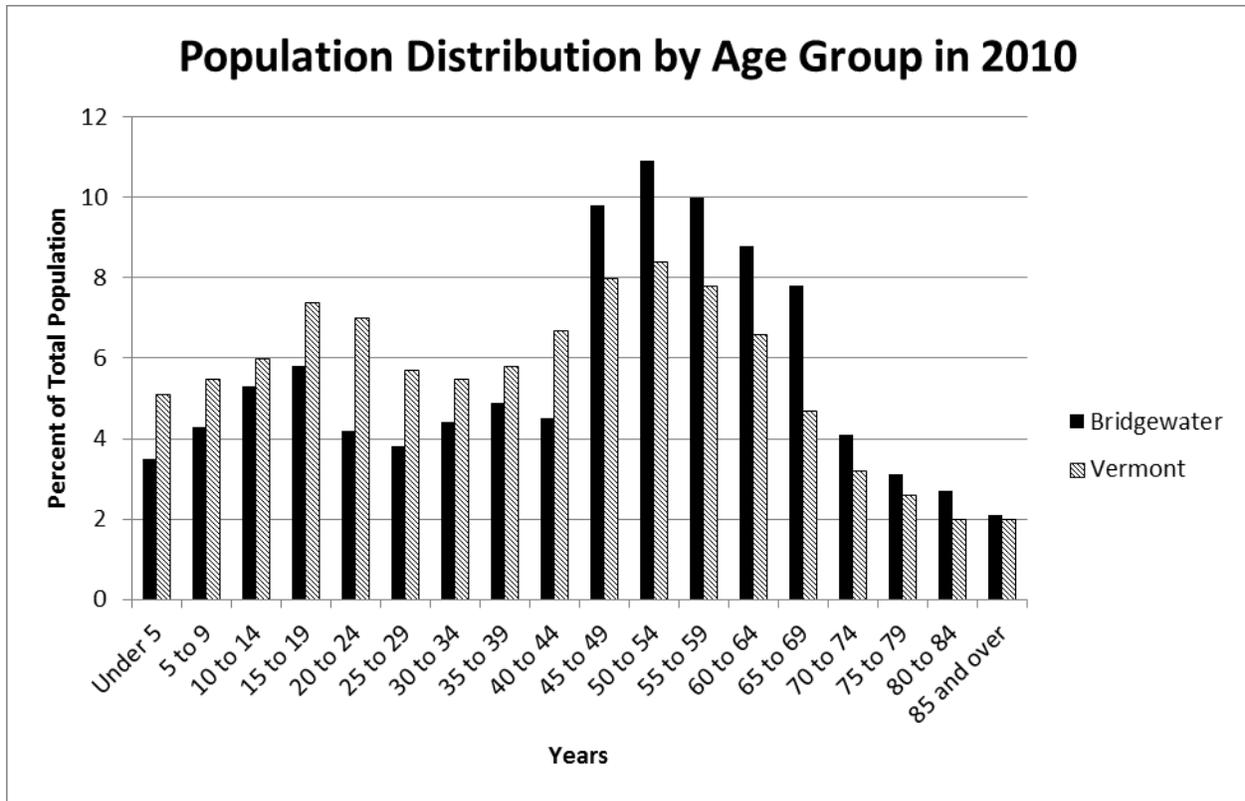


Figure 4: Population Distribution by Age Group
Source: U.S. Census 2010

As illustrated in Figure 4, Bridgewater’s population in 2010 was much older than Vermont’s population as a whole.

PERCENT OF REAL ESTATE OWNED BY RESIDENTS IN 2012

TOWN	PERCENTAGE
Killington	20.2%
Plymouth	24.4%
Bridgewater	44.7%
Reading	46.9%
Stockbridge	51.3%
Woodstock	51.8%
Pomfret	54.9%
Barnard	56.1%

Figure 5: Real Estate Ownership
Source: Vermont Dept. of Taxes – Annual Report – Div. of Property Valuation and Review

In Figure 5, one can see the percent of real estate owned by residents of Bridgewater and residents of nearby towns in 2012.

Figures 6 and 7 depict property ownership in Bridgewater as it relates to household income. The value of land in Killington and Plymouth and other nearby towns, as well as in Bridgewater itself, makes housing difficult to afford for most people who are actually working in Bridgewater to afford, and the taxes on property are often so high that people cannot afford to pay them.

**PERCENT OF TAX RETURNS BY INCOME RANGE (2011):
TOWN AND STATE BASED COMPARISON¹**

REPORTED INCOME	Bridgewater # of Returns	Bridgewater (Percent)	Vermont # of Returns	Vermont (Percent)
Negative/Loss, None or Missing	17	3.5%	4,683	1.5%
\$0 - \$9.9K	82	16.8%	53,100	17.1%
\$10K - \$19.9K	72	14.8%	46,014	14.8%
\$20K - \$29.9K	73	15%	40,187	13.0%
\$30K - \$39.9	50	10.3%	32,777	10.6%
\$40K - \$49.9	54	11.1%	24,689	8.0%
\$50K - \$59.9K	36	7.4%	19,957	6.4%
\$60K - \$74.9K	23	4.7%	24,051	7.8%
\$75K - \$99.9K	33	6.8%	27,902	9.0%
\$100K - \$149.9K	28	5.7%	22,621	7.3%
\$150K + More	19	3.9%	14,284	4.6%

Figure 6: Tax Returns by Income Range
Source: Vermont Dept. of Taxes – Vermont Tax Statistics

¹ Note: Percentage based on total tax returns for the Town of Bridgewater and total in-state tax returns for Vermont.

PERCENT OF TAX RETURNS BY INCOME RANGE IN BRIDGEWATER IN 2011

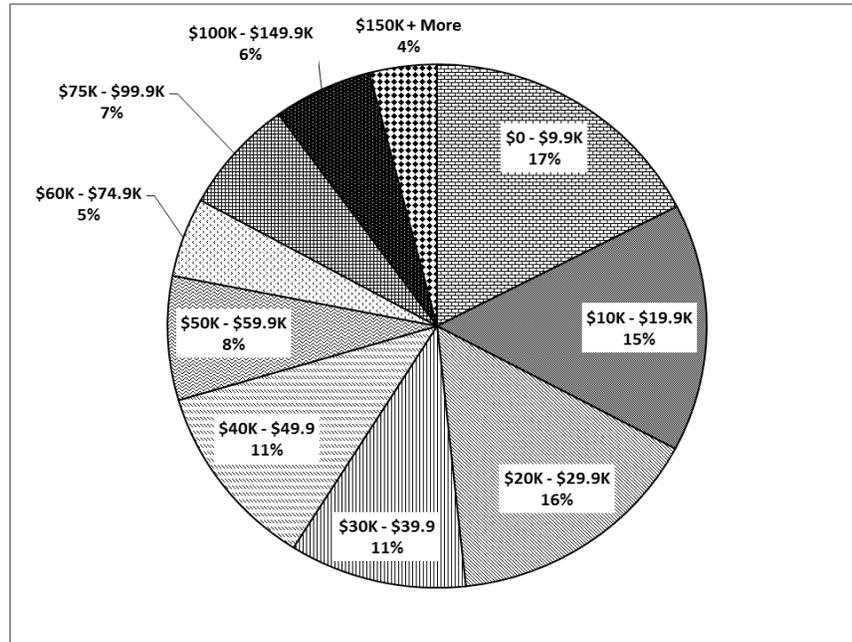


Figure 7: Tax Returns by Income Range
 Source: Vermont Dept. of Taxes – Vermont Tax Statistics

BRIDGEWATER TAX BASE COMPONENTS: PERCENT OF GRAND LIST

REAL ESTATE	1994	2001	2006	2012
Residential	32.8%	39.1%	40.1%	39.9%
Vacation	35.5%	38.7%	26.9%	28.0%
Commercial & Industrial	12.8%	9.9%	4.7%	5.4%
Farm & Woodland	10.7%	6.2%	11.7%	11.1%
Mobile Homes	2.7%	2.7%	8.0%	7.6%
Other	5.5%	3.4%	8.6%	8.0%

Figure 8: Bridgewater Tax Base Components
 Source: Vermont Dept. of Taxes, Form 411 – Grand List

• MUNICIPAL PLANS IN VERMONT

According to Title 24, Chapter 117 of the Vermont Statutes, the Vermont Planning and Development Act, towns are enabled to have Municipal Plans. These Plans are used most frequently in Act 250 proceedings (projects approved under Act 250 must be found to conform to duly adopted municipal and regional plans). Municipal Plans are also used as a legal framework for zoning and subdivision bylaws, should they be adopted by the town.

Plans, unlike Bylaws, are adopted by the town's Board of Selectmen. The voters are not asked to vote on them. The adoption process for a new Plan, or for amending an existing Plan, is this:

The Planning Commission prepares a Plan and conducts at least one public hearing. Following the hearing, the Planning Commission may make changes, and then passes the Plan along to the Selectboard. The Selectboard may make changes, and then holds a public hearing. The Selectboard may again make changes and hold additional hearings. After the final hearing, the Plan is adopted by the Selectboard.

THE BRIDGEWATER MUNICIPAL PLAN

Preparation of the original Bridgewater Municipal Plan was completed by the Bridgewater Planning Commission in 1972, with the assistance of the Ottauquechee Regional Planning Commission, now the Two Rivers-Ottawuechee Regional Commission.

Extensive studies and analysis were undertaken before the formulation of that Plan. Natural processes and formations, which included climate, geology, hydrology, topography, soils, floodplain, etc., were identified and mapped. Socio-economic data was gathered pertaining to population, housing, employment, and land use. An analysis of this information was presented in a 1972 report entitled *Bridgewater: The Background for Town Planning*.

A Plan for the Town was then formulated. A land use map was prepared identifying steep slopes, shallow and wet soils, flood prone areas, wetlands, agricultural lands, surface waters, and rural lands suitable for high, medium and low-density settlement.

The original Plan was adopted on July 25, 1972. In the spring of 1977, the Bridgewater Municipal Plan was reviewed for re-adoption according to the requirements of Section 4387 of the Vermont Municipal and Regional Planning and Development Act that stipulates that a plan shall expire five years from the date of its adoption. At that time, minor changes were made in the Plan's form and content. Where available, updated data on housing, land use, and population characteristics were included. The second Bridgewater Municipal Plan was adopted on July 19, 1977.

Since then, the Bridgewater Municipal Plan has been updated and readopted many times to broaden the Plan's scope and to explain in more detail, the rationale for making certain recommendations and policy statements. This is the eighth Bridgewater Municipal Plan.

• MUNICIPAL BYLAWS

In 1972, proposed Zoning Regulations were prepared and presented for a vote of the Town in order to implement the policies presented in the original Plan. These Regulations were rejected by Australian Ballot in 1972 and 1975 by a small margin. In 1986, a revised Zoning Regulation was rejected again by the voters. Currently, Bridgewater has no local land use regulations in effect.

In 1975, Interim Flood Hazard Zoning Regulations were prepared and adopted by the Town to protect flood hazard areas as designated and prepared by the National Flood Insurance Administration. In 1980, permanent Flood Hazard Zoning Regulations were passed by a vote of the Town and adopted. These regulations were updated and readopted by the Town in November 2006.

Since 1975, the Town has had in effect Health Regulations for Bridgewater relating to individual sewage disposal systems. This Regulation requires that a permit be obtained from the Selectboard before any sewage system is constructed or replaced. Beginning July 1, 2007, however, this regulation was superseded by a new State regulation under which every parcel of land, wastewater facility, private drinking water supply, and water treatment facility in the state will need a state permit for repairs, upgrades, and new construction.

In 1979, Bridgewater passed a Sewer Use Ordinance that requires that all sewage from properties within the service area of the Bridgewater Sewage System be connected to the municipal system.

The Town of Bridgewater also has the following highway ordinances: Town Road and Bridge Standards (adopted May 14, 2013), Class 4 Roads and Trail Policy (adopted April 2002), Driveway and Access Ordinance (adopted April 23, 2002).

• TOWN SERVICES AND FACILITIES

MUNICIPALLY OWNED BUILDINGS

The Town of Bridgewater owns and maintains several public buildings, including the following: the Richard Southgate House (Town Offices & School Library), Town Garage, Brick School House, and Wastewater Treatment Plant.

❖ **Richard Southgate House (Town Offices & School Library)**

- Description: In 1971, the Bridgewater Town Offices moved into the renovated Richard Southgate House. This historic structure also houses the School Library (initially the Public Library, it became the School Library through a town vote in March 1996). The School Library presently houses over 5,000 books and has a small conference room, which is used for meetings relating to Town business. The Richard Southgate House building also has an additional 1,800 square feet of professional office space for rent.
- Recent Improvements: Southgate House was recently renovated with new energy efficient windows, siding, and insulation, as well as new electrical wiring.
- Future Needs & Anticipated Cost and Method of Financing: Given the recent improvements, we do not anticipate needing to make any additional building upgrades in the next few years.

❖ **Town Garage**

- Description: The Town Garage consists of two buildings: a three bay, heated garage with an attached office.
- Recent Improvements: The building recently underwent some electrical work.
- Future Needs & Anticipated Cost and Method of Financing: No additional renovations should be necessary in the near future.

❖ **Brick School House**

- Description: The Brick School House was renovated in the early 1980s so that it could be used as a community building/center. Currently, the building is being leased to the newly formed Bridgewater Historical Society.
- Recent Improvements: No major improvements since the work in the 1980s.
- Future Needs & Anticipated Cost and Method of Financing: None at this time.

❖ **Wastewater Treatment Plant**

- Description: The plant was built in 1978 on the east end of the Bridgewater town line in Woodstock. It currently operates under the management of Simon Operating Services. See “Sewage Facilities” section (below) for more detailed history.
- Recent Improvements: The Town of Bridgewater bonded for a major upgrade in 1999.
- Future Needs & Anticipated Cost and Method of Financing: None at this time.

Recommended Actions

1. The Planning Commission is aware of the potential energy and financial savings associated with switching the current street light system to a light-emitting diode (LED) system. The Planning Commission will explore this option in the future.

SEWAGE FACILITIES

In 1978, the Bridgewater Municipal Sewage Treatment Facility began operation on less than one acre of land located just over the town line, in Woodstock. This “Rotating Biological Disc” secondary treatment facility has a design capacity of 43,000 gallons per day, and serves the village area of Bridgewater and the Bridgewater Mill Mall.

As of December 2007, the system was operating at approximately twenty-two percent of its design capacity, processing approximately 9,500 gallons per day, from the 151 units of domestic and commercial service. Use of the sewage treatment facility decreased when the brewery moved out of the Mill Mall.

The wastewater treatment plant has remaining capacity to accommodate additional users, such as those living on the edge of Woodstock, near the Bridgewater border. In 1993, Woodstock constructed an 8-inch sewer extension to service the first house in Woodstock. This sewer has the design condition to allow future extension to service the four additional existing houses. It is the policy of the Town to coordinate with Woodstock in the future development of this area.

SOLID WASTE

Solid Waste District

In 1987, the Vermont legislature passed a new solid waste law that resulted in dramatic changes in the way Vermonters view their garbage and how they will chose to manage and dispose of it. The law brought Vermont communities into the modern era of refuse management in accordance with the new U.S. Environmental Protection Agency requirements.

This law prohibited unlined landfills from being constructed. New landfills must have expensive synthetic liners and leachate collection and treatment systems. The law also stated that existing landfills, including Bridgewater's, needed to be closed by July 1, 1991. The Bridgewater landfill stopped accepting waste in October 1992, and closure was complete in July 1993.

The law identified the need for regional solid waste planning as the means for managing solid waste. Bridgewater, along with 15 other towns, joined the Joint Municipal Survey Committee (JMSC) in July 1988; the JMSC determined that a solid waste district in this region was necessary for financing future solid waste disposal alternatives. Out of this effort, the Greater Upper Valley Solid Waste Management District (GUVSWD or District) was formed in 1990. Today, Bridgewater remains a member of the District (along with nine other towns) and sends a representative from the municipal government to the GUVSWD Board of Supervisors meetings.

The District adopted its first Solid Waste Implementation Plan (SWIP) in the early 1990's with subsequent amendments following its initial approval. The most recent SWIP was approved in August 2006 as a five year plan; however, it remains in force today because revisions cannot commence until the State of Vermont has finished revising the State Plan (an ongoing, multi-year process). Upon completion of the new State Plan, the District will update its current SWIP to comply with the State Plan and Act 148.

Materials and Capacity

Presently, the Lebanon City Landfill provides lined disposal capacity for mixed solid waste for all towns in the District. The District is allowed access to this facility as a "tenant at will" and, accordingly, is not guaranteed long-term access to the site. Because of this uncertainty, the District has identified the North Hartland site as a contingency plan in the event that the Lebanon landfill becomes unavailable or unaffordable. The Lebanon City Landfill received certification from the Vermont Department of Environmental Conservation several years ago. At that time, it was estimated that the site could provide for at least 50 years of the GUVSWD's disposal needs.

Construction and demolition (C&D) materials are currently disposed of at the Hartford C&D landfill through an agreement by the District with the Town of Hartford. The GUVSWD has no plans to develop or operate its own C&D facility or contract with another operator unless its agreement with Hartford expires. Detailed information about the District's organization and operation can be obtained from the District Offices in North Hartland or by calling (802) 296-3688.

Backyard Open Burn Ordinance

The Town of Bridgewater has an Open Burn Ordinance that went into effect on December 23, 2000. This ordinance requires residents to obtain a permit from the Town before burning materials on one's land. The ordinance is intended to ensure that a backyard burn pile does not turn into a wildfire and thereby threaten the safety of life and property. It is also intended to protect citizens' health and the environment by prohibiting the burning of certain noxious materials. You can request a copy of the ordinance at the Bridgewater Town Office.

Solid Waste – Goals, Policies & Recommended Actions

Bridgewater recognizes that the private sector serves as the primary vendor for waste management services; however, the Town understands that responsibility lies with the local government and the District to provide and ensure the smooth functioning of such services. Accordingly, the Town of Bridgewater will continue to be an active participant in the governance of the District in order to ensure that the goals and policies for managing solid waste are both economically and environmentally sound.

Goals

1. Reduce the amount of solid waste that is generated in Bridgewater.

2. Ensure that the remaining solid waste is disposed of in a lined landfill and in an environmentally sound manner.
3. Reduce or stop altogether the illegal dumping of solid waste in Bridgewater.

Policies

1. It is the policy of the Town of Bridgewater to support the reuse and recycling of materials that would otherwise be placed in the waste stream.

Recommended Actions

1. Create and maintain a program to process waste or reduce volumes before disposal.
2. Research the District's current schedule and method for collecting and disposing of electronics and plastics and ensure that Bridgewater residents are aware of this opportunity.
3. During future revisions to the District's SWIP, the Town of Bridgewater should coordinate with other member towns and their respective regional commissions to ensure that the updated goals and policies conform to the local, state, and regional plans that address solid waste.

EMERGENCY SERVICES

Ambulance services are provided in cooperation with the Woodstock Ambulance Association. In 1996, E911 telephone service went into effect. In 2001, federal funds were used to acquire emergency generators to service public buildings or shelters. In 2000, a Rapid Response Plan (RRP) was developed in cooperation with the Vermont Department of Emergency Management. Since then, the RRP has become the Basic Emergency Operations Plan (BEOP). Bridgewater updates its BEOP annually; the most recent version was adopted on May 14, 2013.

The Bridgewater Fast Squad provides emergency medical services. The Squad consists of 13 volunteers and is available to respond to accidents and medical emergencies as needed. Bridgewater volunteers are encouraged to continue building a cohesive town-wide emergency service team.

Bridgewater is located along U.S. Route 4, approximately 40 minutes driving distance to Rutland (home of Rutland Regional Medical Center) and almost an hour from Lebanon (home of Dartmouth Hitchcock Medical Center).

In terms of primary care providers, many Bridgewater residents utilize the Ottauquechee Health Center (an affiliate of Mt. Ascutney Hospital) in nearby Woodstock, as well as Rutland Regional Medical Center in Rutland. Additionally, the Visiting Nurse Association and Hospice of Vermont and New Hampshire visit the Thompson Senior Center and other venues to deliver basic care (ex: vaccinations) on scheduled dates throughout the year.

The Town has seen a dramatic decline in the number of accidents on U.S. Route 4 since the County Sheriff became active patrolling this road. This is a huge improvement in safety for people traveling on U.S. Route 4, which pays for itself through speeding ticket revenues.

Fire Protection

The Town of Bridgewater is serviced by the Bridgewater Volunteer Fire Department (a member of the Upper Valley Mutual Aid Association). Member towns of the Association provide assistance to one another in the event of a serious fire.

With 20 active volunteer members, two pumper trucks and two 4-wheel drive tanker trucks, the Department is doing a commendable job for its size. Funding is provided through fund raising activities plus annual support from the Town.

All future development within the Town should be in accord with the capabilities of this Department to service the development. Anyone planning to build a new pond or upgrade an old pond should consider consulting the fire department about the installation of a dry hydrant.

RECREATION

A 1979 study revealed that recreation was a high priority need within the Town of Bridgewater. In January 1981, the Selectboard created within the body of the town government, the Bridgewater Recreation Committee. Since that time, the Committee has successfully raised private and public funds to construct the Bridgewater recreation park and to renovate the old brick school.

Groundbreaking for the recreation park began in July 1982 on the 4.5 acres of land generously donated to the Committee by a Bridgewater resident. The park now includes a baseball/softball diamond, tennis court, basketball court, shuffleboard court, picnic area, and playground area. A full basketball court has also been constructed behind the elementary school. This was a needed and most welcomed development within the town that should meet the recreation needs of Bridgewater citizens for the duration of this Plan.

SNOWMOBILE TRAILS AND TRAVEL

Many residents and visitors alike snowmobile on the several miles of trails in Bridgewater (a small, but important segment of Vermont's 5,000 mile trail system). While Bridgewater businesses benefit from snowmobilers who stop for food, gas, or other goods, none of them relies solely on this audience to remain profitable. This is important given that snow conditions have been mixed or poor during the last few winter seasons.

The snowmobiling trails in Bridgewater and throughout Vermont are maintained by the Vermont Association of Snow Travelers (VAST) and its local clubs. In addition to grooming trails, VAST provides trail maps and updates on local snow conditions, which can be accessed through its website at www.vtvast.org. Please note that VAST trails are for winter use only and any other use (by ATVs, four-wheelers, motor or mountain bikes, or hiking), unless specifically authorized, is

considered trespassing. It is important to note that the trail systems in Bridgewater are provided at the goodwill and forbearance of the property owners; this system is not owned or guaranteed by the Town.

Recommended Action

1. To support maintenance of the trail system on private lands in Bridgewater.
2. To encourage development of businesses that serve and support recreational users.

EDUCATION

The Bridgewater School System consists of one elementary school located in the village area, which serves pre-kindergarten through the sixth grade. In the 2011-2012 school year, there were 39 students enrolled at the Bridgewater Village School, though at present (2012-2013 school year), there are 43 students enrolled. The capacity of the seven classroom school is 90. The 2011-2012 staff consisted of four full-time teachers, a part-time principal, plus support staff and special education personnel.

Seventh through twelfth grade students attend the Woodstock Union Middle School and High School. Bridgewater is a member district of the Windsor Central Supervisory Union.

School appropriations comprise a considerable portion of the Town budget even though the student population is very low and continues to decrease. Since the Town currently pays more into the state education fund than what it receives from the State, improving the town's educational facilities is not a practical option. These issues should be carefully considered in light of the Town's ability to provide education and the local tax burden.

Technical and Vocational Opportunities

The Town encourages alternative education programs for adults and students in Bridgewater. High school students who reside in Bridgewater, but attend Woodstock High School, have the opportunity to take classes at the Hartford Area Career & Technology Center (HACTC). Buses transport students back and forth between the two schools. HACTC offers students a variety of programs, including culinary arts, engineering and architecture design, automotive technology, business administration and more.

The Town of Bridgewater and its residents were recipients of technical assistance through the e-Vermont Community Broadband Project in 2011. The e-Vermont program staff helped school officials develop a website and worked with the Bridgewater Historical Society to devise a system for digitizing records. Additionally, e-Vermont staff gave thirty-six netbooks to the Bridgewater Village School and provided fourth, fifth, and sixth grade students and teachers with computer literacy training.

Goals

1. To provide the opportunity for Bridgewater students to have access to high quality and affordable education.
2. To encourage the use of the Town's school for adult education and other community activities.

Recommended Actions

1. The Planning Commission would like to have a dialogue with the School Board to discuss ways to address the impact of the low elementary school enrollment on education in Bridgewater, as well as the adequacy of school facilities in Town.
2. Identify a local coordinator to develop technical/vocational training opportunities with local businesses and facilitate connections with students.
3. Provide community based workshops and vocational programs in Bridgewater schools for the community and potential start-up businesses.

CHILDCARE

Currently, there are no registered in-home providers of childcare in the Town of Bridgewater or any licensed childcare programs, however there are many programs and providers in the surrounding towns. For instance, the nearby Town of Woodstock is home to Woodstock Nursery School, Woodstock Christian Childcare, the Purple Crayon, and Rainbow Playschool, all of which are licensed providers. There are also a few nearby registered in-home child care providers, including two in Pomfret, one in Reading, and two in Stockbridge.²

Ideally, there would be some in-town access to childcare for parents and children living in Bridgewater. For this reason, the Town of Bridgewater supports the private development of additional in-town facilities to meet this need.

² VT Bright Futures Childcare System. Database accessed Feb. 2013.

• ECONOMY

Historically, a great deal of the economic activity in Bridgewater was tied to agriculture and forestry, which provided jobs for many residents; however, it is now estimated that less than five working farms remain.³ Nevertheless, there are other types of businesses in Bridgewater. For instance, there is the Long Trail Brewery, several restaurants and many construction and home-based companies.

EMPLOYMENT CHARACTERISTICS

In recent years, studies estimate that Bridgewater’s 370 employed residents (sixteen years of age and older) have shifted toward working in construction (21.9%), educational services/health care/social assistance (17%), and professional/scientific/management/administrative/waste management (12.2%).⁴ Consider the following graph:

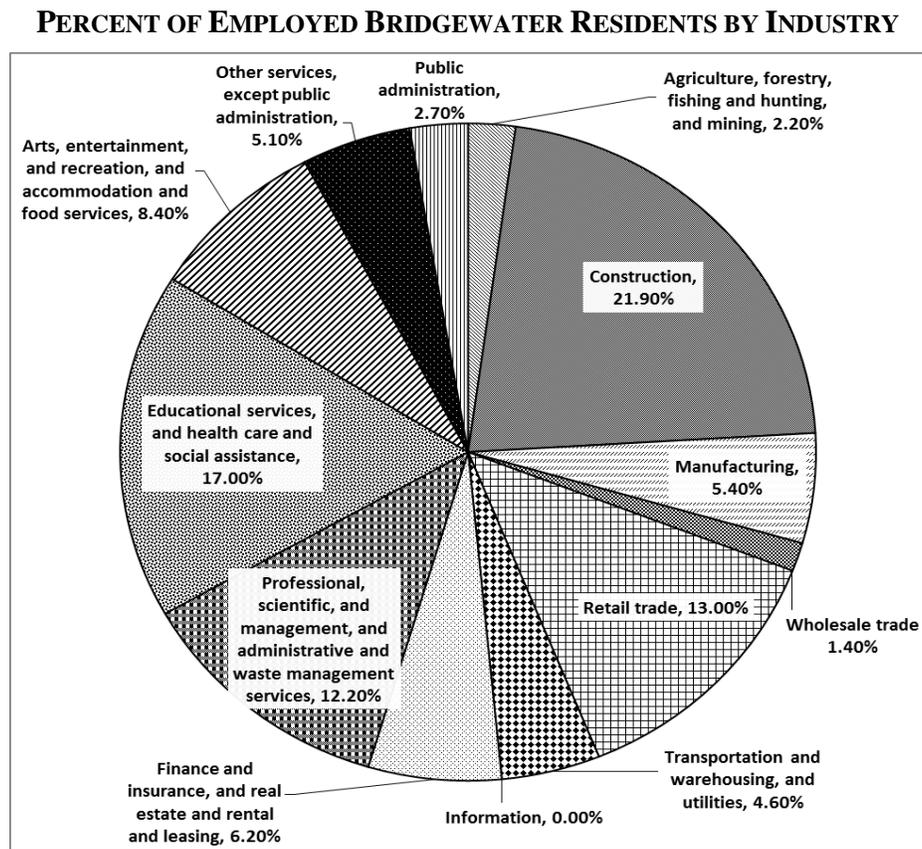


Figure 9: Percent of Employed Bridgewater Residents by Industry
 Source: 2006-2010 American Community Survey 5-Year Estimates

³ Estimate by 2013 Bridgewater Planning Commission members.

⁴ 2006-2010 American Community Survey 5-Year Estimates.

It is unclear how many Bridgewater residents work in-town; however, the American Community Survey (2006-2010) estimated that approximately 20 people (or 6% of the employed population) walked to work, while 31 people (or 9%) worked from home. Working from home (or “telecommuting”) has become increasingly popular in Vermont—it allows for greater flexibility in terms of one’s work schedule, reduces travel (and the risk of an accident) during bad weather, and opens up extra time (by eliminating the commute) for one to spend with family and friends. While there are certain jobs in which employees can work remotely without a high-speed internet connection, most employers require their employees to have broadband access at home if they wish to telecommute.

Currently, internet services are available to most Bridgewater residents through Comcast, Fairpoint, and VTel; however, the fastest type of internet connection (fiber) has not yet arrived. As a mountainous and largely rural state, the State of Vermont has struggled to ensure that all Vermonters have access to broadband coverage. The Bridgewater Planning Commission has identified broadband access as being important for the community’s economic development in the future. VTel anticipates upgrading its customers (including those in Bridgewater) to a fiber connection during summer 2013, which would allow residents to telecommute. If residents would like to review the availability of broadband service providers at their home or business address, they can do so at www.BroadbandVT.org.

While it is estimated that at least 15% of Bridgewater residents work in-town, it is likely that the majority commute to workplaces outside of town, in places like Woodstock, Rutland, or the Lebanon/Hanover, New Hampshire area. The estimated mean travel time to work for Bridgewater residents is 21 minutes and approximately 75% of employed residents commute alone by car, truck, or van.⁵

INCOME OF POPULATION

The Vermont Department of Taxes publishes *Vermont Tax Statistics* annually, which includes a summary of personal income tax returns filed within the state. In 2011, 487 income tax returns were filed with the State of Vermont by residents of Bridgewater. The *total* adjusted gross income (AGI) reported for Bridgewater residents was \$24,342,319. Bridgewater’s *average* AGI (\$49,984.23) was lower than two and higher than three other towns’ *average* AGIs.

COMPARISON OF ADJUSTED GROSS INCOME (AGI) IN BRIDGEWATER & NEARBY TOWNS

Town	# of Returns Filed	Total Adjusted Gross Income	Average Adjusted Gross Income
Barnard	440	\$26,914,803	\$61,170.01
Bridgewater	487	\$24,342,319	\$49,984.23
Plymouth	269	\$13,022,090	\$48,409.26
Pomfret	449	\$12,338,039	\$27,478.93

⁵ 2006-2010 American Community Survey 5-Year Estimates.

Stockbridge	359	\$16,314,099	\$45,443.17
Woodstock	1,789	\$126,710,390	\$70,827.50

Figure 10: Adjusted Gross Income in Selected Towns
Source: Vermont Dept. of Taxes – Vermont Tax Statistics

Goals

1. The Town of Bridgewater should plan for economic growth and expansion in a manner that creates a range of employment opportunities, encourages rising incomes, and raises citizens' living standards while considering the impact of such growth on the Town.
2. New businesses should be encouraged to locate in Town because of our business-friendly climate. This would ensure more local jobs for residents and eliminate long commutes.

Policies

1. To encourage the development of local businesses, professional services and agriculture-related activity in a manner that conforms to the overall goals of keeping Bridgewater rural and residential, and which will not require Town expenditures on infrastructure.
2. To reduce the demand for commuter transportation and energy, and encourage the development of energy efficient home occupations and small-scale home businesses.
3. To encourage business growth that will expand the primarily residential tax base and enhance the rural character that Bridgewater's residents strongly value.

Recommended Actions

1. Create a forum for local businesses or some type of local association, with information available at the Town Office.
2. Encourage residents to visit the local job bank in Woodstock.

• HOUSING

BACKGROUND

As the population of the Upper Valley expands, people who work here oftentimes cannot find affordable land for housing. This prompts them to look to the towns further from the interstate highways. These people are now looking to Bridgewater for affordable land. There is a general tendency for growth in housing and population within a town to push the cost of land upwards, and as a result both the cost of housing and property taxes increase, usually faster than the average income increases.

The Town of Bridgewater has seen a steady increase in the number of houses built over the last several decades.

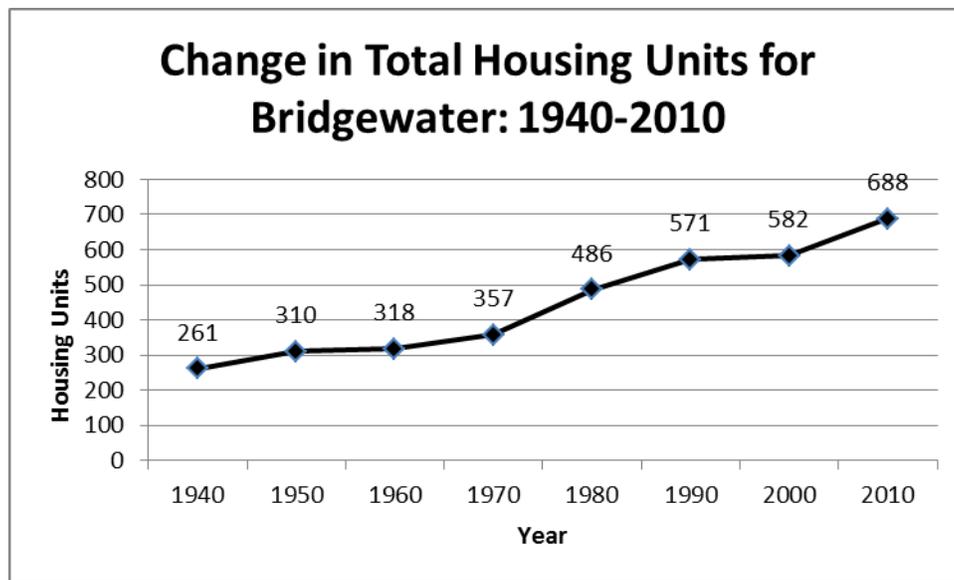


Figure 11: Change in Total Housing Units for Bridgewater
Source: U.S. Census

Since 1980, the Town’s population has grown by 8% and the number of housing units has grown by a remarkable 42%. Between the years 2000 and 2010, Bridgewater had the highest percentage of growth in total housing units when compared to neighboring communities.

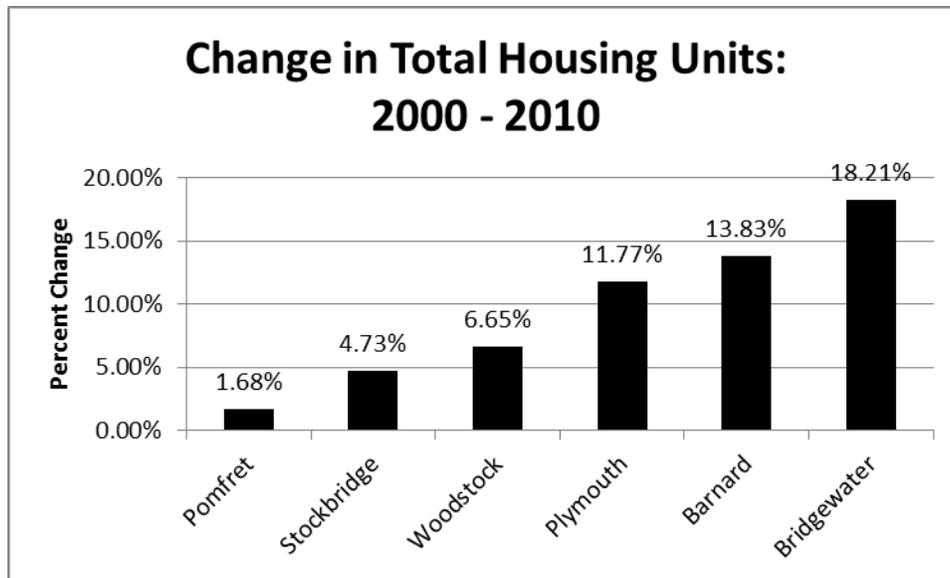


Figure 12: Change in Total Housing Units for Selected Towns
 Source: U.S. Census

Change of this nature is difficult to manage, at best. This is particularly true since the Town does not have zoning regulations, and attempts to pass zoning have failed. However, a simple Building Notification Ordinance requiring builders to provide basic project information concerning health and safety standards and avoiding nuisances would be helpful to the Town. Building notification would help ensure that buildings are not placed in nuisance areas, to confirm that builders are referred to the state for septic permits, and to ensure driveway access onto town roads is controlled by the Town and therefore is safe for emergency vehicles. Additionally, priority conservation areas would be better protected from development, and people who build in the floodplain would know they need to get a local flood permit before they begin their project.

A housing unit, as defined by the U.S. Census, includes houses, apartments, mobile homes, and rooms for occupancy. The majority of Bridgewater’s homes are owner-occupied (49%), while some are renter-occupied (15%). The low percentage of homes that are currently unoccupied (for sale or for rent) indicates that Bridgewater was experiencing a shortage of available housing stock in 2010. Anything below 5% is functionally considered a zero.

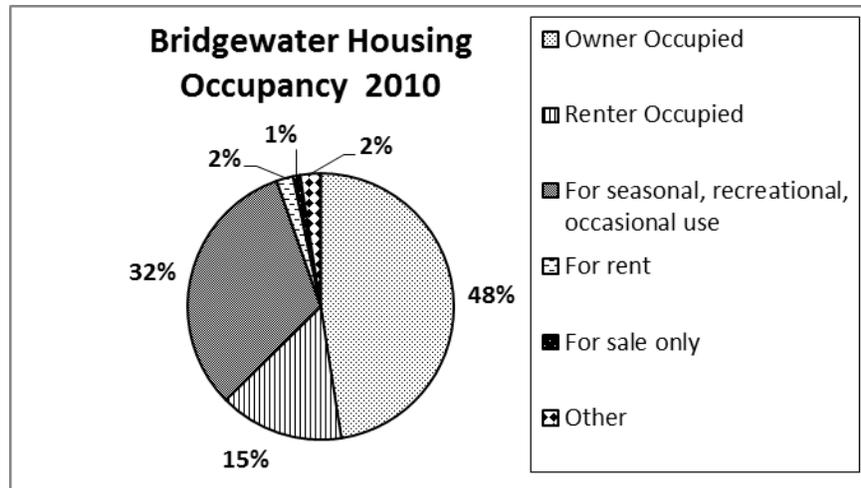


Figure 13: Bridgewater Housing Occupancy

Source: U.S. Census 2010⁶

The percentage of seasonal, recreational, and occasional use homes (essentially, second homes) in Bridgewater is 33%, which is relatively low when compared to that of neighboring towns (see Figure 14); however, one-third is still significant. When a town has a large number of homes that are not occupied year-round, it can have unforeseen impacts on town services. For example, communities which rely on volunteers can have trouble filling positions, and schools can face a shortfall of school aged children and thus students. Bridgewater is lucky in that it has plenty of volunteer fire fighters, however, student enrollment continues to fall.

2010	
Town	Percentage
Woodstock	19.1%
Pomfret	24.4%
Bridgewater	32.0%
Stockbridge	34.9%
Barnard	37.4%
Plymouth	62.0%
Killington	80.1%

Figure 14: Percent of Seasonal, Recreational & Occasional Use Housing Units

Source: U.S. Census 2010

HOUSING AFFORDABILITY

Housing is considered affordable when households pay no more than 30% of their gross income on housing costs. Housing costs for homeowners include principal, interest, taxes, and insurance. For renters, housing costs include rent, utilities, and renters insurance.

⁶ Please note: This graph is based on the owner-occupied, renter-occupied, and vacant housing units, which combined create 688 total housing units.

Affordable housing can be difficult to find in Bridgewater and its neighboring towns, but some opportunities do exist. Over the last five years, an increasing number of single residences have been converted into multi-unit apartment buildings, giving Bridgewater residents the opportunity to rent, rather than purchase a home (which requires a substantial financial commitment upfront). Additionally, the longstanding Mill Village Apartments development has four units that can be rented by qualifying low-income families and fourteen units designed specifically for the elderly.

A Bridgewater Planning Survey, conducted in 1995, clearly indicated that residents felt affordable housing in Town was necessary and desirable. Planning Commission members are confident that more affordable housing options exist today than did in 1995; however, another survey should be conducted in the future to confirm or deny this point and goals, policies and recommended actions should be updated accordingly.

Goals

1. To provide the opportunity for Bridgewater residents to have access to decent and affordable housing.
2. To encourage the retention of existing housing and construction of new housing that meet the anticipated needs of the population (for instance, the needs of an aging population).
3. To encourage the preservation of historic structures in ways that appropriately serve the community's housing needs.

Policies

1. It is the policy of the Town to ensure that the timing and rate of new housing construction or rehabilitation does not exceed the community's ability to provide adequate public facilities (e.g. schools and municipal services).
2. It is the policy of the Town to accommodate housing that is permanently affordable for households having moderate, low, and very low incomes.
3. It is the policy of the Town to keep housing affordable by planning for:
 - appropriately sized lots;
 - accessory apartments; and
 - clustered developments.
4. It is the policy of the Town to work with businesses and non-profit housing corporations to help Bridgewater meet the demands for affordable housing.
5. In the future, new housing that is affordable to working families should be tied to public transportation systems to enable commuting and access to child care, health care, and commercial services (e.g. laundromats) whenever possible.
6. It is the policy of the Town to encourage the provision of housing for special needs populations, such as the elderly and physically handicapped.

7. It is the policy of the Town that the location of primary and vacation housing, related amenities and land uses should be planned with due regard to the physical limitations of the site and location of current or planned public and private services such as roads and commercial/service centers.

Recommended Actions

1. The Planning Commission should work with the Selectboard to:
 - a) Suggest ways to encourage the creation of additional rental properties throughout town, provided that they do not put an undue burden on Town services and facilities.
 - b) Seek information from the Two Rivers-Ottawaquechee Regional Commission to better understand the housing needs of Bridgewater residents and options for addressing these needs.
2. The Town should encourage private development of quality and affordable housing for working families and seniors.

• THE USE OF LAND IN BRIDGEWATER

SETTLEMENT AND LAND USE PATTERNS

Settlement in Bridgewater has occurred in a distinct pattern of small settlements of relatively high density of mixed areas surrounded by sparsely settled rural agricultural and forest lands. The areas of concentrated development are Bridgewater Village, Bridgewater Corners, and West Bridgewater, all of which are located along U.S. Route 4, a highway that runs on an east/west axis through Town. In addition, located approximately 2.5 miles north of Bridgewater Corners at the end of a State-Aid Highway is Bridgewater Center. Of these village settlement areas, Bridgewater Village is the largest.

Land use for crop, tillage, hay and pasture stretches along the roadways in the Town, especially south from Bridgewater Corners, along Route 100A, north to Bridgewater Center from U.S. Route 4 and in North Bridgewater.

Residential uses in the Town, if not located in the villages and hamlets or along the major roads leading to these village/hamlet areas, are located along the road system extending north of Bridgewater Village, north of Bridgewater Center or along several other roads lying north of U.S. Route 4. Recent development of houses, some of them permanent residences, along the Dailey Hollow and other remote roads, has been requiring additional services from the highway department.

PROPOSED LAND USE IN BRIDGEWATER

It can be seen from the foregoing sections that the Town of Bridgewater has a distinct pattern of settlement, which has emerged over time in response to cultural and social attitudes, as well as to natural environmental considerations. This pattern is one of small localized centers of village and hamlet settlement composed of high densities of residential and commercial uses, surrounded by very sparsely settled rural agricultural and forest lands. Over the years, this pattern of settlement has demonstrated itself to be of sociological, psychological and aesthetic benefit to the Town, while simultaneously providing a system that is both efficient and economical for the conduct of business and the provision of social and community services.

Even though maintaining the existing settlement pattern of the Town is a fundamental goal of this Plan, development pressure within the Town is a reality. More and more homes are being built in rural areas, particularly in close proximity to maintained town roads far outside of the existing community centers. Maintaining a sense of community and environmental quality that makes Bridgewater a pleasant place to live and work is becoming more difficult due to these recent land use trends.

Nevertheless, because the existing pattern of settlement has served the public interest for well over 200 years, it is the purpose of this Plan to maintain and to enhance this pattern wherever possible.

Overall Land Use Goals

1. Locate higher density mixed use development in the village and hamlets, or designated expansion areas surrounding the village and hamlets.
2. Provide for both residential and non-residential development only in areas where adequate public services are available or planned.
3. Protect and conserve rural areas and their natural resources by avoiding scattered development and discouraging incompatible land uses.
4. Conserve forest lands, wildlife habitats, outdoor recreation, scenic resources and local history of the Chateaugay area by promoting conservation and sustainable resource management.
5. Retain the quality of the natural environment by wise use of natural resources.

PROPOSED LAND USE MAP

A proposed or future Land Use Map was produced and is a part of this Plan to illustrate land use categories in Bridgewater. Input on the creation of this map included past planning documents, current Municipal Plan policies and responses from residents of Bridgewater through a 1995 Planning Survey.

The pattern of development on this map maintains established compact village and hamlet areas with medium density growth areas adjacent to them generally within the 2,000 feet prescribed in the Municipal Plan. Commercial and light industrial development is planned for existing Village and hamlet areas only with no planned pattern of “strip development” along roadsides outside these Village and hamlet areas.

Rural, low-density development is located in areas not having physical constraints listed as conservation or critical areas in the Municipal Plan, while avoiding existing agricultural lands. The largest, contiguous agricultural areas are not planned for future development, while some small patches of current agricultural areas may be suitable for low-density development. The rural, low-density developments follow the existing roadways so no new roads need to be built at taxpayer expense.

The rural, essentially undeveloped areas such as the Chateaugay, ridges south of U.S. Route 4 and ridges between town highways are maintained in their undeveloped state hosting only small camps and no permanent housing or commerce.

Areas of new low-density rural housing are concentrated essentially to the:

- Existing highway system in the northeast of Bridgewater where homes and access from Woodstock highways are already established, and
- The southwest area of Bridgewater north of U.S. Route 4 where land appears suitable for such development without major public investment in roads.

The remaining terrain in Bridgewater is not conducive to development because it is steep, not suited for septic systems, has very limited highway access and is thus planned for conservation of forest, recreation, and watershed resources. Bridgewater is highly regarded as a town with excellent tracts of undeveloped forest frequently enjoyed by hunters, off-road vehicle enthusiasts, hikers, and snowmobile enthusiasts. The neighboring towns of Killington, Barnard, Stockbridge, and Plymouth all have similar forested areas contiguous to Bridgewater, making this one of the best multi-town recreational assets in this Region. This Future Land Use Map does not plan for development of the large tracts of forest into residential, commercial, or industrial uses. Conversely, such tracts are intended to remain predominately as undeveloped or limited development areas for the purpose of conserving existing resource values.

This map is for general planning purposes only and should be reviewed with site visits to verify its suitability in meeting the goals and policies of the Bridgewater Municipal Plan. This map is intended to be a general guide for development in Bridgewater recognizing specific sites not shown on this map may indeed be suitable for certain densities of development.

GENERAL VILLAGE AND HAMLET SETTLEMENT PATTERNS

The areas of highly concentrated settlement are Bridgewater Village, Bridgewater Corners, Bridgewater Center, and West Bridgewater. By analyzing the existing pattern of settlement, it can be seen that these areas are the focal points of the Town, providing a sense of place or identity, a center for community interaction and a contrast to the surrounding rural countryside. As the Town develops, the village and hamlets should continue to fulfill these important functions.

BRIDGEWATER VILLAGE

The purpose of the Bridgewater Village is to be the location of the major retail commercial activities of the Town, the elementary school, recreation facilities, town offices and other major cultural and civic functions. It is also the only section of the Town with a public sewer system, which allows for considerably more concentrated development than those areas where septic systems with leach fields are required. Therefore, the following Planning Policies are suggested for Bridgewater Village:

Planning Policies for the Village

1. 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 Bridgewater Village Area or Hamlet Areas.

Primary vs. Secondary Retail

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

Primary retail - Primary retail establishments have only one purpose: to sell goods. Examples of a primary retail establishment include a grocery store, dry goods store, hardware store, etc. The Plan recognizes that there are some types of primary retail development that by their nature are less appropriate in the village. These would be those businesses that require a substantial amount of space to store materials, such as lumberyards or nurseries. It will be noted in the Plan where these uses are appropriate.

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

2. Density for development within the Bridgewater Village Area should be no greater than the capacity of existing sewer system will allow. If there is no access, density should be no greater than allowed under state potable and wastewater permit program.
3. Any new intensive and concentrated, commercial, or multi-unit development requiring public sewage facilities should be located within Bridgewater Village.
4. Residential development within the Village should allow a variety of housing types at high densities and should be coordinated with the sewer system and its ability to accommodate additional sewage.
5. All new development, or modification of existing buildings in the Village should seek to establish a flow of traffic for automobiles and pedestrians that is safe and convenient for local residents as well as through traffic.
6. Because of past problems caused by the parking of large trucks along the side of U.S. Route 4, it is the policy of this Plan to discourage the creation of any commercial development that does not have adequate space for off-street parking and safe ingress and egress sight lines for its customers.
7. Commercial and industrial development should be encouraged within the Village so as to maintain a balanced relationship between population growth, the provision of job opportunities and the generation of tax income for the town. Notwithstanding the above, it is not the policy of this Plan to encourage any commercial or industrial development within the Village that will markedly change the character of the community as a prime residential area. Proposed development that creates excessive noise, odors, visual clutter, or other nuisances is not in concert with this Plan.
8. New development of any type should seek to enhance and protect the scenic features and aesthetic quality of the Village area. Where possible, the architectural style of new or modified buildings should reflect existing architectural styles and details. Architectural styles that vary significantly from the existing predominate mix of building types are inconsistent with this Plan. Maintenance of open space within the Village is encouraged to assure adequate off-street parking and scenic amenities.
9. Preservation of historically significant buildings is important in the Village as well as in all parts of the Town. It is the policy of this Plan that buildings with architectural and historic value should not be destroyed, modified, or altered without due consideration to these values and where changes in the exterior of such buildings are to be made, the changes shall attempt to duplicate and maintain the style of the building prior to its modification.
10. No development should be permitted if it will cause a loss of environmental quality within the Village or a degradation of the environmental quality of adjacent properties.
11. Because there is a need for affordable housing in the Town, and because the presence of a public sewer system in the Village suggests a higher density of housing can be located there. Multi-family housing is appropriate in the Village Area.
12. It is the policy of this Plan to encourage developers who are proposing affordable housing projects to work closely with the Planning Commission in determining the economic

impact of the proposed development on the Town's tax structure. If the proposal were to significantly affect the carrying and financial capacity of the Town to reasonably accommodate increased growth, such housing may be considered incompatible with this policy.

THE HAMLETS

Bridgewater Corners, Bridgewater Center, and West Bridgewater are identified as hamlets. They primarily contain clusters of residential buildings with associated businesses that serve the townspeople and visitors who are traveling through the area. The purpose of the Hamlet Land Use Areas is to continue to support the current pattern of development by providing a small, clustered location where a mix of residential, civic and commercial uses that include properly scaled primary retail can interact with existing businesses and/or a civic center in a manner that encourages mixed-use growth. Density in these areas should be no smaller than is appropriate for septic systems under Vermont's potable and wastewater permit program. The boundaries of these hamlet areas are shown on the maps accompanying this Municipal Plan and a more detailed description of each follows:

- **Bridgewater Corners** ("the Corners") is located at the junction of Routes 4, 100A, and the State-Aid Highway leading from Bridgewater Center. In terms of surface waters, it is located at the confluence of the Ottauquechee River and the North Branch, and further downstream, with Broad Brook. There are presently several businesses here, including a restaurant and inn, a U.S. Post Office, Well Drilling Co., brewery, business offices, and a general store with gasoline pumps serving local and tourist needs. The Corners is also the location of the Town Garage, Mennonite Church, and Grange.
- **Bridgewater Center** ("the Center") is located at the end of the State-Aid Highway that runs 2.46 miles north from U.S. Route 4. Bridgewater Center is also the site of the Oak Chapel Community Christian Church. There are several small businesses located here. Major planning concerns for future development of the Center include the suitability of the soils for on-site sewage systems, the need for recreational facilities, vehicular and pedestrian safety, and floodplain boundaries.
- **West Bridgewater** is located at the junction of the town lines of Killington, Bridgewater, and Plymouth; Routes 100 and 4; and the Ottauquechee River and Reservoir Brook. There are several businesses in West Bridgewater, including a motel, general store, restaurant, gas stations, snowmobile tour facility, and other retail shops.

Policies for the Hamlets

1. The hamlet designation does not indicate a desire for "strip" or "sprawl" development and their associated problems such as traffic congestion and hazards caused by unlimited highway access, extensive signage, and on-site advertising. Any development which lends to or which impedes pedestrian traffic is contrary to this Plan.
2. Future development within the hamlet areas must be accomplished so as to retain the present hamlet qualities and amenities. These include: community integrity and

identification; maintenance of a center for community interaction; internal vehicular and pedestrian circulation which provides for easy and safe access to any part of the hamlet; harmony of building and property utilization features within each hamlet, and appropriate aesthetic design considerations.

3. New development within the hamlets should be sited to minimize conflicts in traffic flow and vehicular movement while maintaining safe pedestrian movement. Development that requires on-street parking should not be permitted.
4. New development near or adjacent to the Ottauquechee or its tributaries must maintain and enhance the scenic and recreational amenities of these waters. Waterways throughout the Town should be protected from development activities which could impair these amenities.
5. Whereas none of the hamlet areas are currently served by a municipal treatment facility, new development must be sited and designed so as to insure the safe, healthful, and environmentally sound disposal or treatment of sewage in such a way as it does not endanger water sources of adjacent properties.
6. Any development adjacent to the hamlets should be related to them as logical extensions of the build-up area rather than be so located as to constitute strip development or urban sprawl characteristics. Since one of the major goals of this Plan is to keep the hamlets separated from each other and to have rural and or residential land uses in between them, development of a sprawl nature along town roads is not desired.
7. All new development along U.S. Route 4 should be sited so as to minimize conflicts in traffic flow and vehicular movements and seek to maintain the scenic qualities and recreational amenities of the Ottauquechee River and its tributaries.

RURAL AREAS

Surrounding the village and hamlets is rural land. Settlement in these outlying areas has been historically associated with farming and other agricultural uses, and generally homes have been located in areas that are suitable for building and where the subsurface disposal of sewage effluent is appropriate.

Access to public sewer facilities is not available in rural areas, nor in the hamlets, and for economic reasons will not be in the near future. Therefore, new households will probably continue to be serviced by individual septic tank and leach field systems or other suitable individual systems to treat and recycle sewage effluent. Since the majority of homes constructed in rural areas will utilize ground water as their drinking supply, it is especially important that septic systems are designed and maintained to ensure that drinking water sources are not polluted.

The proper installation and functioning of subsurface sewage disposal systems is dependent on the physical composition of the land. This includes soil type, steepness of slope, depth to bedrock

or other impervious material, high ground water table and flooding hazard. The first phase in preparing the Municipal Plan several years ago included an identification of the physical processes and formations within Bridgewater. These processes and formations were analyzed to identify the degree to which they affect the proper installation and functioning of subsurface disposal systems. Based on this analysis, a map was prepared showing the range or degree of suitability of the land in Bridgewater for these systems. This Plan is based on that map; however, there is a need for individual on-site analysis to determine the exact suitability of a specific lot for subsurface disposal systems.

The Purpose of the Rural Area is to provide a rural location for residential development, while allowing for continued agricultural and forestry operations. The Rural Development Area is intended to remain rural in nature; therefore density in this land use area should be varied based the natural physical limitations on the land (see policies below).

The types of commercial development that are appropriate in this area could include home occupations, small service businesses, small professional offices and inns.

Policies for Rural Areas

1. In rural areas, the lot size, density and rate of development should be determined by the following factors:
 - the suitability of the land to provide for waste water disposal;
 - the slope of the land, and the likelihood of soil erosion;
 - the availability of water to accommodate existing and planned uses within an area; and
 - the overall effect on town highways and other costs to the Town.
2. Within the rural areas, it is the Plan's intent to preserve scenic open space as well as the potential for future agricultural and forestry uses of our land. The Plan recommends Medium Density uses on non-agricultural land within 2,000 feet of the boundaries of the village and hamlets, and High Density development only within the village and hamlets.
3. In consideration of the varying land formation and the resulting natural physical limitations of the land within the rural areas for development, the varying ability of the Town to provide a high level of service at a reasonable cost to these areas and the overall objective of the Plan, development within rural settlement areas of Bridgewater is recommended at three different densities:
 - **High Density Areas** - Those areas where overall suitability of the soil reveals excellent-to-good potential for concentrated development, where slope is typically slight to moderate, where depth to bedrock is not shallow, where permeability rates are moderately rapid, where water tables are not seasonably high or excessive well-drained, where availability of water for domestic use is excellent and in close proximity to those areas adjacent to Bridgewater's existing highway systems. Density in this area is recommended to be one residential unit per .5 to 1 acre.

- **Medium Density Areas** - Those areas where overall suitability of the soil reveals good-to-fair potential for development, those areas where the slope range is typically moderate to steep (10-15%) where soils generally have moderate limitations for development of roads and where water tables are not seasonably high or wet. Density in this area is recommended to be one residential unit per 2 to 3 acres.
- **Low Density Areas** - Those areas where overall suitability of the soil reveals poor potential for development, particularly on-site waste water disposal systems. Areas of low-density development are characterized by one or more of the following factors: slopes greater than 15%, shallow depths to bedrock or water table. Density in this area is recommended to be one residential unit per 3 to 5 acres.

CHATEAUGUAY – DAILEY HOLLOW AREA

A predominant land use for much of Bridgewater is remote forestland, particularly in the Chateauguay - Dailey Hollow Area of town. The Area has historically been very rural, except for a brief period during the mid-1800's when development flourished due to gold mining speculation. Today, human settlement in the Area is sparse, year round public access is practically non-existent, and public services (electric or telephone) are very limited. For the few human inhabitants living there, most provide their own heat and electricity and maintain and plow their own roads. Roads are relatively narrow and steep and are not designed to sustain heavy vehicles or high volumes of traffic. None of the public roads that lead into the Area are open or passable into the abutting Towns of Barnard and Stockbridge.

With limited exception, land parcels are very large, ranging upwards to several thousand acres in size. Much of this land is owned by timber companies or families interested in using the land for wood production. While there have been numerous land title transfers in recent years, the number of subdivisions has remained relatively low. Much of this land is enrolled in Vermont's Use Value Appraisal (UVA) Program. Under UVA, qualified landowners, owning at least 25 contiguous acres, can elect to keep their forestland in production and to pay local property taxes based on its 'use' value rather than 'development' value. This Program has helped to slow development of these lands.

In late 1997, the Chateauguay No Town Conservation Project was launched by the four Towns of Bridgewater, Barnard, Killington, and Stockbridge. The locally directed project has set the following goals for the approximately 55,000 acre area: "To foster, through locally sponsored conservation activities, the long-term commitment to stewardship of exceptional forest, wildlife, and recreational lands." Given the size of the area, implementation of these goals will take years to complete.

Since 1997, a locally appointed Town Committee (in cooperation with the Vermont Land Trust, The Conservation Fund, Two Rivers-Ottawaquechee Regional Commission, Appalachian Trail Conference, and the Vermont Agency of Natural Resources) has been evaluating ways to conserve the Area, protect critical wildlife habitat, promote sustainable forestry, and ensure recreational opportunities. To date, activities have included working with landowners on long-term planning and conservation of their property. Several landowners have agreed to work with

local land trusts on specific plans to conserve the Area. In some cases, landowners have donated conservation easements, relinquishing the right to develop their property, while others have agreed to sell their development rights to a land trust. For instance, in December 2001, Meadowsend Timber Inc., headquartered in New London, New Hampshire and a large landowner with a strong conservation ethic, sold the development rights to its land in the Area to the Vermont Land Trust. In doing so, Meadowsend Timber, Inc. permanently protected approximately 2,100 acres of land in the project area, most of which is located within Bridgewater.

To assist the Project partners with implementation, a local and a regional conservation fund have been established. These funds provide financial resources to assist landowners interested in conserving their property. The hope of this Project is that if enough people are inspired by the prospect of conserving the Area, the land will be permanently protected from development.

Recreation

The Chateauguay - Dailey Hollow Area allows for many different kinds of recreational activities. For instance, people can hunt on the land, and it should be noted, there are numerous seasonal hunting camps situated there. Additionally, people can observe wildlife, such as black bear, moose, and deer, thanks to the exceptionally valuable habitat. Hikers who are seeking a rugged wilderness experience also frequent the Area at all times of the year, using old town roads and trails (including the Appalachian Trail). Access to the Appalachian Trail is relatively easy and the number of trail users continues to increase. Snowmobiling remains a very popular sport, attracting both locals and outsiders to the Area. The Vermont Association of Snow Travelers (VAST) retains an extensive system of snowmobile trails in the Area that serve as connector routes to other trails in Windsor and Rutland Counties. Local snowmobile groups have been active in maintaining these trails and working with private landowners to ensure continued access.

Wildlife

The entire Area has been identified by the Vermont Department of Fish and Wildlife as bear production habitat or an area supporting high densities of cub-producing females. These production areas are contiguous to or within remote forestlands that lack roads for human travel. The long-term stability of black bear depends on the retention of this Area in a predominately undeveloped state. With the exception of busy U.S. Route 4, which acts as an unwanted crossing barrier to animals, this Area provides a critical link for bears to move freely between the north and south production habitats.

Purpose

The purpose of this land use area is to maintain the aesthetic, historic, recreational and natural value of the Chateauguay – Dailey Hollow Area. Timber production should be the primary type of development within this area, but low-density residential development and outdoor recreation may be acceptable. Commercial retail development is discouraged in this Area.

Goals

1. To promote and endorse voluntary efforts between landowners and conservation trusts to conserve property that has exceptional aesthetic, historic, recreational, and natural resource values.
2. To maintain or enhance use of land for forestry which provides wildlife habitat as well as recreational opportunities.
3. To support local, regional, and State efforts to foster conservation of the Area through planning, land acquisition, conservation easements, and tax incentives.
4. To limit public investments by the Town of Bridgewater, abutting municipalities, the State of Vermont, and other governmental agencies when these investments unnecessarily or unreasonably endanger the long-term use of the Area for forestry, wildlife, and recreational purposes.
5. To discourage public or private development of major access roads or through roads connecting with public highways in neighboring towns.
6. To advocate against public utility upgrades or extensions unless the public is clearly benefited thereby and where it is determined not to compromise the land use goals and policies for this Area.
7. To ensure the protection and management of upland watersheds comprising the Area, specifically that they remain in their pristine or natural state.
8. To promote land and wildlife conservation on privately owned land. Conservation is possible only through the support of private landowners and with the respect of the community.

Policies

1. Given the combination of factors that make conservation of this Area a high public priority, large development projects, including major residential subdivisions and tract development, are inconsistent with this Plan.
2. Development of non-commercial seasonal camps serving hunters, snowmobilers, and other outdoor recreational users are appropriate uses and are encouraged. See definition of "camp."
3. Construction of homes intended for permanent or seasonal occupancy with all modern amenities is not the intended use for the Area. Where a landowner is proposing to undertake such a development, permanent conservation of the remaining land is encouraged as a means to ensure that future residential development will be limited on this tract.
4. Timber production should be the primary or dominant use in this Area. Logging operations are encouraged provided that they are in accordance with acceptable

Camp - Defined by the Agency of Natural Resources as a habitable structure "on its own individual lot with no interior plumbing consisting of no more than a sink with water that are used for no more than three (3) consecutive weeks per year and no more than a total of sixty (60) days per year."

management practices. Accordingly, woodlots should be managed and harvested in ways to keep soil erosion and sedimentation of streams to a minimum.

5. Insofar as is reasonable, all future development should be planned and sited to promote the continued use of forestland for its intended purposes. To minimize conflicts between forestry, wildlife habitats, and recreational uses, projects should be designed to:
 - be relatively small in scale and not be the dominate land use on the parcel or in the immediate area;
 - include or reserve a major portion of the land base for conservation or open space;
 - avoid improvements or development in areas exhibiting highly scenic or sensitive landscapes and design structures to minimize disruption of the natural condition of the Area.
6. Ensuring continued public access into the Area for snowmobilers, hunters, hikers, and others is critical to the future use and enjoyment of this Area for sporting and recreational purposes. Town roads, legal trails, and some private roads open to the public serve as primary access routes into the Area. Loggers, sportsmen, hikers, and snowmobilers, benefit from this as they are able to access woodlots and trails readily. Public policy decisions or actions need to reflect these values.
7. Retention of snowmobile trails (those that traverse private land and are part of the statewide VAST trail network) is a priority. Where private lands are involved, owners should be encouraged to keep their land open for these purposes. Local sports groups and snowmobile clubs should continue to have the support and cooperation of the Town in these efforts. Conservation plans developed for landowners in this Area should reflect, where practicable, the desire to retain this network of trails and not close or cut-off important trail routes.
8. This policy is specific to town roads and trails in the Area. Town highways and legal trails are the primary means of public access to land in the Area. Principal users of these roads are local residents, seasonal camp owners, hikers, hunters, snowmobilers, and loggers. These roads accommodate relatively few vehicles ranging from light ATVs and snowmobiles to heavy logging trucks. The Selectboard retains jurisdiction over these roads, including maintenance, upgrading, reclassification, and discontinuance. Roads are classified by the Town as either Class 3 or Class 4 Highways or legal trails. Class 3 roads are intended to be open year-round and negotiable by a regular automobile. Class 4 roads are not regularly maintained and are only improved to the extent required by the necessity of the Town in the judgment of the Selectboard. Legal trails are not considered highways in a legal sense, and the Town is not responsible for maintenance, including culverts and bridges (19 V.S.A. Sections 302 and 310). In regard to Class 3 and 4 roads, ATVs and snowmobiles may be permitted to travel on some of the roads; each year, the Bridgewater Selectboard decides which roads to open and has the power to close these roads at their discretion. Present and future programs and actions for town roads and trails for this area need to be compatible and complement the long-term land use goals and policies of this Plan. Public investment decisions that have the potential effect of altering the stated land use goals of the Area are discouraged. In considering whether to reclassify or improve a

Class 4 highway or to lay out or accept a new highway in the Area, the Selectboard shall give due consideration as to the extent of development likely to result from the action and whether or not such public investment is in accordance with this Plan. Notwithstanding, maintaining or improving bridges and culverts in the Area should be undertaken when needed to accommodate log trucks and related equipment provided that it is economically feasible to the Town. Upgrading roads and trails will stimulate year-round residential development within an area intended primarily for conservation. Over time, the cumulative impact of new development in the area could erode the fundamental land use goals for the Area. It is in the interest of the Town to evaluate the effects of its decisions on the scenic, historic, and recreational values, homestead rights, and public safety. The mere loss of a particular right or benefit to improved access to property should not be the single factor considered in reclassifying or upgrading roads and trails within the Area.

9. Vermont law (24 V.S.A. Section 1111) grants authority to the Selectboard to control driveway entrances, power and telephone lines, and similar private investments within the right-of-way of Town roads. It is unlawful to construct a driveway accessing a town highway or to extend a power line within the right-of-way without first obtaining the approval of the Selectboard. In determining whether to grant approval the Town may consider, in addition to other criteria, the likely impact on the stated goals and policies of this land use Area. The existing public road and trail system within the Area functions primarily to provide access for timber harvesting, seasonal camps, and recreational uses. Access for residential uses is a secondary and subordinate function. Evaluation of requests for improvements within the right-of-way shall consider if is compatible or consistent with the goals and policies of this Plan, and this Area, in particular.

AGRICULTURAL AND FORESTRY RESOURCES

Agriculture and forestry are important components of the Bridgewater economy. Currently, there are less than five working farms in Bridgewater, but there are approximately 14,580 acres in timber production and the famous furniture maker, Charles Shackleton maintains a store at the Bridgewater Mill.⁷

Because agricultural and forestry related occupations are heavily dependent on land as the basis for their operation, the use of such lands is an issue of great importance to the Town. Over the last several decades, Vermont has seen an increasing trend toward the fragmentation of forestlands whether through the subdivision of existing parcels or the expansion of roads, infrastructure, and housing into what were once wild places. Conversion of agricultural and forested lands for housing and commercial development is probably irreversible. Such conversion, if allowed to occur in sufficient quantity, would undermine Bridgewater's economic base, decrease the availability of locally grown foodstuffs for future generations, eliminate much of the natural beauty of open and undeveloped land and destroy the sense of physical separation between the developed communities within the town. In many ways, it is the appearance of rural life that is important to the residents of Bridgewater. Whether for appearance sake, or in order to

⁷ The number of working farms was estimated by Bridgewater Planning Commission members in February 2013.

support local jobs in the food and wood products industries, the farm and forestlands of the town are important considerations and should not be carelessly diminished.

Goals

1. Encourage connections between working lands (both agricultural and forested).
2. Support the local farming and forest industries.
3. Ensure that best practices are being utilized in agricultural and forest related activities in order to safeguard the environment.

Policies

1. The Planning Commission, with the advice and assistance of property owners, should consider developing an Agricultural and Forestry Protection Plan to identify those areas in Bridgewater which rank highest as an agricultural or forest based resource. This assessment should take into consideration the following: soil quality, current and prospective productivity, as well as the parcel size, shape, location, and any other relevant criteria. The assessment should be followed by a public hearing to seek additional information, as well as feedback regarding strategies for protection. Ultimately, an Agricultural and Forestry Protection Plan should be written and incorporated into future revisions of this Municipal Plan.
2. The Town of Bridgewater encourages residents to buy food locally, whenever possible, through road-side farm stands, Community Supported Agriculture (CSA) programs (in which an individual pays a set amount of money at the beginning of the growing season to a farmer and later receives installments of produce throughout the year), or at nearby farmer's markets.⁸
3. The Town of Bridgewater encourages the development of agritourism opportunities in Bridgewater, provided that these do not negatively influence the health, welfare or safety of nearby residents. Agritourism, as defined by the Vermont Farms Association, is the practice of keeping a farm open to the public to allow visitors. Agritourism allows farms to remain financially viable by diversifying their operations.
4. The Town of Bridgewater encourages investigation of and participation in public and private programs that provide for equitable means of keeping the agricultural and forestry land in continuous production.

⁸ Please note: Bridgewater residents considered establishing a farmer's market (in which multiple farms sell their products in the same place) in the past; however, they found that there was not enough demand given their proximity to the already well-established farmer's markets in Woodstock and Norwich. Additionally, there are already a couple of farm stands (in which an individual farmer sells his or her goods) that exist and prosper within the Town of Bridgewater.

5. The construction or expansion of public facilities should not significantly reduce the resource value of primary agricultural or forest property and soils, particularly those currently in production, unless no feasible or prudent alternative exists and any such activities are planned to minimize its effect on adjoining lands of similar character.
6. When non-agricultural or non-forestry development is proposed on land currently used for these purposes, the development should be planned to minimize the reduction of the agricultural or forestry potential by cluster design which reduces the costs of roads, utilities, and land usage, and planned so as to not unreasonably or significantly interfere with agricultural or forestry uses of adjoining lands.
7. Promote conservation and stewardship of existing patches of contiguous forest within Bridgewater, including, but not limited to parcels within the Chateauguay No Town (CNT) Area.
8. Loggers and foresters must use Accepted Management Practices (AMPs) and are encouraged to implement Best Management Practices (BMPs) in their operations and to minimize point and non-point source water pollution.
9. Agricultural activities shall follow Acceptable Agricultural Practices (AAPs) for Agriculture. When feasible, farms are encouraged to follow Best Management Practices (BMPs), site-specific practices for farm management developed by the Natural Resource Conservation Service (formerly the Soil Conservation Service). They include guidelines for storage and spreading of manure, fertilizers, and pesticides; buffer strips, diversion of surface water runoff, and milk house waste management, among others.

Recommended Actions

1. Explore the possibility of creating a forest conservation district to connect the Chateauguay No Town Area to other wildlife habitat areas in Vermont.
2. Encourage private landowners who own parcels in-between the Chateauguay No Town Area and other wildlife habitat areas to consider managing their lands in a way that is consistent with sustainable forestry practices and wildlife protection, and educate them about the Use Value Appraisal ('Current Use') program.

EARTH RESOURCES EXTRACTION

The use of local sand and gravel significantly reduces the cost of road maintenance within the Town, and can also benefit the local economy. When proper erosion control and reclamation techniques are used, extraction of gravel and other minerals can have minimal impact on the environment. The land can later be returned to other productive uses. Currently, there are no operating sand or gravel pits in Bridgewater.

Policies

(Please Note: Policy #2 regarding agricultural land preservation in the above sub-section on “Rural Areas.”)

1. The Town discourages the unsustainable extraction of earth resources, including sand and gravel, as well as timber.
2. The extraction of earth resources, logging and forestry activities are to be limited to operations that do not conflict with the other goals, policies, or objectives of this plan.

Recommended Actions

1. Potential sand and gravel reserves should be identified and set aside for future use.

PLANNED RESIDENTIAL DEVELOPMENT

This Municipal Plan recognizes that a prime characteristic of rural areas is the landscape pattern. Small clusters of farm buildings surrounded by open fields and woodlands add greatly to the attractiveness of Bridgewater. This pattern is greatly valued by the people of the Town. As development occurs in the rural settlement areas, it must not only respect the physical limitations imposed by topography and soil characteristics, but must also be in harmony with the existing landscape.

Bridgewater can maintain the feeling of openness in its countryside while permitting development by providing for Planned Residential Development (PRD) in certain areas. The rural residential grouping of buildings at relatively high density is also called “cluster housing.” Cluster housing respects the overall rural densities recommended elsewhere in this Plan, but permits placing the houses on lots smaller than otherwise would normally be required. To offset this high concentration of homes, conservation of open space is required for the remainder of the property by grant of easement, covenant to the municipality, or other legal instrument.

The purpose of this kind of development in rural areas, as stated in the Vermont Planning and Development Act, is “to encourage flexibility of design and development of land in such a manner so as to promote the most appropriate use of land, to facilitate the adequate and economical provision of streets and utilities, and to preserve the natural and scenic qualities of the open lands and forests in the town.”

• **CRITICAL NATURAL AREAS**

Many years ago, an analysis was conducted to inform municipal planning in Bridgewater. This analysis focused on natural processes, formations, and critical features that play a key role in maintaining the environmental health and quality of the Town. Many of these features are fragile and require special conservation and protective measures to ensure their continued existence. The following descriptions and recommendations constitute an environmental conservation policy for the Town of Bridgewater:

STEEP SLOPES

Steep slopes are more susceptible to erosion, especially when vegetation is removed from them during the construction of roads or buildings. Erosion can undermine the soil on which existing, nearby structures are located, and it can also lead to an increase in sedimentation (a type of pollution) in surface waters. Additionally, steep slopes make the proper installation and function of subsurface wastewater disposal systems difficult to achieve and steep slopes can be costly to the Town as they make road and utility maintenance more difficult. A general rule of thumb: as the slope increases, the suitability of that land for development decreases.

Planning Policy for Steep Slopes

1. Steep slopes should remain predominantly in forest cover.
2. Development of these areas should be considered carefully in order that it not be detrimental to the environment.

HIGH ELEVATIONS

Because Bridgewater is located among the foothills of the Green Mountains, the tops of Bridgewater's hills tend to be relatively high. Several peaks exceed 2,500 feet in height, above which little disturbance can be tolerated without causing extensive environmental damage.

At these higher elevations, rainfall is greater, air and soil temperatures are lower, soils are more shallow, poorly drained and low in nutrients, slopes are usually quite steep, and there are fewer plant species. These characteristics can lead to several problems. For instance, rainfall on steep slopes, shallow soils, and disturbed ground can cause or exacerbate erosion and once erosion begins, it is hard to stop; the few plants that grow at high elevations move too slowly to establish traction in badly eroded areas. Additionally, road and building construction on shallow mountain soils or ledge can impede natural water drainage and frustrate sewage disposal efforts, resulting in the potential for water and soil pollution.

The most appropriate use of mountain lands above 2,500 feet is as a source of abundant clean water that supplies streams, rivers and lakes. Mountain soils absorb large quantities of water from rainfall and collect fog moisture through trees. This water filters through the thin soil and adds to stream flows, springs and eventually ground water supplies in the valleys. An abundant supply of clean potable water is one of the most vital natural resources for sustaining human, plant and animal life.

Planning Policy for High Elevations

1. Land above 2,500 feet elevation should be maintained predominantly in a natural wilderness state, except in cases of wind power or telecommunications projects endorsed by this Municipal Plan.

SHALLOW AND WET SOILS

The soils that cover the bedrock of Vermont are those soils which were created over a period of about 10,000 years and which have not yet been eroded and washed away to the sea. There are various kinds of soils and different degrees of quality. In general, good soils are alive with micro-organisms that provide food and minerals for a diverse mix of vegetation.

Soil characteristics (such as depth, composition, texture, and stratification) have been influenced over the years by bedrock, past glacial action, climate, terrain, and vegetation, as well as animal and human use. As a result, soils have different levels of permeability, and water-holding and load-bearing capacity.

The depth of the soil over bedrock and its degree of wetness are two of the most important factors affecting development. Areas where the soil is less than four feet deep are not suitable for the use of leach fields and septic systems, for these systems depend upon the soil serving as a filtering medium to purify wastewater. If soils of too little depth were to be flooded with wastewater, they would not have the ability to cleanse the water sufficiently, making downhill and downstream water pollution likely. When there are shallow soils on steep slopes, it is very likely that groundwater recharge and storage areas will be polluted.

Shallow soils are also very susceptible to erosion, and once bedrock is exposed, the ability of soils and plants to regenerate is greatly reduced. Soils that are excessively wet, or where the seasonal high water table is within four feet of the surface, also have severe limitations for development. If subsurface disposal systems are constructed in these areas, pollution of ground water supplies is almost guaranteed. Additionally, these wet soils, because of their low load-bearing capacity, often do not provide adequate strength for the construction of buildings.

Planning Policy for Shallow and Wet Soils

1. In areas where shallow or wet soils exist, development using subsurface disposal of sewage effluent should be prohibited or, where it can be shown that development will have no deleterious effects, the density of any such development should be limited.

FLOOD-PRONE AREAS

There are lands in Bridgewater that are adjacent to the Ottauquechee River, its North Branch, Broad Brook, and Reservoir Brook that are subject to occasional flooding. These flood-prone areas are natural extensions of these water bodies. They retain excessive amounts of water occurring as runoff during heavy rains and spring thaws, and impede the velocity of water flow during floods.

In late August 2011, Tropical Storm Irene dropped several inches of rain over a two to three day period onto an already very wet, saturated area. The Ottauquechee River, Broad Brook, North Branch Brook and several other streams absorbed as much of the rain as they could and then overflowed their banks, damaging town roads, bridges and structures. By the end of the storm, four homes had washed away and an additional eight were severely damaged. Additionally, 14 bridges and 34 roads sustained damage. The expense of repairing the roads and bridges totaled just under two million dollars, 95% of which was reimbursed by the Federal Emergency Management Agency (FEMA). The Town of Bridgewater is currently participating in the Hazard Mitigation Program which will award state and federal money to “buy out” four of the properties that were impacted by the flooding. Once these parcels have been successfully purchased, any remaining damaged structures will be removed and the land will be protected from most types of future development.

As Tropical Storm Irene demonstrated, flood-prone areas are unsuitable for residential and commercial development for many reasons; development can put life and property in harm’s way, negatively impact channel capacity, and prevent subsurface sewage disposal systems from functioning properly during high water events. In addition, flood-prone areas are usually good locations for agriculture due to the soil content and flat land. Therefore, flood-prone areas can be used for human activities that do not pose safety or health problems for the community or for property-owners and their down-stream neighbors.

Planning Policy for Flood-Prone Areas

1. The Town follows federal flood hazard regulations (“Bridgewater Flood Hazard Area Regulations” adopted on November 28, 2006) that are compliant with the National Flood Insurance Program for the management and protection of flood-prone areas for a 100-year flood (a flood that has a probability of occurrence of one percent for any given year). Under these regulations, only certain non-structural land uses can be permitted in the floodway portion of these areas. The current regulations specify where, under what conditions, and in what manner any development can be undertaken in these hazardous areas within the Town. Development in the floodplain outside of floodways should be very limited, must take place in a manner that does not lead to increased flooding elsewhere, and is safe from the damages of floods. It is the policy of this Bridgewater Municipal Plan that development in flood-prone areas follow the town’s current flood hazard regulations (as referenced by name, above).

SURFACE WATERS

The brooks, streams, and rivers in Bridgewater provide many important amenities, including recreation, scenic value, and a potential source of clean drinking water. The continued use of surface water is directly related to its quality. The state has passed a Water Pollution Control Act regulating the quality of waters in the state. This Act forbids the discharge into the waters of the state of any waste that reduces the quality of the receiving waters below the classification established for them except by special permits. Many of the Town's water bodies were found to be below the required criteria for classification.

Since the 1970's when extensive efforts were made to clean up the waters of the Ottauquechee River and its tributaries, and when the Village Sewage Treatment Plant was installed, the formerly horrid waters of the Town have been reclaimed to a quite satisfactory degree in most areas. The major threat to surface water quality now seems to be the failure of wastewater treatment systems, especially from the older private septic systems. Other forms of pollution exist, and non-point source pollution (ex: storm water run-off from farm fields that have been fertilized or otherwise treated with chemicals) is a potential problem, but seems to pose no significant threat to public health at this time.

In Bridgewater, the threats to the Ottauquechee 's water quality include: (1) sedimentation due to land development, stream bank de-stabilization, and road runoff and (2) pathogens from poor or possibly failing septic systems. Upstream in Killington, these same sources of non-point source pollution plus thermal modification from riparian vegetation removal are not just threats, but are having real impacts on the water quality and aquatic life.

The simplest, most straightforward, and very effective means of preventing sedimentation impacts to rivers and streams is to establish and/or maintain existing buffer strips of native vegetation between any land disturbing activity and the top of the stream or river bank. The roots of the trees, shrubs, and herbaceous species will hold soil in place and help keep the banks stable. Woody vegetation will also help shade the rivers and streams. All vegetation, in addition to the un-compacted soil and uneven topography of an undisturbed vegetation community, will slow runoff, reduce its erosive force, allow sediments to settle, and filter out nutrients and other pollutants.

Goals for Surface Waters

1. It is the goal of the Town of Bridgewater to protect the important scenic resources that are provided by stream corridors.
2. It is the goal of the Town of Bridgewater to protect, manage, and utilize waters of the Ottauquechee River and its tributaries (within the Town of Bridgewater) in a manner that meets or exceeds the water quality standards for Class B waters as set forth under the *Vermont Water Quality Standards*.
3. It is the goal of the Town of Bridgewater to maintain and further protect the Ottauquechee River and its tributaries as a water resource for fish and other aquatic life and for public recreation.

Planning Policies for Surface Waters

1. All new or increased discharge of wastewater into the Ottauquechee River and its tributaries must be fully compatible with Bridgewater's goal to meet or exceed the water quality standards for Class B Waters, and must utilize the highest practical degree of treatment currently available.
2. Development shall not take place within 50 feet from the top of stable river or stream banks.

3. Acceptable Management Practices (established by the Agency of Agriculture, Food and Marketing of the State of Vermont) shall be adhered to in lands adjacent to and inside riparian buffers.
4. Farmers are encouraged to voluntarily maintain or create wider buffers than required by the State's Accepted Agricultural Practices (AAP) between active farmland and adjacent rivers and streams to prevent the runoff of nutrients, pesticides, fertilizers, manure, and soil which adversely affect water quality in rivers and streams. The Town of Bridgewater recommends the voluntary adoption of a 50 to 75 foot buffer strip of no-till seeding, non-disturbed soil of grasses or native shrubs or trees. The width of the buffer should be determined by slope, intensity of land use, existing vegetation and related factors.
5. Recommended uses adjacent to surface waters are forest cover and open spaces for recreation in order to maintain the river corridor's scenic values.
6. For the purpose of maintaining water quality, land within 50 feet of stream banks should not be used for the installation of subsurface wastewater disposal systems.
7. Where the natural flow of the Ottauquechee River and its tributaries are to be artificially limited, as would be the case where a dam was proposed, the river should maintain certain critical minimum flow rates to ensure that excessive erosion, turbidity and discoloration of the water does not take place.
8. The use and development of lands adjacent to streams should not significantly detract from the scenic resources of the stream corridor. Accordingly, the Town of Bridgewater shall impose conditions on development to control unreasonable or unnecessary adverse effects on the scenic resource of the town's surface waters.

WETLANDS

The occurrence of wetland areas in Bridgewater is not extensive, but those that do exist are very important. They provide needed wildlife habitat through serving as feeding or breeding grounds for a select group of species. Mammals such as muskrat, beaver and raccoon, as well as certain bird species utilize wetland areas.

Wetland areas also provide the direct benefit of flood protection. In having a high organic composition, a large amount of water can be absorbed and retained by wetlands, thus reducing flood peaks in surrounding areas. Wetlands can also help to filter pollutants, thereby contributing to a higher quality (or more pure) groundwater.

Given the many benefits of maintaining and enhancing existing wetland areas, the Town of Bridgewater has the following goals and policies:

Goals for Wetlands

1. It is the goal of the Town of Bridgewater to ensure that wetland areas are maintained in their natural state because they provide certain public benefits, including valuable wildlife habitat, filtration of pollutants, and flood protection.

2. It is the goal of the Town of Bridgewater to reduce development on or near wetlands.

Planning Policies for Wetlands

1. The State of Vermont requires a 50 foot buffer strip around Class Two wetlands in which development is prohibited. All development within Bridgewater shall comply with this law.
2. It is the policy of Bridgewater that development shall not occur within a 50 foot buffer strip around wetlands that are contiguous to Class Two wetlands and around any other wetlands identified as “functionally significant” by the State of Vermont now or in the future.

CRITICAL WILDLIFE HABITAT

The Bridgewater area is host to some critical wildlife habitat areas and deer wintering areas. Most of these areas are located in the more undeveloped sections of the town. Natural Heritage Sites (rare and endangered species or habitats) and deer wintering areas are mapped by State of Vermont officials and have been excluded from the Future Land Use Map as areas appropriate for development.

Goals for Critical Wildlife Habitat

1. Preserve and enhance wildlife habitat.
2. Maintain diversity of native species.

Planning Policies for Critical Wildlife Habitat

1. Natural Heritage Sites have been identified by State wildlife officials as the most important or threatened habitats. It is the Town of Bridgewater’s policy that new development is not allowed in Natural Heritage Sites or deer wintering areas without State wildlife officials’ concurrence.
2. It is the policy of the Town of Bridgewater that whenever possible and in all areas of the town, development shall utilize existing roads and field lines. This policy will help to prevent the fragmentation of wildlife habitat which can lead to species’ decline or extinction.

• CRITICAL SCENIC AND HISTORIC AREAS

Critical Scenic and Historic Areas in Bridgewater include:

- The Appalachian Trail Corridor
- The Chateauguay – Dailey Hollow Area
- Historical Buildings
 - Brick School House
 - The Richard Southgate House
 - Bridgewater Mill
 - Grange Hall

APPALACHIAN TRAIL CORRIDOR

The Appalachian Trail is a 250,000 acre greenway spanning 2,175 miles from Maine to Georgia. Close to the town line (near Barnard), there is roughly a half-mile swath of the Appalachian Trail Corridor that crosses into North Bridgewater for about four miles, providing a wildlife corridor for large mammals and an excellent hiking opportunity for residents and visitors alike. Views at Lookout Point are exceptional, and there is a town-wide desire that this area remain undeveloped.

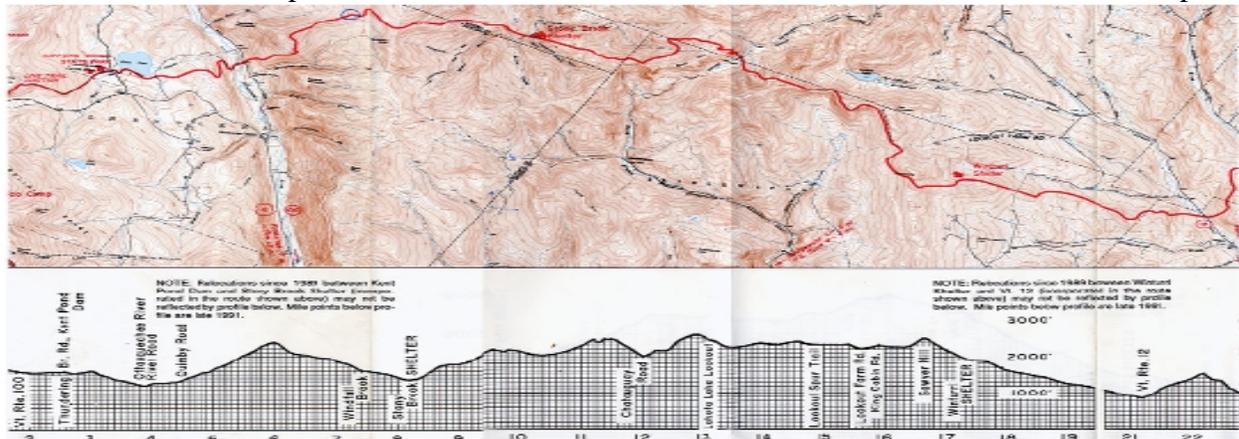


Figure 15: Cross Section of Appalachian Trail Corridor From Woodstock to Barnard
 Source: Green Mountain Club – Ottauquechee Section, 2007

THE CHATEAUGUAY – DAILEY HOLLOW AREA

Please see “The Use of Land in Bridgewater” chapter, “The Chateauguay – Dailey Hollow Area” subsection for details on this important resource.

HISTORIC BUILDINGS

Brick School House and Richard Southgate House

- Please see the “Town Services and Facilities” chapter, “Municipally Owned Buildings” subsection for descriptions of the historic Brick School House and the Richard Southgate House.

Bridgewater Mill

- Please see the “Introduction” chapter, “Town History” subsection for a description of the Bridgewater Mill.

Grange Hall

- The Bridgewater Grange was organized in Bridgewater Corners in the early 1900’s. It is still active with area membership including grange members from Bridgewater and Pomfret.

- **TRANSPORTATION PLAN**

The Town's Transportation Plan is critical, not only to maintain this important capital asset, but also for the safety and economy of the surrounding towns and the region. The purpose of this Transportation Plan is to promote transportation as a complete system that addresses the diverse mobility needs for all people in Bridgewater. Decisions about transportation resources should enhance the safety of the Town's residents, community livability, economic development, and the preservation of the environment. This Transportation Plan encourages the preservation and maintenance of the Town's current transportation assets, including roads, bridges, and culverts.

The Town has invested more money in transportation than any other town asset. Town highways are the second highest annual budget item, beyond schools, in the municipal budget. Bridgewater's network of back roads is also an integral element of the scenic, rural countryside. These byways are both visually and economically important to the town. Improvement of the town highway system should support development that is consistent with other elements of the Municipal Plan.

Due to our population's increased demand for mobility, an effective transportation system is an integral part of the community's future growth and economic well-being. While there are many elements that comprise a total transportation system, the Transportation Plan for Bridgewater is limited to its network of highways and roads. This network should form a system that provides for the efficient and safe movement of through traffic, as well as ease of access to, and egress from, individual properties. The Transportation Plan consists of three parts: a discussion of the highway and road network as it now exists; a description of the highways and roads and their classification by function within the transportation network; and a discussion of U.S. Route 4.

EXISTING HIGHWAY AND ROADS

There are 70 miles of highways and roads in the Town of Bridgewater. This total accounts for State and State Aid Highways and local town roads. State highways in Bridgewater include U.S. Route 4, Vermont 100, and Vermont 100A. Route 4 extends for 7.5 miles through the town, generally following the Ottauquechee River. It is one of the major east-west highways serving the State, and it connects Bridgewater Village, Bridgewater Corners, and West Bridgewater.

Vermont 100 extends south from West Bridgewater one mile into the Town of Plymouth. In 1972, this section of highway was reconstructed and paved, thus upgrading its efficiency for vehicular movement. Vermont 100A also extends south from its junction with U.S. Route 4 in Bridgewater Corners, where it winds two miles into the Town of Plymouth.

There is one State-Aid Highway in Bridgewater (Bridgewater Center Road) running three miles of paved road from U.S. Route 4 in Bridgewater Corners north to Bridgewater Center. The majority of miles (56) comprising the Town's transportation network are local town roads. These roads provide access to individual properties and their condition ranges from hard surfaced road to untraveled rights-of-way.

Map 3 illustrates Bridgewater's local transportation network. The overall network has a unique circulation pattern where the main destinations are located along U.S. Route 4 in the southern portion of the town, and there is no central destination, unlike other towns in the region.

It is important to understand the local transportation network for emergency planning purposes, especially for those areas that are only accessible by one road. Road failures in these areas are a concern (e.g., the Chateaugay No Town Area). The access management policy in Bridgewater should reflect the need to preserve mobility on, and safety of, the major collector roads.

FUNCTIONAL CLASSIFICATION OF TOWN ROADS

Using the inventory and analysis of the existing transportation network and the land use plan as a basis, a classification expressing the function of each highway and road was developed. The following classification types are recommended to guide the Town toward a transportation network that is efficient, economical, and provides for orderly and controlled development.

- **Arterial Highways** - (U.S. Route 4, Vermont 100, Vermont 100A) - These are inter-regional or regional highways that connect larger population areas outside of the Town. The primary function of this highway type is to serve as an arterial for the movement of through-traffic. Access to individual properties is secondary. Strip development or other land uses that might create traffic congestion and reduce the function of an arterial highway should be prohibited.
- **Collector Roads** - (State Highway No. 1) - This is the most important town road in terms of vehicular movement. It forms a connecting link in the transportation pattern by joining local town roads to the arterial highway network. While collector roads service abutting properties, their major function is to serve as local connections between villages and hamlets. Regardless of their classifications, the North Bridgewater and Bridgewater Center/Chateaugay roads operate as major collectors.
- **Local Town Roads** - These are the town roads and rights-of-way that comprise the final element of the transportation network. Access to abutting properties is their primary function and movement of through-traffic is secondary. The Town has adopted a Road Ordinance that controls the design and construction of town roads. This includes standards as to grade, width of right-of-way, and other construction specifications.

ACCESS MANAGEMENT

Access management is a process to provide reasonable accessibility to adjacent land uses while maintaining a safe and efficient flow of traffic in terms of safety, capacity needs, and speed.⁹ Without adequate access to the transportation system, businesses and citizens are unable to safely and conveniently reach desired destinations. Conversely, the management of the location and number of driveways on public highways is critical to maintaining traffic flow efficiency and

⁹ The primary resource for this chapter comes from access management materials provided by the Vermont Agency of Transportation at www.vtaccessmanagement.info.

safety. There is a relationship that demonstrates this connection – as access increases (ex: driveways, road intersections, etc.), mobility decreases.

This basic relationship between functionally classified highway systems as serving traffic mobility and land access is illustrated in Figure 16.

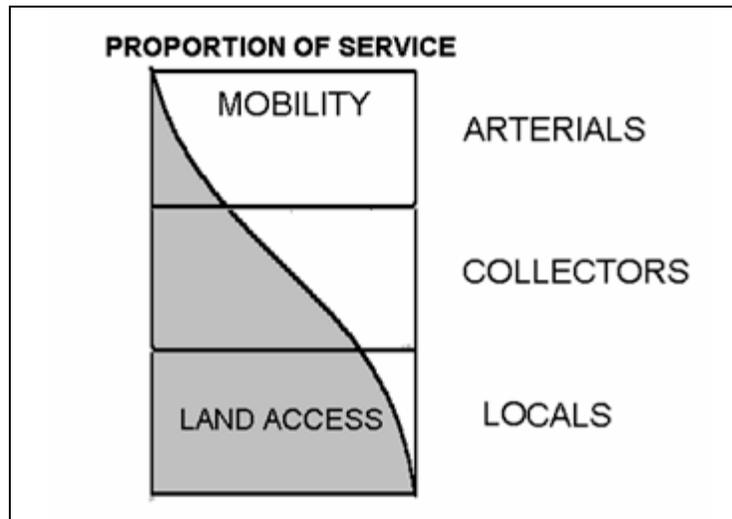


Figure 16: Relationship of Traffic Mobility to Land
Source: Vermont State Design Standards, October 1997.

Goals

1. Enhance the use of access management in local development permitting activities.
2. Promote access management for all local and state transportation projects.

Policies

1. On town roads, access design standards should be implemented for all driveways without distinction if the access is temporary or permanent. The access permitting process shall encourage the use of shared driveways and/or permitting an access that may result in a future shared driveway. The permitting of access for commercial or industrial land uses shall be purposely guided towards existing development nodes in order to preserve or create road segments that possess fewer access points.
2. Where new developments are proposed with access to town highways, and where such developments necessitate improvements to certain town highways, it is recommended that the developer pay for the major share of the costs of making such improvements to the town roads. Prior to the issuance of any required permits, an agreement should be reached between the Selectboard and the party that proposed the new development as to what a fair share for both the Town and the developers would be.

TOWN HIGHWAYS

In accordance with Vermont law, all town highways are classified into four principal categories according to their level of use and condition. These classifications are used as a basis for determining the level of State assistance given to the Town each year for the maintenance of these highways.

Bridgewater has three classes of local town roads:

- **Class 2** highways in Bridgewater include the paved road running to Bridgewater Center from Bridgewater Corners and the North Bridgewater Road.
- **Class 3** highways comprise the largest segment of town highways (36.7 miles) but are generally less frequently traveled than Class 2 highways. Class 3 highways usually connect to a Class 2 or State highway. Class 3 highways by law must be capable of being passable by standard pleasure cars most times of the year.
- **Class 4** town highways are the lowest order of town roads and are generally not maintained. They are generally not of a high standard as compared to Class 3 highways. Vermont law does not require maintenance of Class 4 roads, nor is the town eligible to receive assistance from the State of Vermont for maintenance of these roads.

Outlined below is a breakdown of both State and Town Highway mileage in Bridgewater:

TOWN HIGHWAYS	MILEAGE
Class 1 Town Highways	0.0
Class 2 Town Highways	8.61
Class 3 Town Highways	36.70
Class 4 Town Highways	10.3
Total Town Highways	55.6
STATE HIGHWAYS	MILEAGE
Route 4	7.5
Route 100	0.9
Route 100A	2.2
Total State Highways	10.6
Total All Highways	66.2

Figure 17: State and Town Highway Mileage

Source: Vermont Agency of Transportation - Town Highway Mileage Map, 2010

All roads, especially Class 3 and Class 4 Town Roads, are subject to changes as new developments necessitate or as old highways are discontinued.

It is recommended that the Town of Bridgewater consider reclassifying some Class 3 highways to Class 2 highways as Class 2 highways receive greater priority and greater state funding.

Due to limited municipal taxes for funding major improvements, the Town of Bridgewater anticipates no major upgrades of Class 4 highways over the duration of this Plan.

U.S. ROUTE 4

U.S. Route 4 is a principal arterial highway, one moving large amounts of traffic and goods between regions of Vermont. It has also been designated as a National Highway of Significance (NHS) where improvements and dollars will be focused. A secondary purpose of a principal arterial is connecting other town highways to it.

Approximately 10 years ago, there was a proposal for a bypass route on U.S. Route 4. A survey of Bridgewater residents found little support for a bypass of the Village on U.S. Route 4. This feeling is significant because residents acknowledge advantages of a main thoroughfare through the Village, but also the vehicular/pedestrian conflicts that exist in the Village.

In particular, a flashing warning light at the school crossing on U.S. Route 4 is desired to create a safer pedestrian crossing environment. Any U.S. Route 4 roadway improvement project should include space for pedestrian movement between Bridgewater Village and Bridgewater Corners. This would support the Vermont Complete Streets legislation that was signed into law on July 1, 2011 which seeks to make roads safer and more accessible for all Vermonters – regardless of age or ability or whether traveling by car, bus, bike or on foot. The Town does support some limited improvements to U.S. Route 4 outside of village areas, but within Town boundaries.

From West Bridgewater to Bridgewater Corners, U.S. Route 4 adequately fulfills the needs of existing traffic movement, but from Bridgewater Corners east through Bridgewater Village, U.S. Route 4 is a narrow winding highway in need of some improvement to provide better safety and convenience. As one would expect, U.S. Route 4 serves as a major commuting facility for residents leaving town for their jobs and for those who work in Bridgewater, but live elsewhere.

BICYCLE AND PEDESTRIAN FACILITIES

U.S. Route 4 is the main street in the village where the elementary school, town facilities and businesses are located. With no sidewalks along U.S. Route 4, there are vehicular and pedestrian conflicts as pedestrians try to cross U.S. Route 4 to access destinations. The shoulder is insufficient and does not provide a safe facility for pedestrians and bicyclists. There are no satisfactory routes for children to walk or bike to school. The Planning Commission is aware of the Safe Routes to School program and its offerings; however, they believe that the challenges posed by U.S. Route 4 are largely insurmountable in regard to ensuring the safety of pedestrians.

Goals

1. Improve pedestrian safety in Bridgewater.

Policies

1. The development of bike lanes and pedestrian pathways or sidewalks along or parallel to U.S. Route 4 are supported and encouraged by the Town of Bridgewater. Such infrastructure would allow for bike tours and would create new business opportunities.
2. Provide safe transportation connections between schools, recreation areas and other adolescent destinations to support independent travel of adolescents.
3. Support the installation of a flashing light by the school crossing.

VERMONT SCENIC BYWAYS

Bridgewater was involved in two Vermont Scenic Byway designations in 2011: the Crossroad of Vermont Byway (U.S. Route 4) and Scenic Route 100 Byway (Route 100 and Route 100A). These designations offer travelers historic, cultural, scenic and recreational information about the towns and villages along the Byways.

The Crossroad of Vermont Byway follows U.S. Route 4 westward across the state from the Connecticut River Valley through the Green Mountains to the Valley of Vermont. The Byway stretches across nine towns from Hartford to West Rutland. The Crossroads of Vermont Byway is a joint project of town representatives, Chambers of Commerce of Hartford, Woodstock, and Killington, the Office of Killington Economic Development and Tourism, local businesses, and the Rutland and Two Rivers-Ottawaquechee Regional Planning Commissions. The Crossroad of Vermont was designated as Vermont's 7th Scenic Byway in February 2011.

The Scenic Route 100 Byway follows Route 100 and Route 100A and is a joint effort of town representatives from Pittsfield, Killington, Bridgewater, Plymouth, Ludlow and Andover; Okemo Valley Chamber of Commerce, Office of Killington Economic Development and Tourism, local businesses, and the Southern Windsor County and Two Rivers-Ottawaquechee Regional Planning Commissions. The Scenic Route 100 Byway was designated as Vermont's 8th Scenic Byway in April 2011. This Byway is currently under designation expansion which will run from Granville south to the Massachusetts's border and incorporate 20 towns along Route 100.

Each Byway has their own Corridor Management Plan which outlines the management goals for economic development, transportation, natural and scenic, land use and historical areas. All towns have approved these Corridor Management Plans, which aim to enhance the village areas, promote tourism and economic development, but also preserve the rural character along these Byways.

Goals

1. Preserve the aesthetic character of the region's roads and surrounding landscapes.

Policies

1. Support the designation, corridor planning, and promotion of the Crossroad of Vermont Byway and the Scenic Route 100 Byway as identified in each Corridor Management Plan.
2. Any U.S. Route 4 improvements must balance the need versus the environmental, social, cultural, and historical costs. Extensive changes to U.S. Route 4 are contrary to this Plan.

PLACES OF WORK

The American Community Survey is collected by the U.S. Census Bureau every year to fill in some gaps for information not collected in the Decennial Censuses. Data is released yearly as a 5-year estimate for places with under 20,000 people. This uses the 2006-2010 estimates which were released in 2012. The ACS collects a variety of information from the Decennial Census “Long Form” until 2010, including mean travel time to work, number of vehicles per household and mode of travel to work.

Through analysis of this data, a determination can be made regarding a worker’s place of work and place of residence. This information reveals some interesting characteristics for Bridgewater.

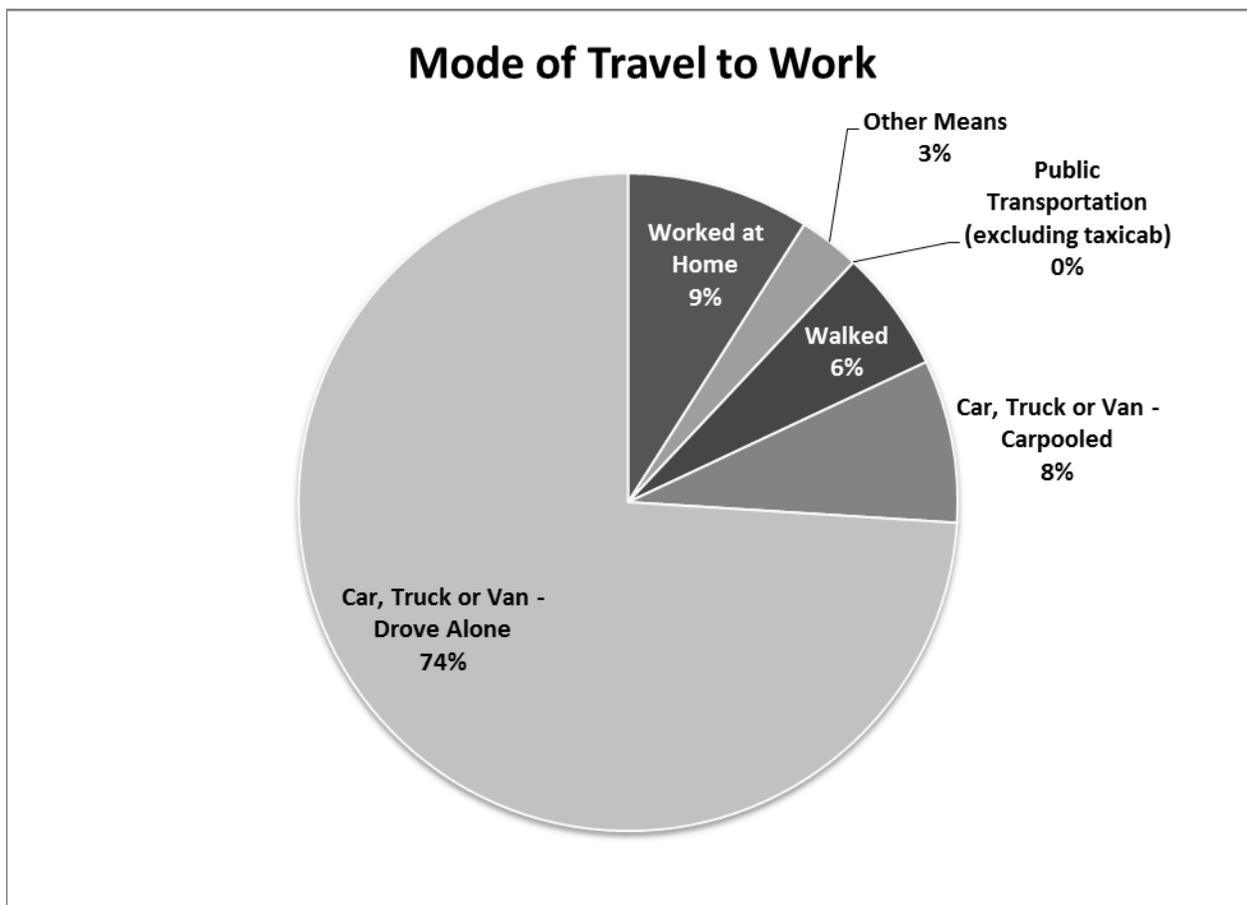


Figure 18: Mode of Travel to Work

Source: 2010 American Community Survey

The 2010 American Community Survey recorded that of the 289 workers surveyed, 65% of commuters were from the area towns in close proximity to Bridgewater. A surprising number of commuters are coming from New Hampshire and as far as Derby. Outlined below is a breakdown of key places that commuters travel from in order to work in Bridgewater.

COMMUTERS *TO* BRIDGEWATER

Bridgewater	123	43%	Derby	5	2%
Rutland City	34	12%	Barnard	5	2%
Woodstock	22	8%	Piermont, NH	4	1%
Pomfret	20	7%	Peacham	4	1%
Rochester	18	6%	Brookfield	4	1%
Hartland	16	6%	Strafford	3	1%
Plymouth	15	5%	Chittenden	3	1%
Claremont, NH	11	4%	Andover	2	1%

Figure 19: Commuters to Bridgewater
Source: 2010 American Community Survey

Workers from these communities (see Figure 19) represented 67% of the total commuters (those who are employed in Bridgewater, but do not live there).

Where do the residents of Bridgewater work? Of the 337 workers reported in Bridgewater who did not work at home, 123 work within their hometown. As expected, most of the others work close by in neighboring communities. Figure 20 provides a breakdown of commuters from Bridgewater.

COMMUTERS *FROM* BRIDGEWATER

Woodstock	126	37%	Lebanon	8	2%
Bridgewater	123	36%	Rutland City	7	2%
Hartford	19	6%	Rutland	4	1%
Killington	18	5%	Norwich	3	1%
Hanover	15	4%	Windsor	3	1%
Plymouth	9	3%	Weathersfield	2	1%

Figure 20: Commuters From Bridgewater
Source: 2010 American Community Survey - Commuting Patterns

As illustrated in the commuter data, 80% of Bridgewater residents are working in town or in the adjacent town, which is surprising given the economic growth of nearby regions such as Rutland and the Upper Valley. The Town of Bridgewater is considered by many people to be a healthy community in which a significant portion of residents work within town (this differs greatly from

other towns in the Upper Valley, such as Strafford, where many residents must commute out-of-town daily for employment).

Figure 21 shows the percentage of travel time to work by Bridgewater residents. It shows the travel time to be fairly equal and that almost 70% of residents are traveling within 30 minutes to work according to the 2010 American Community Survey.

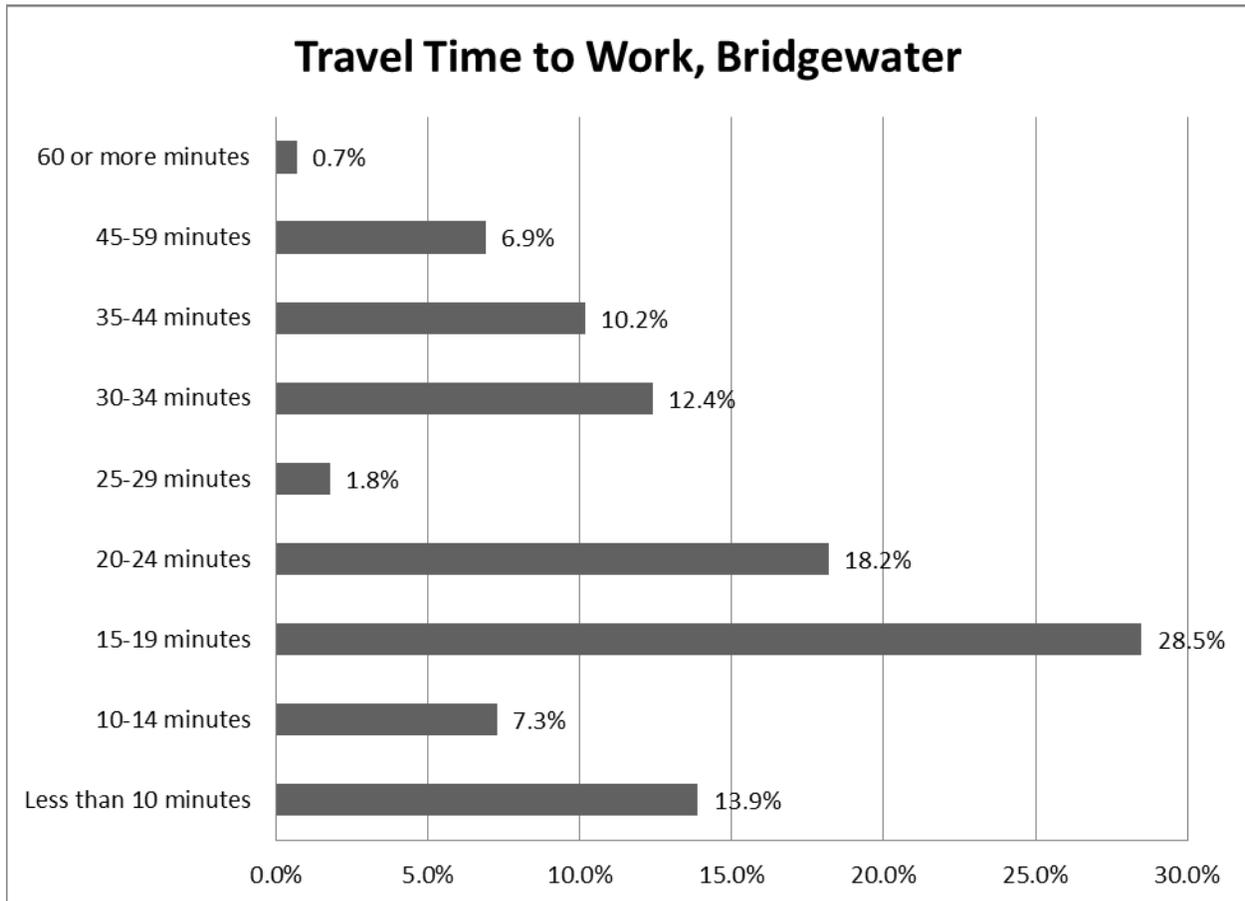


Figure 21: Travel Time to Work
 Source: 2010 American Community Survey

PUBLIC TRANSPORTATION

A review of the public transportation facilities reveal that Bridgewater currently does not offer any public bus service or regular taxi service. Taxi service is, however, available in White River Junction and West Lebanon.

Air travel services are available at the nearby airports in West Lebanon, New Hampshire; Manchester, New Hampshire; Boston, Massachusetts; Burlington, Vermont; and Rutland, Vermont. Intercity bus services include the Greyhound route from Boston to Montreal (with a stop in nearby White River Junction, Vermont) and Dartmouth Coach which connects riders to Logan Airport and South Station in Boston (with stops in nearby Hanover and Lebanon, New Hampshire).

Currently, the lack of local public transportation services has led to a dependency on private automobiles to commute to work. The development of a carpooling or vanpooling system, either by private arrangement or through Vermont Rideshare, would decrease residents' dependence on private automobiles. This would be beneficial for residents because it would help to reduce the high financial and environmental costs associated with owning and using a car (monetary costs include purchase, maintenance, insurance, and gasoline, while environmental costs include contribution to poor air quality and thus human health problems, such as asthma, as well as climate change).

The current Stagecoach strategic plan calls for developing a U.S. Route 4 Bridgewater-Woodstock-Hartford-Upper Valley fixed route system. The logical stop for such a service would be a U.S. Route 4 Bridgewater East park and ride. This park and ride facility is most welcomed and would facilitate carpooling and vanpooling, particularly to major employment centers in the area such as Dartmouth Hitchcock Medical Center. Park and Ride facilities are being established in other small Vermont towns and are eligible for full state funding.

The Thompson Senior Center offers limited van service to participants for travel from home to the Center as well as for trips to shopping and banking facilities. Bridgewater and the surrounding towns contribute through taxes to this service and it is also supported with federal dollars. 12 out of 14 counties in Vermont have a higher *percentage* of elderly persons 65 years and older than in the U.S. The same is true for 9 out of 14 counties in Vermont with regard to elderly persons 85 years and older.¹⁰ Non-fixed route services such as elderly and disabled transportation through Stagecoach or Thompson Senior Center will be a growing need. This is consistent with resident's desire to 'age in place,' and so the community should better support public transportation in the future.

Goals

1. Increase mobility options to residents and reduce dependency on single occupancy vehicles.

Policies

1. Participate in VTran's Municipal Park and Ride Program to create a park and ride facility in Bridgewater. Identify local businesses to donate parking space for this effort.
2. Establish a local ride share bulletin board and create the same service on a new town website.
3. Investigate local bus companies that could expand service into Bridgewater. Seek grant funding to establish a local bus stop on existing routes.
4. Continue participating in the Thompson Senior Center program for elderly and disabled transportation.

¹⁰ "The Older Population: 2010," 2010 Census Briefs, U.S. Department of Commerce, Economics and Statistics Administration. November 2011. Website: <http://www.census.gov/prod/cen2010/briefs/c2010br-09.pdf>.

ROAD AND CULVERT MANAGEMENT

The town of Bridgewater has inventoried and assessed every road mile and culvert. The Road Surface Management System (RSMS) and culvert inventory gives the town a better local match rate on state grants and helps town officials manage their system. These are important assets of the local transportation system.

On August 28, 2011, Tropical Storm Irene descended on Vermont and created widespread flooding and damage in the southern half of Vermont. There was extensive damage to roads and bridges everywhere, immediately isolating some towns. The storm decimated multiple sections of U.S. Route 4 between Rutland and Hartford, making east/west travel through the state near impossible. Bridgewater suffered damage on nearly every road in town, costing the town \$2 million in town road damages. Overall, the Town had 48 projects receiving \$1.9 million in Federal Emergency Management Agency (FEMA) reimbursements. The Town completed repairs to all damaged infrastructure in 2012.

Vermont's Agency of Transportation and Agency of Natural Resources have approved an updated 2013 Town Roads and Bridge Standards that addresses water quality from roadway runoff in addition to State standards for culverts, bridges, ditching, and guardrails. The Town of Bridgewater adopted the Town Road and Bridge Standards on May 14, 2013.

Goals

1. To maintain the inventory of roads and culverts in Town to keep opportunities for state grants available.

Policies

1. To ensure safe and dependable transportation for the residents of Bridgewater, and other users of the roads, at a cost within the Town's budget.
2. It is recommended that all existing roads be maintained and upgraded according to the functional classification designated herein.
3. Any new roads constructed by developers of land within Bridgewater should be constructed to the standards of the town's road system, and only after consultation with the Selectboard and obtaining their approval for such construction.
4. The Town shall continue working with the Two Rivers-Ottawaquechee Regional Commission in updating road and culvert inventories.

SAFETY PLANNING AND ENFORCEMENT

National and state statistics show that speeding is one of the greatest contributors to crashes and that speed is one of the highest contributing factors to fatal crashes. There are two approaches to improving safety: preventing crashes and mitigating their effects. As previously mentioned, the number of accidents on U.S. Route 4 has been reduced dramatically in town due to the presence of a County Sheriff and vigilant speed enforcement. This supports the Agency of

Transportation's Strategic Highway Safety Program focusing on reducing the number of crashes statewide. Between 2007 and 2012, there were a total of 36 crashes in the Town of Bridgewater.¹¹ At least five of these crashes occurred on local roads in Bridgewater (this does not include U.S. Route 4) and resulted in injuries or property damage above \$1,000.¹²

Goal

1. Reduce crash incidents on state and local roads.

Policies

1. Continue with speed enforcement or introduce traffic calming options to maintain a safer environment for pedestrians and drivers.

¹¹ Bridgewater Fire Chief, May 2013.

¹² VTrans High Risk Rural Roads Crash Data, 2007-2012.

• **ENERGY PLANNING AND CONSERVATION**

BACKGROUND

Vermont planning law provides that municipal plans include an energy program for the community. Such a program is intended to promote efficient and economic utilization of energy. Pragmatic energy planning and implementation results in positive environmental and economic returns to the community and energy providers. Conservation of energy lessens the demand for expensive new sources. Utilities are able to postpone capital investments necessary to provide for additional capacity. Such a practice has benefits to residents, businesses, and ratepayers.

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

Historically, energy has been taken largely for granted because it is relatively abundant and cheap. Society becomes “energy conscious” only when supplies are threatened and prices are up. The Town must not be paralyzed by the belief that many of the energy related issues are beyond its control and can only be solved at the national and international levels. Local governments and individuals are in key positions to influence energy policies and use.

ENERGY DEMANDS

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

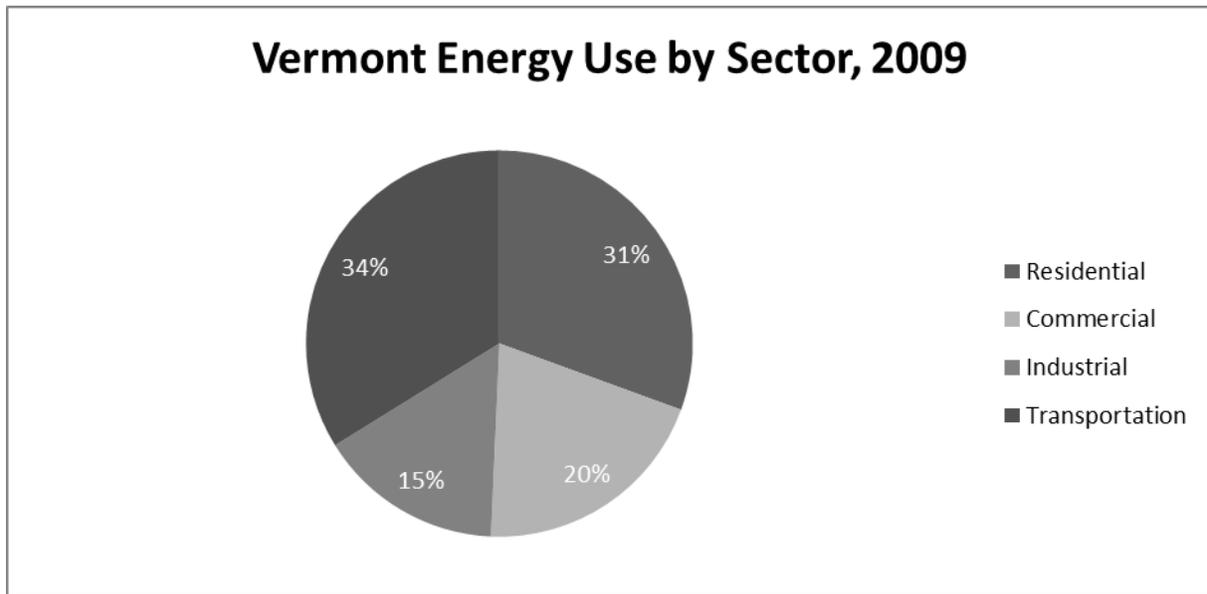


Figure 22: Vermont Energy Use by Sector
 Source: U.S. Energy Information Administration, 2009

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

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

According to data collected by Efficiency Vermont in 2008, the Town of Bridgewater is 11th highest in terms of average annual residential energy use in the Two Rivers region: Bridgewater residences used an average of 6,998 kWh of energy that year.

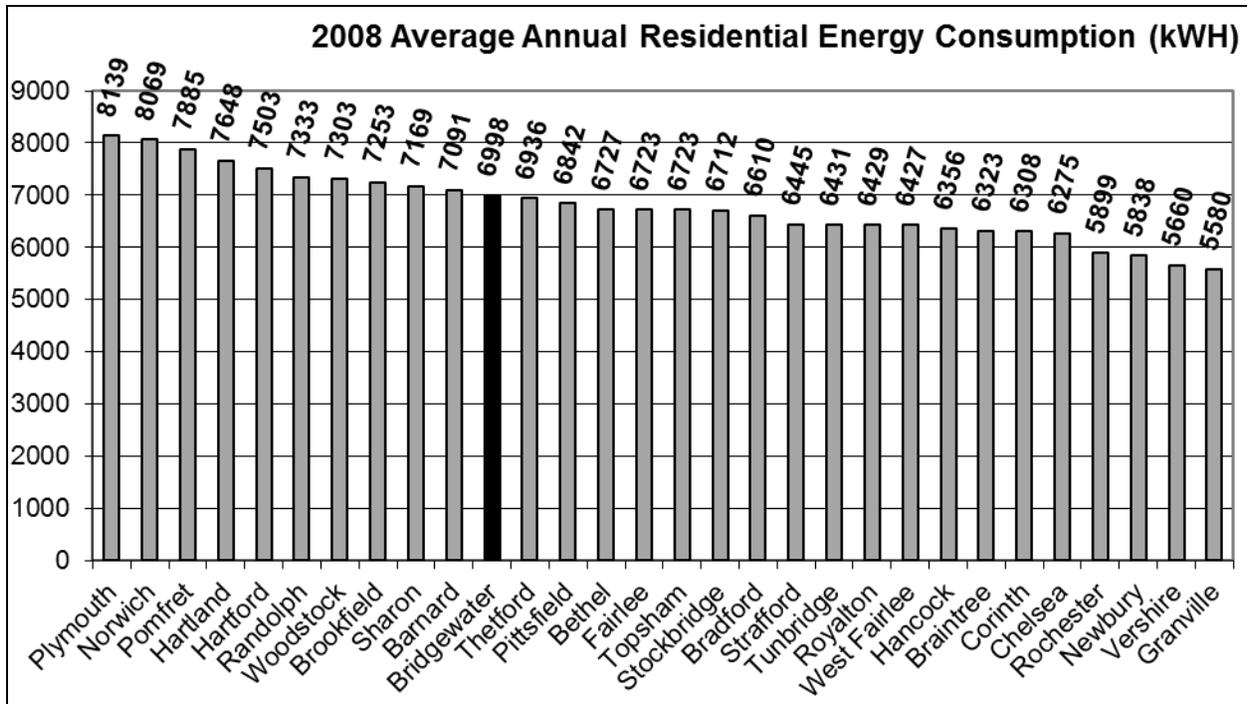


Figure 23: Average Annual Residential Energy Consumption (kWh)
 Source: Vermont Energy Atlas and Efficiency Vermont, 2008

CURRENT ENERGY SOURCES

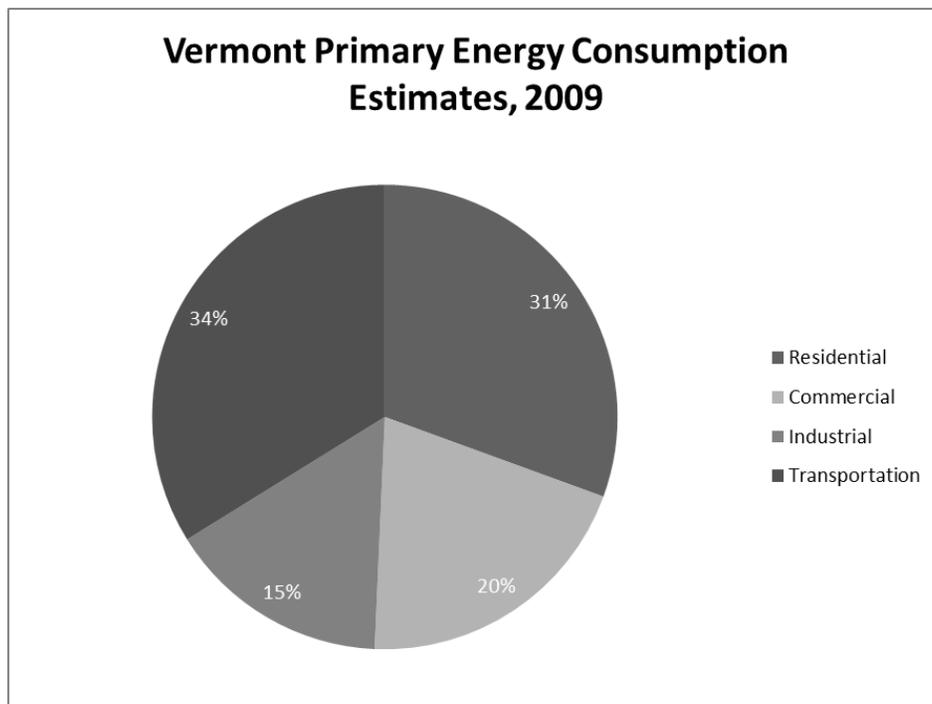


Figure 24: Vermont Primary Energy Consumption Estimates
 Source: U.S. Energy Information Administration, 2009

Fossil Fuels

Bridgewater, like most other towns in Vermont, depends primarily on fossil fuels for heating and transportation. As shown in the table above, fossil fuels account for more than 50% of all energy consumed in Vermont, most of which is used in transportation. Nearly 50% of the oil consumed in the U.S. is imported. Vermont's economic system is so closely tied to the availability of fossil fuels that even modest price increases can lead to inflation, a slowdown in economic growth, and monetary instability. This can have unanticipated adverse impacts at the municipal and residential level. For example, increasing fuel prices have made 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 oil prices).

But these consequences of intensive fossil fuel use are only part of the story. The combustion of fossil fuels has been determined to be the largest contributor of atmospheric "greenhouse gases" (primarily carbon dioxide). There is near consensus in the scientific community that continued accumulation of greenhouse gases within the earth's atmosphere will lead to a warming of the atmosphere, or "greenhouse effect." Such warming can cause severe coastal flooding and unpredictable climate shifts, threatening the viability of the earth's most significant urban and agricultural centers. Vermont has experienced an increase in the number of severe weather events: in 2011, there were four federally declared disaster events, breaking the record for the most events in a single year. If, indeed, climate instability and climate change are linked, then it is essential that we decrease our reliance on fossil fuels in an attempt to reverse or at least halt future damage to our atmosphere.

Nuclear Energy

Vermont Yankee Nuclear Power Station has been generating electricity since 1971. The age of the facility has begun to manifest itself in terms of plant instability. Between 2009 and 2010, the Vermont Department of Health identified several ground water monitoring wells at the facility that contained tritium. This finding indicated an unintended release of radioactive material, and it means that other radioisotopes may have contaminated the environment. Vermont Yankee's future remains uncertain. While the plant is currently operating, lawsuits (between the parent company and the State of Vermont) remain ongoing and will ultimately decide the question of whether the plant is allowed to stay open or must close permanently.

A properly maintained nuclear power facility can, to some extent, represent a cleaner form of energy production than fossil fuels. However, the mining, processing and disposal of nuclear materials continues to raise questions regarding the viability of nuclear energy; nuclear generated electricity produces various long-lived radioactive wastes which are highly toxic and require extraordinary precautions for safe storage. Existing technology does not assure safe disposal. The industry has not completely resolved safety issues regarding the decommissioning of nuclear power plants.

Renewable Energy

Vermont can successfully claim that a substantial amount of the power used statewide comes from renewable sources when compared to other states. The majority of Vermont's renewable energy is generated by Hydro-Quebec, while additional sources of renewable energy include several utility owned commercial-scale wind, solar, and landfill methane projects.

RENEWABLE ENERGY RESOURCES

For the municipality, individual or small group of homeowners, the key to sustainable energy production will be renewable sources of energy. The term "renewable energy" refers to the production of electricity and fuels from energy sources that are naturally and continually replenished, such as wind, solar power, geothermal (using the earth's heat to create power), hydropower, and various forms of biomass (trees, crops, manure, etc.).

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

The types of renewable energy found in Vermont are:

Solar Energy

Solar energy has potential for providing clean, reliable, and safe energy, even in Vermont's climate. Most areas in Vermont have the potential for some solar energy production, at least at the residential scale. In Bridgewater, if all potential opportunities to develop solar energy production were taken advantage of, the town could generate roughly 876,837 kWh of power per year.

- Passive Heating and Lighting: Good building and site design are essential to taking advantage of the sun's energy through passive methods. Bridgewater does not currently have zoning bylaws or subdivision regulations; however, if the town chooses to adopt either of these in the future, they could encourage residents and businesses to capture solar energy through the appropriate placement of buildings, landscaping and building design.
- Water Heating: Solar water heating is the most common form of residential-scale solar use in Vermont. Solar systems are not regulated at the state level and are subject to local regulations. State statute forbids the creation of land use regulations that prohibit renewable energy generation.
- Electricity Generation: Decreasing costs of equipment have made solar electric generation systems more prevalent. Solar systems are no longer utilized exclusively by "off-grid" buildings. The advent of net-metering allows buildings to be connected to the grid while

utilizing renewable energy. Systems that are net-metered are overseen by the Public Service Board and are not required to get a local permit. Currently, there are three existing net-metered sites producing a total of 48 kWh via solar technology in Bridgewater.

Presently, there are 40 potential commercial-scale solar electricity generation sites in Bridgewater. Because of the nature of solar arrays, they are in some ways more desirable than wind towers. This is primarily due to the fact that they do not need to be located on high ground and are therefore less visually prominent. In addition, these facilities can be located in areas that are less rural in nature, requiring fewer access roads and reducing adverse impacts on wild lands.

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

Wind Energy

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

Potential Wind Development Areas (Acres)							
	Class 1 (10-11 mph)	Class 2 (12-13 mph)	Class 3 (13-14 mph)	Class 4 (15-16 mph)	Class 5 (16-17 mph)	Class 6 (17-18 mph)	Class 7 (19-25 mph)
Residential (30-meter)	11,148	3,360	1,138	226	0	0	0
Small Commercial (50-meter)	0	2,847	2,587	1,227	599	366	0
Large Commercial (70-meter)	0	0	24	1,992	865	818	107

Figure 25: Potential Wind Development Acreage in Bridgewater

Source: Vermont Energy Atlas, 2012

Similar to solar, wind energy is an intermittent resource and its generation fluctuates in response to environmental conditions. The amount of energy produced by a specific wind tower can

depend greatly on location, height of the tower and proximity to other obstructions. Nevertheless, most modern wind turbines (when properly sited) are able to generate electricity 95% of the time.

There are multiple levels of potential wind energy generation, ranging from Class 1 (10-11 mph) to Class 7 (19-25 mph). According to the Vermont Energy Atlas, there are 818 acres of Class 6 winds and 107 acres of Class 7 winds that could be utilized for commercial-scale wind development.

Biomass & Biogas Energy Generation

The term 'biomass' refers to biologically-based feedstocks (that is, algae, food or vegetable wastes, grass, wood, methane, and more). Biomass can be converted into an energy source to fuel vehicles (e.g. biodiesel), heat homes, or even generate electricity. According to the 2011 Vermont Comprehensive Energy Plan (CEP), those using wood for primary heating consumed about 5.4 cords in 2007–2008, while those using wood as a supplementary source used 2.25 cords. In that same year, Vermont households burned about 20,155 tons of wood pellets, with primary-heat-source consumers burning 3.8 tons and supplementary-heat-source consumers burning 1.2 tons for the season. As of March 2013, there were no biomass energy generation facilities in Bridgewater.

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

Biofuels

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

According to the Vermont BioFuels Association, biodiesel is a clean burning alternative fuel, produced from domestic, renewable resources such as soybeans, sunflowers, canola, waste cooking oil, or animal fats. Biodiesel contains no petroleum, but it can be combined 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.

Growing biomass to use in biofuels may be a viable way to encourage farming in Bridgewater as

well; however, balance should be sought between growing for energy demands and for human and animal consumption.

Agriculture

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

Cow Power is especially popular in Vermont; however, it requires a significant upfront financial investment and is generally only effective when utilized by a large scale farm. One of the key advantages of methane digestion is that it reduces the amount of methane released into the environment. However, large-scale cow farms can also have adverse impacts on the environment, which should be carefully considered when weighing the benefits and drawbacks of setting up a methane digestion system in this community.

There are currently no methane digester facilities in the Town of Bridgewater and there are no potential sites for energy production of this type, according to the Vermont Energy Atlas, which considers prospective sites as having at least 250 cows.

Hydropower

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

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

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 (FERC) and stringent federal water quality standards. As a result, the regulatory process for hydro facilities is extensive and time consuming. Further, streams are public trust resources and the potential impacts of hydro projects warrant significant consideration. Any hydropower

development proposed in Bridgewater shall not result in an undue adverse impact to riverine ecosystems and water quality.

PERMITTING CONSIDERATIONS

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

Section 248

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

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

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

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

RESIDENTIAL ENERGY EFFICIENCY

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

Decreasing Energy Use by Changing Behavior

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

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:

- Insulating with high R-value (or heat flow resistance) material;
- Using high efficiency windows;
- Installing energy efficient appliances like refrigerators, freezers, front loading washing machines, gas heated clothes driers and heating systems without blowers;
- Using high efficiency lighting;
- Using gas and/or solar hot water heaters;
- Siting buildings to make use of existing wind blocks and natural cooling patterns derived from the landscape's topography;
- Siting buildings with maximum southern exposure to capture passive solar energy.

Purchasing more energy efficient appliances or deciding to weatherize your home can require an upfront financial investment. If this poses a barrier to an individual, he or she should investigate the following resources, which can assist with lowering or waiving the associated costs:

- **Central Vermont Community Action Council (CVCAC) – No-Cost Weatherization Program:** <http://www.cvcac.org/weatherization/about-weatherization>. Description: *CVCAC offers no-cost home weatherization for those who income qualify. For details, go to their website or call: 1-877-919-2299 or 802-476-2093.*
- **Efficiency Vermont:** http://www.encyvermont.com/for_my_home/ways-to-save-and-rebates.aspx. Description: *Efficiency Vermont regularly provides rebates and incentives for Vermonters to purchase more energy efficient appliances or to weatherize their homes, businesses, or apartments. Go to their website for the latest offerings or call 1-888-921-5990.*

Building to Code – Residential Building Energy Standards (RBES)

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

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

In order to comply with the RBES, a home, as built, must meet all of the Basic Requirements and the Performance Requirements for one of several possible compliance methods. If the home meets the technical requirements of the RBES, a Vermont RBES Certificate must be completed,

filed with the Town Clerk and posted in the home. If a home required by law to meet the RBES does not comply, a homeowner may seek damages in court against the builder.

MUNICIPAL ROLE IN ENERGY EFFICIENCY

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

Town Energy Committee

As of March 2013, Bridgewater did not have an active Energy Committee or Energy Coordinator. An Energy Committee is formed by local volunteers who want to identify and implement energy efficiency and renewable energy opportunities in the community. A Committee can be formed on an ad-hoc basis (without municipal approval) or by the Selectboard's formal sanction. An Energy Coordinator is a volunteer position created by the Selectboard and Planning Commission, which reports directly to those municipal bodies.

Many towns across Vermont now have an Energy Committee or Energy Coordinator; the closest to Bridgewater is the Woodstock Energy Group, which is part of Sustainable Woodstock (www.sustainablewoodstock.com).

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 on to taxpayers. Town Officials in Bridgewater are aware of these issues and have pursued the weatherization of municipal buildings. For instance, the Richard Southgate House (which contains the Town Offices and School Library) was recently renovated to include new energy efficient windows, siding, and insulation, as well as new electrical wiring.

Capital Budget Planning

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

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

Policy Making

In addition to reducing the energy use related to facilities, Bridgewater 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. For example, the Town of Bridgewater could create a policy requiring that town vehicles (such as dump trucks and other road maintenance equipment) not idle for more than a set period of time. Idling is an expensive waste of fuel, and a policy such as this could lead to substantial savings in money spent on fuel by the town.

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. Please see the goals, policies, and recommendations section (below) for more ideas.

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. At present, the Planning Commission does not wish to pursue the creation of zoning bylaws.

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 Bridgewater to locate

adjacent to existing roads. In particular dense residential developments should be located within or adjacent to existing village centers or within designated growth areas. Commercial development that requires trucking and freight handling should only locate on roads which can effectively handle the size of vehicle needed.

ENERGY ASSURANCE PLANNING

The dramatic rise in fuel costs over the last decade has brought concerns about the stability of our national energy system to the forefront. Dependence on foreign fuels puts the nation in a position of weakness, unable to control prices and maintain fuel supplies. This lack of control highlights the fragility of our dependence on foreign fuel, particularly petroleum. This lack of control is especially apparent in Vermont because the state has no crude oil reserves or refining capacity.

If the cost of petroleum was to rise precipitously (for example, double in price), Bridgewater might find it challenging to maintain public services, such as regular road maintenance or the school bus system. To continue providing the same quantity and quality of services, taxes would have to be raised. This, coupled with the impact of oil prices on the private sector, could result in significant economic hardship for residents.

Bridgewater should engage in comprehensive, integrated energy assurance planning that is designed to mitigate and enable timely response to the consequences of energy supply disruption, whether this disruption is the result of physical scarcity, high prices, or a severe weather event (for example, in 2011, Tropical Storm Irene cut off access to fuel supplies in many communities). One way to prepare for an energy supply disruption is by including an element that specifically addresses this issue in Bridgewater's Hazard Mitigation Plan.

Bridgewater's Hazard Mitigation Plan should include a clear set of non-mandatory and mandatory fuel conservation measures along with a clear indication of what circumstances would trigger implementation of the various measures. For instance, if an acute shortage arises, communities should be prepared to ensure that any available fuel will be distributed based on priority rankings (for example, fuel might go first toward emergency response, next to health care providers, etc.).

GOALS, POLICIES AND RECOMMENDATIONS

Goals

1. To ensure the long-term availability of safe, reliable and affordable energy supplies, to increase energy efficiency, and to promote the development of renewable energy resources and facilities in the Town of Bridgewater to meet the energy needs of the community and region.
2. To reduce energy costs, the community's reliance on fossil fuels and foreign oil supplies, and greenhouse gas emissions that contribute to climate change.

3. To identify and limit the adverse impacts of energy development and use on public health, safety and welfare, the town's historic and planned pattern of development, environmentally sensitive areas, and our most highly valued natural, cultural and scenic resources, consistent with related development, resource protection and land conservation policies included elsewhere in this plan.
4. To encourage a pattern of settlement and land use that uses energy efficiently.
5. 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.
6. To increase public transportation opportunities throughout the community, including park-and-ride access, bus service, and biking paths.
7. To promote greater use of existing public transportation services by community members.

Policies

1. Planning which reduces the dependency and demand for new sources of energy are matters of public good. Likewise, conservation of energy usage is encouraged. To meet this policy, the following practices are recommended:
 - a. development of existing and current transportation routes and highways need to reflect design and location principles that complement the recommended land use and settlement patterns set forth in this Plan. Major public investments, such as schools, public recreational areas, and municipal facilities need to be situated within or in close proximity to the village of Bridgewater;
 - b. the rehabilitation or the development of new buildings and equipment should be encouraged where use of proven design principles and practices demonstrates the lowest life cycle costs;
 - c. where land development or subdivisions are proposed, design plans should work towards the goal of locating structures and buildings on the site that reflect sound energy conservation principles, such as solar and slope orientation and protective wind barriers. Use of the cluster planning concept, where buildings are concentrated in one area of a site with a complementing off-set of open space, is an approach that encourages energy conservation and efficiency; and
 - d. given that electrical generation, transmission, and distribution facilities are significant visual contributors of the landscape, it is the policy of the Town to encourage efforts to monitor the negative effects of these facilities on the landscape and adjacent uses. Accordingly, where such facilities are proposed, design plans should uphold recognized standards and practices to minimize any adverse visual impacts.
2. Where generation, transmission, and distribution facilities or service areas are proposed, such facilities or areas should be encouraged only when they complement the

recommended land use patterns set forth in this Plan. Likewise, such facilities or areas should be developed so as to avoid negative impacts on the rural character of the surrounding area. Developers should make all possible efforts to minimize damage to important natural areas as identified in the “Critical Natural Areas” section of this Municipal Plan. Additionally, such facilities should be located as close to existing roads as possible to avoid any increase in the services provided by the town.

3. As alternatives to the automobile, the acquisition of land or rights to land by the Town or other qualified entities for the future development of bikeways and footpaths is encouraged in the village areas or other areas of concentrated settlement.
4. To reduce the demand for commuter transportation facilities and energy, the development of energy efficient home occupations and small-scale home businesses is encouraged.
5. To ensure a sustainable source of fuel wood production and improvement of Bridgewater’s forests at a reasonable rate of return, such lands should be taxed at use value and not at development value.
6. To promote energy efficient commuting, the community supports state and regional transportation programs serving Bridgewater.
7. Town officials support partnerships, strategies, and state and federal legislation that will ensure the affordable, reliable and sustainable production and delivery of electrical power to the region, in conformance with regional and municipal goals and objectives.
8. Town officials will participate in the Public Service Board’s review of new and expanded generation and transmission facilities to ensure that local energy, resource conservation and development objectives are identified and considered in future utility development.
9. Developments that are proposed under Act 250 must include measures to reduce energy consumption through site and building design, materials selection and the use of energy-efficient lighting, heating, venting and air conditioning systems.
10. Bridgewater supports the development and use of renewable energy resources – including but not limited to wind, solar, biomass, micro hydro and cogeneration – at a scale that is sustainable, that enhances energy system capacity and security, that promotes cleaner, more affordable energy technologies, that increases the energy options available locally, and that avoids undue adverse impacts of energy development on the local community and environment.
11. Town officials will work in cooperation with state, regional and local agencies, emergency service providers, regional suppliers and municipalities to develop local emergency contingency plans that ensure access to critical energy supplies and measures to reduce nonessential energy consumption in the event of an abrupt energy shortage.
12. Town officials will support efforts to educate homeowners about what resources are available to them for energy efficiency improvements.
13. 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) should be located within or in close proximity to the village and shall utilize existing roads whenever possible.

14. 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.
15. It is the policy of the Town to promote energy efficient travel by residents.

• **PLANNING FOR TELECOMMUNICATIONS FACILITIES**

BACKGROUND

Telecommunications have become increasingly important to the security and economic needs of residents and businesses in the Upper Valley. This trend will continue. They will play a key role in the Upper Valley's economic future, creating new opportunities for the relocation and growth of decentralized business operations and reducing demands for travel by conventional modes. With an improved telecommunications infrastructure, large amounts of information can be transmitted over long distances at competitive rates.

The field of telecommunications is undergoing rapid change. Advancements in this technology have and will continue to impact growth in Bridgewater. The implications for land use are significant, as this technology has enabled people to move into rural areas of the town and to "telecommute" to other remote or central offices more readily.

Under present standards, transmission towers are the dominant telecommunications facilities. As land uses, these towers have emerged as planning concerns. Towers may emit electromagnetic radiation that affect human health, can conflict with other forms of development, and raise issues of aesthetic impact. To ensure adequate transmission of signals in mountainous areas, towers and related facilities oftentimes need to be confined to hilltops or high elevation points. Thus, due to their higher visibility from multiple vantage points, conflict with scenic landscapes has become an issue.

The Federal Communications Commission (FCC) retains jurisdiction over public airwaves and the telecommunications industry in general. Additionally, the Federal Aviation Administration (FAA) exercises control over the location and height of towers and similar structures to prevent interference with airport operations. Under Vermont law (24 V.S.A. Chapter 117), municipalities may require that certain standards be met prior to the erection of telecommunication facilities. Local bylaws may regulate the use, dimension, location, and density of towers; however, FCC rules are preemptive of local and state law where conflicts exist. In 1997, Act 250 jurisdiction was conferred by the State requiring a permit prior to the construction of a communications tower or similar structure over 20 feet in height.

Goals

1. To preserve the rural character and appearance of the Town of Bridgewater.
2. To protect the scenic, historic, environmental, and natural resources of the Town of Bridgewater.
3. To provide standards and requirements for the operation, siting, design, appearance, construction, monitoring, modification, and removal of telecommunication facilities and towers.

4. To minimize tower and antenna proliferation by requiring sharing of existing communications facilities (towers and sites) wherever possible and appropriate.
5. To facilitate the provision of telecommunication services to the residences and businesses of the Town of Bridgewater
6. To minimize the adverse visual effects of towers and related facilities through careful design and siting standards.
7. To encourage the location of towers and antennas in non-residential areas and away from visually sensitive areas, prominent scenic areas, historic areas, and the White River.

Policies

1. In order to minimize tower proliferation, it is the policy of the Town that applicants exhaust all reasonable options for sharing space on existing towers prior to proposing new towers and related facilities. The principle of co-location is the favored alternative. In making such a determination on the feasibility of co-location, prospective developers should conduct a due diligence effort to evaluate space available on existing towers, the tower owner's ability to lease space, geographic service area requirements, mechanical or electrical incompatibilities, the comparative costs of co-location and new construction, and regulatory limitations.
2. It is the policy of the Town that existing wireless service providers be required to allow other providers to co-locate on existing facilities, subject to reasonable terms and conditions.
3. One of the Town's principal scenic qualities is its ridgelines and mountainsides. These areas are significant contributors to the maintenance and enjoyment of rural character. These ridges are predominately undeveloped and provide an unbroken skyline viewed from the valley floor. It is the policy of the Town that use of ridges for telecommunication towers and related facilities needs to be undertaken in a manner that will not detract or adversely affect these scenic values. Accordingly, protection of these areas from insensitive developments are matters of public good. To minimize conflict with scenic values, facility design and construction should employ the following principles:
 - a. be sited in areas minimally visible to the traveling public, particularly for users of U.S. Routes 4, 100, and 100A, from residential areas, historic buildings or sites, public use areas, shorelines or lands immediately adjacent to the Ottauquechee River, and public outdoor recreation areas such as hiking trails, including the Appalachian Trail;
 - b. be located in forested areas or be sufficiently landscaped to screen the lower sections of towers and related ground fixtures from public vantage points, such as trails, roads, or water bodies;
 - c. utilize materials, architectural styles, color schemes, mass, and other design elements to promote aesthetic compatibility with surrounding uses and to avoid adverse visual impacts;

- d. where prominent views of a site exist, be located downgrade of the ridge so as not to exceed the elevation of the immediate ridge;
 - e. where construction of access roads are involved to minimize visibility, be situated to follow the contour of the land and to avoid open fields or meadows; and
 - f. avoid peaks and ridges that are locally significant or regional focal points.
4. It is the policy of the Town that towers not be illuminated by artificial means and not display strobe lights.
 5. It is the policy of the Town that the height for towers, antennae, and tower-related fixtures not exceed 20 feet above the average height of the tree line within the immediate vicinity of a wireless communication facility.
 6. It is the policy of the Town that in planning for telecommunication facilities, due consideration be given to the environmental limitations of any given site. Impacts of the use on wildlife habitats, soil erosion, forestry and agricultural lands, and similar resources should be carefully addressed. Projects that materially influence these resources are discouraged.
 7. It is the policy of the Town that telecommunication projects situated on lands owned by the State, design plans that are compatible with current Management Plans for Public Lands adopted by the Agency of Natural Resources.
 8. It is the policy of the Town that towers, antennae, and related fixtures that fall into disuse, or are discontinued be removed to retain the values set forth above. Local and state land use permits should incorporate removal of inactive fixtures as a condition of approval.
 9. It is the policy of the Town that the policies of this section serve as a clear written community standard intended to preserve the aesthetics or scenic beauty of the Town of Bridgewater. Accordingly, it is the intent that this section be utilized by the District Environmental Commission or the Vermont Environmental Board as part of an aesthetics analysis for all wireless communications facilities. These policies shall be used, however, not exclusively, to determine whether or not a project fits the context in which it will be located, is highly visible, and results in an adverse impact on scenic resources.

• AESTHETICS AND OUTDOOR LIGHTING

ISSUES AND OPPORTUNITIES

Increased development in the Town in recent decades has brought about a corresponding increase in the use of outdoor lighting. These include new parking lots, brighter street lighting, floodlights on commercial and industrial complexes, and lighted gas station canopies at our interchanges and along our major roads. While increased lighting can be seen as an inevitable result of growth, there is a concern that excessive and unplanned lighting results in unwise and inefficient energy use, contributes to "light pollution," affects our ability to view the night landscape, and creates an adverse impact on the character of our historic village.

With the advent and increased use of new lighting technologies since the 1950's, commercial enterprises, industry, public utilities, and others now have new tools to shape the nighttime environment. Many of these new lighting installations are well designed, provide good night vision at reasonable levels, and fit well into their immediate surroundings. Others do not. Problems of glare, over-lighting, light escalation, sky glow, and energy waste have become more common.

This section is intended to provide guidance and standards to assist policymakers in evaluating lighting issues, opportunities, and costs. It is also intended to provide clear policy statements to developers and enable them to evaluate new lighting installations located on public and private property. By selecting a lighting design that enhances the nighttime comfort, we can ensure that our historic village, rural areas, and other areas planned for concentrated mixed use will be better served.

The purpose of an outdoor lighting installation should be to enhance the visibility necessary to provide lighting for a given task or need. However, using a large quantity of light does not guarantee good visibility. Over-lighting can cause glare and other problems that hinder good vision. Lighting problems arise when competing properties are illuminated at very different levels. For example, a brightly lit auto sales parking lot situated next to an adequately lit restaurant can make it look dark by comparison. Studies have shown that this leads to "competitive" lighting; more light is added to reduce the risk of not being seen. This results in more lighting equipment expense, higher electric bills for businesses, and the loss of character in an area.

Excessive light levels can vary according to the use. Conventional parking lots generally need higher light levels than passive recreational parks. Using the minimal amount of light necessary to allow adequate visibility for a site decreases skyglow and avoids escalation of light levels.

Glare is another lighting issue facing growing communities in the Upper Valley, including Bridgewater. Excessive brightness makes it difficult to see. Good visibility can be accomplished with less light. Misdirected fixtures or unshielded lamp sources cause glare. Light that is not

directed toward the ground or towards the intended surface can shine into the viewer's eyes, impairing vision and causing potential safety problems.

Skyglow or reflected light from surfaces is visible in the night sky over villages or large commercial/industrial complexes. Sky glow is a form of "light pollution." Sky glow contributes to a loss of our ability to see stars and other celestial elements of our galaxy. Reducing sky glow is a desirable objective for the Town. Techniques to reduce the amount of illumination shining directly into the sky can reduce skyglow and the overall level of lighting to be used.

Goals

1. To preserve the nighttime ambiance and aesthetic qualities of the village and other places by illuminating them for safety and convenience in ways that enhance the best qualities of streets, architecture, and public spaces.
2. To enable outdoor lighting systems that conserve energy and minimize life cycle costs.
3. To encourage lighting design that is creative and functionally consistent with these lighting goals and policies.

Policies

1. It is the policy of the Town when developing lighting plans that good design, light levels, and distribution be appropriate for the proposed use of the site and compatible with the character of the neighborhood. New lighting installations should be designed to minimize glare, not directly light beyond the boundaries of the area to be illuminated or onto adjacent properties, and not result in excessive lighting levels.
2. It is the policy of the Town that for large projects, lighting professionals follow lighting design guidelines and other technical information established by the Illuminating Engineering Society of North America (IESNA). Such information will be useful in evaluating and developing lighting schemes for particular uses and settings, but not necessarily in all situations. Additionally, it is the policy of the Town that project planners give due consideration to the guidelines set forth in the *Outdoor Lighting Manual for Vermont Municipalities*, published by the Chittenden County Regional Planning Commission (1996). Design plans that exceed IESNA's or the *Manual's* recommendations for outdoor lighting should be evaluated for conformity with this Plan, particularly as they may relate to the effects on the character of the area and aesthetics.
3. It is the policy of the Town that project designers utilize fixtures to reduce glare. Where a light source is particularly bright compared to its background, use of cut-off or shielded fixtures to direct light downward or a reduction on the amount of light being generated is encouraged. Such a practice should utilize lighting more efficiently, minimize the amount of wasted light, and reduce energy costs.
4. It is the policy of the Town that excessively high lighting levels for uses in rural or very low density residential areas are inappropriate. Where neighborhoods are characterized by heavy traffic, larger facilities (i.e. schools, and industrial plants), or high parking turnover rates, higher lighting levels may be appropriate. Where high ambient or background

lighting levels are adjacent to planned uses, such levels should be considered when evaluating light levels for new installations.

5. Lighting at gasoline stations and convenience stores, and some types of commercial establishments (i.e. the Sharon Industrial Park) have or may become lighting issues. Such facilities are typically far more brightly illuminated than neighboring properties to attract attention to the business. Glare hinders visibility for pedestrians and drivers on major highways. It is the policy of the Town that lighting levels for these uses and similar uses only, be sufficient to facilitate the activities taking place in such locations. Lighting schemes that serve as advertising or to attract attention to these uses are discouraged. Signs or other forms of advertising should be used for these purposes. Excessive pole height and bright lighting fixtures are inconsistent with this Plan.
6. Illuminated signs that are excessively bright, causing glare and illuminating surrounding areas are inappropriate. It is the policy of the Town that large illuminated signs are disruptive to rural areas or Bridgewater's historic village and that they should be discouraged.
7. Lighting designs should address the negative effects of skyglow. Project designers should advocate for lighting plans that minimize light pollution without unduly compromising safety, security, or utility. Methods to be used for minimizing skyglow are:
 - directing luminaries downward toward the ground;
 - using low pressure sodium lamps;
 - turning lights off after hours;
 - reducing illumination levels; and
 - prohibiting rays of light from being emitted above 90 degrees from Luminaries.
8. It is the policy of the Town that outdoor lighting schemes employ generally available mitigating steps to improve harmony with its surroundings taking into consideration, among other things, the type and density of land use presently in existence, the type of topography, and whether the area has scenic value.

• **BRIDGEWATER'S PLANNING AND ITS RELATIONSHIP TO OTHER PLANNING ACTIVITIES**

KEEPING THE PLAN REALISTIC AND RELEVANT

The statements, goals, and policies set forth in this Plan to guide growth extend from the desires and needs expressed by the people of Bridgewater. It is intent on articulating a clear vision for the future. Successful implementation of Plan goals depends on the public's commitment to it. The Planning Commission and Selectboard cannot alone bear the responsibility for planning. Citizens must ensure that the Plan is dynamic and remains realistic. They must remain informed and involved.

While local control is recognized and to an extent desirable, neither the Town nor its citizens have total control over the factors that will affect growth in Bridgewater. There are numerous social and economic factors driven by national and international events or conditions beyond our control.

In spite of this, the community needs to relate this to those planning activities and programs set forth in this Plan.

NEIGHBORING TOWN PLANNING ACTIVITIES

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 Bridgewater, the Planning Commission has reviewed the Municipal Plans and, if available, the land use regulations of surrounding towns for consistency with this Plan. These communities include:

Barnard – The Town of Barnard has had an adopted plan since 1971, which has been revised regularly, as well as a newly adopted Unified Bylaw (zoning and subdivision). The pattern of development promoted by the Barnard Town Plan along Stockbridge's border is very similar to the diffuse pattern outlined in the Land Use chapter of this plan. Uses encouraged in Barnard are likewise similar. There are no potential conflicts between these plans.

Killington – Killington has also maintained a lengthy history of local planning, primarily due to the constant development pressures from Killington and Pico Ski areas. Much of the land in Killington that is adjacent to Bridgewater has been designated as Forest Reserve and effectively mirror's Bridgewater's land use patterns in these locations. Likewise, the area in the area of Killington that abuts West Bridgewater is similarly mixed-use. The only potential area for

conflict between Bridgewater and Killington relates to the potential impacts of large-scale developments related to the ski industry.

Plymouth – Plymouth has a Town Plan which was adopted in 2012 and a zoning bylaw which was adopted in 2007. The majority of the lands in Bridgewater that border Plymouth are low-density residential in nature. The pattern of development proposed in Plymouth in these areas is compatible with the Bridgewater Town Plan.

Pomfret – Pomfret’s Town Plan was adopted in 2007. Pomfret has a zoning ordinance that was last adopted in 1989. Bridgewater and Pomfret share a very small boundary. The only area for potential conflict is along ridgelines. Pomfret has a strong prohibition on ridgeline development that is not present in Bridgewater. But because of the limited amount of contiguous land between the two communities, this potential conflict is unlikely to be an issue.

Stockbridge – The Town of Stockbridge has an adopted Town Plan (2010) as well as zoning, subdivision and flood hazard regulations. The border shared by Bridgewater and Stockbridge is fairly small. The pattern of development in this area is rural in nature, which is consistent with the Bridgewater Town Plan.

Woodstock – The Town of Woodstock recently revised the Woodstock Comprehensive Plan (March 2012). Revisions to the Plan included an updated Land Use element. Woodstock also has a zoning bylaw which was adopted most recently in 2002. Woodstock and Bridgewater share a substantial border, which includes the gateway into Bridgewater Village on Route 4. The pattern of development proposed along Route 4 adjacent to Bridgewater’s Village is similarly dense and mixed use in nature. Outside of this area, Woodstock’s proposed pattern of development along Bridgewater’s border is generally rural in nature. There are no conflicts between the two plans.

This Plan is consistent with the goals set forth in 24 V.S.A., Section 4302 and is compatible with the plans or planning activities of adjacent towns, the Two Rivers-Ottauquechee Regional Commission and various state agencies. In the development of this Plan, all of the goals set forth in Section 4302 have been incorporated and addressed. Where necessary or appropriate, the Planning Commission has adapted them to fit Bridgewater.

This Plan is based, in part, on the inter-relationship among Bridgewater, adjacent towns and the rest of the region, and past development trends in those areas. Analysis of these inter-relationships has reaffirmed the realization that these goals cannot be achieved without the cooperation of neighboring towns and the State. Likewise, they need Bridgewater’s commitment to help them achieve their goals. The Town is open and available to working with these towns and the State.

The Towns of Woodstock, Plymouth, Reading, Barnard, Pomfret, Stockbridge, and Killington abut Bridgewater. All of these communities have adopted municipal plans prepared under 24 V.S.A., Chapter 117. To ensure that municipal plans are reasonably compatible with one another and that potential conflicts in land use development are identified and possibly addressed, it is

recommended that the Planning Commissions of these communities jointly meet from time to time.

REGIONAL PLANNING ACTIVITIES

Bridgewater is within the Two Rivers-Ottauquechee Regional Commission. It is one of thirty municipalities that comprise the Region. The Region covers northern Windsor County, most of Orange County, the Towns of Pittsfield (Rutland County), Hancock and Granville (Addison County). 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 are. Thus, the level of services to each of the towns changes with time.

The Regional Commission adopted its most recent Regional Plan on June 27, 2012, a copy of which can be downloaded at www.trorc.org. It will remain in effect for a period of five years. This Plan was developed to reflect state and regional planning goals. It is an official policy statement on the growth and development of the Region. The Regional Plan contains several hundred policies to guide future public and private development in the Region. Policies for land use settlement are identified. These areas are: Town Centers, Village Settlement Areas, Hamlet Areas, Rural Areas, and Conservation and Resource Areas. Although delineation of each land use area is not precisely mapped or charted, policies for management of new development within these areas are substantially similar to those set forth in detail in the Bridgewater Municipal Plan. Accordingly, it is reasonable to conclude that the Bridgewater Municipal Plan and the Regional Plan are compatible, complementary to one another and the goals of the Planning and Development Act (24 V.S.A. Chapter 117).

• PLAN IMPLEMENTATION

This Municipal Plan outlines numerous recommendations and policies for accomplishing its many stated purposes and objectives. It is a duly adopted public policy statement made by and for the citizens of the Town. In Vermont, municipalities are given numerous ways in which to implement their municipal plans. The following paragraphs explain generally the methods that may be utilized to implement the Bridgewater Municipal Plan.

REGULATORY METHODS

Land development and subdivision of land may be regulated by laws adopted by vote of the Town. The parameters by which municipalities can create and enforce these bylaw provisions are set forth in considerable detail under the Vermont Planning and Development Act (24 V.S.A., Chapter 117). Essentially, there are zoning regulations, subdivision regulations, and official maps. In addition, the Town may exercise control over new developments by adoption of health regulations and highway ordinances.

Zoning Bylaws (Bridgewater does not have) - Zoning bylaws typically establish general land use districts throughout the Town. Within these districts, prior to the erection of a building or change in use of a present building, an application for a permit would have to be submitted to the town. In granting the permit, the Town would have to find that the project, as proposed, would meet area and use criteria established for the district.

Subdivision Regulations (Bridgewater does not have) - Adoption of a subdivision regulation would give authorization to the Planning Commission to approve, modify, or disapprove the division of all land into two or more lots. In rendering approval for the subdivision of land, the Planning Commission would have to find that such land division, as planned, would meet standards for the design and layout of streets and roads, water, sewage, public utilities, and drainage facilities. Prior to any action by the Planning Commission, a public hearing would be required with notice to all affected property owners.

Official Map (Bridgewater does not have) - Although little used in Vermont, municipalities may adopt an official map showing the location and widths of existing and proposed rights-of-way of all streets or drainage ways and the location of all existing and proposed public facilities. Within the bounds, as outlined and described on such a map, building development or improvements could be prohibited or limited so as to not adversely affect such existing facilities or those planned by the Town of Bridgewater.

Health Regulations - Municipalities may adopt health regulations relating to the installation and maintenance of sewage disposal systems. Such a regulation would typically require that, prior to the construction or replacement of an on-site waste water disposal system, a permit be obtained from the Town Board of Health. In granting permits for these systems, the Board would have to find that the systems, as designed and proposed for construction, complied with accepted standards related to system design and operation. The Town of Bridgewater has had in effect a health ordinance regulating the installation of a sewage disposal system since September 1981.

Highway Ordinances - Towns can adopt and administer ordinances for the purpose of establishing a municipal policy and practice for the maintenance and upgrading of existing town

roads and to set forth standards by which new roads may be added to the town highway system. Through such ordinances, the municipality can prevent or control highway improvements that would cause unreasonable congestion or unsafe conditions or significantly affect the financial capacity of the Town to provide for such improvements. The Town of Bridgewater has the following highway ordinances: Town Road and Bridge Standards (adopted May 14, 2013), Class 4 Roads and Trail Policy (adopted April 2002), Driveway and Access Ordinance (adopted April 23, 2002).

NON-REGULATORY METHODS

Although the primary implementation tools for a Municipal Plan are generally considered to be regulatory in nature, there are a number of non-regulatory means that can be used to supplement local land use regulations.

The use of non-regulatory methods has gained in popularity in Vermont in recent years. To a large extent, this can be attributed to voluntary cooperation between property owners, citizen interest groups, and town government; and the degree of flexibility that can be utilized to meet the objectives of both the public and private sectors.

Outlined below is a brief description of the non-regulatory methods that may be employed by Bridgewater to implement its Municipal Plan.

Vermont Land Trust - The Vermont Land Trust, headquartered in Montpelier, is a non-profit charitable corporation whose principal goals are to protect and encourage the productive use of farm and forest land, create opportunities for farmers or foresters to acquire land and to assist in directing development on to suitable lands.

The Trust achieves these goals by negotiating agreements with private landowners. This task frequently requires reconciling the owner's financial needs with conservation needs. The Trust assists in tax planning for the property owner and has in past projects worked out plans that would allow for limited development of the property. Every agreement that is achieved assures permanent protection of the land resources.

Examples of conservation options available include conservation easements, gifts of land, leasing, and purchase.

Public Sector Conservation by acquisition of Land - Under Vermont law, municipalities have the power to acquire land or interests in land for the purpose of maintaining farm, forest and other open land, recreation and service areas. Acquisition of whole or partial interest in land consistent with the above purposes can serve to implement the recommendations of the Bridgewater Town Plan.

Conservation Commissions – Conservation Commissions have become quite popular in Vermont, with many towns establishing one to oversee natural resource issues. In the Two Rivers region, the following towns have Conservation Commissions: Bradford, Thetford, Strafford, Sharon, West Fairlee, Woodstock, Barnard, Braintree, Corinth, Hartford, Hartland, Newbury, Norwich, Randolph, and Royalton). Conservation Commissions, whose members are appointed by the Selectboard, may undertake a number of conservation activities designed to encourage the

maintenance of open space, improved forestry markets, and practices, and the protection of rare and unique natural areas.

Further information about creating a Conservation Commission can be obtained from the Two Rivers-Ottawaquechee Regional Commission.

Current Use Value Appraisal Techniques - The majority of the land in Bridgewater is either agricultural and/or timber forestland. In Vermont, municipalities may appraise and tax certain forestland and/or agricultural land according to its use value rather than fair market value at the request of the property owner. In so doing, the taxes on such property are reduced and in exchange, the landowner must make a long-term commitment to keep that land actively managed within the guidelines of the Use Value Appraisal Program. The State has, since the commencement of the program, partially reimbursed the Town for the.

More information about this program can be obtained from the Bridgewater Town Listers or the Two Rivers-Ottawaquechee Regional Commission.

**CONSIDERATIONS ABOUT
DEVELOPMENT IN BRIDGEWATER**

What follows are thoughts about development that we hope will help facilitate what we, the people of Bridgewater, look towards as a cooperative and valuable relationship between potential developers and the community.

Bridgewater residents hold dearly to the values of small town life, of community involvement in various activities and social functions that knit the people of a small town together. The people of Bridgewater value highly the visual beauty of their farms and open spaces, their forests and mountain tops and scenic ridgelines, their churches, old homes and stores centrally located in Bridgewater Village, Bridgewater Corners, Bridgewater Center, and West Bridgewater. These values represented by these things are what make up the standard of the quality of life that is why we choose to live here. We believe that it is our duty to see that the beauty of hamlet and village, of field and forest, is handed down not only to our children and grandchildren but also to the residents and children who will live here a hundred and two hundred years from now. We believe that these values outweigh any immediate monetary gain. Further we believe that development just for development's own gains and profits, without concern for the standards of the town, is not to be considered to be in the town's best interest. This kind of growth only adds to the required services that the Town must provide, at taxpayer expense, and to the visual and scenic destruction of this very beautiful Vermont town.

The following things are important to the Town and should be considered in planning any development in Bridgewater:

- Preservation of open land
- Establishment of low-income housing
- Betterment of town services, facilities and equipment
- Maintenance of the quality of life which is to be had here.

-Affirmed by the Bridgewater Planning Commission of 2013

- **TOWN PLAN MAPS**

MAP 1 – CURRENT LAND USE

MAP 2 – FUTURE LAND USE

MAP 3 - TRANSPORTATION

MAP 4 – UTILITIES, FACILITIES & EDUCATION

MAP 5 – NATURAL RESOURCES