

Exhibit CS-BW-14

Bennington County Regional Plan

Bennington County Regional Plan

Adoption Date: March 19, 2015

Amended (new Regional Energy Plan added): March 23, 2017



Bennington County Regional Commission
111 South Street – Suite 203
Bennington, VT 05201

Bennington County Regional Plan

Table of Contents

Table of Contents	i
Chapter 1. Introduction	1
Chapter 2. Vision and Goals	5
2.1 Vision Statement	5
2.2 Goals	6
PEOPLE OF THE SHIRES	
Chapter 3. History	9
Chapter 4. Population and Housing	14
4.1 Overview	14
4.2 Housing Cost and Affordability	17
4.3 Housing Organizations and Services	19
4.4 Special Housing Needs	20
4.5 Specific Housing Issues Across the Region	21
Housing and Land Use Planning	21
Housing Cost	22
Design of Housing Developments	24
4.6 Policies and Recommendations	25
Chapter 5. Education	26
5.1 Overview	26
5.2 Schools and Colleges	27
5.3 Education Cost	31
The Cost of Higher Education	32
5.4 Childcare and Early Childhood Education	33
5.5 Policies and Recommendations	35
Chapter 6. Economic Development	37
6.1 Overview	37
6.2 Economic Sectors	40
Manufacturing	40
Information and Microtechnology	42
Health Care and Social Services	42
Education and Governmental Services	43
Other Professional Services	44
Retail Trade	45
Tourism and Recreation	46
Natural Resources and Energy	47
Construction and Trades	49

6.3	Critical Regional Economic Assets	49
	Physical Assets	50
	Natural Assets	50
	Institutional Assets	51
	Cultural Assets	52
	Social and Political Assets	52
	Financial Assets	53
6.4	Regional Community and Economic Development Needs	53
	Workforce Development	53
	Housing	54
	Quality of Life	54
	Infrastructure	55
	Investment Capital	55
6.5	Achieving a Sustainable Regional Economy	56
6.6	Policies and Recommendations	57

LANDSCAPE OF THE SHIRES

Chapter 7.	Land Use	60
7.1	Overview	60
7.2	Urban Centers	62
	Shopping Centers	64
7.3	Villages	65
	Pownal Race Track Property	67
7.4	Rural Areas	68
	Roadside Commercial Development	70
	Ski Areas and Other Outdoor Recreation Centers	70
7.5	Historic Districts and Properties	72
7.6	Upland Forests	74
	Energy Resources and Public Utilities	75
	Green Mountain National Forest	76
7.7	Policies and Recommendations	76
Chapter 8.	Natural Resources	81
8.1	Overview	81
8.2	Water Resources	82
	Lakes and Ponds	82
	Rivers and Streams	86
	Wetlands and Floodplains	90
	Surface Water Quality Management	92
	Groundwater	93
8.3	Clean Air	96
8.4	Agricultural Lands	98
8.5	Forest Lands	101
8.6	Earth Resources	105
8.7	Fish and Wildlife Resources	107
	Wildlife	107
	Fisheries	110

8.8	Unique Natural Features	111
8.9	Scenic and Recreational Resources	111
	Scenic Resources	111
	Outdoor Recreational Resources	115
8.10	Policies and Recommendations	116
Chapter 9.	Flood Resilience	119
9.1	Overview	119
9.2	Assess Hazards and Risks	120
9.3	Avoid Increasing Risk	122
9.4	Reduce Current Risk	123
9.5	Prepare for an Emergency	124
9.6	Insure Residual Risk	124
9.7	Recovery After a Flood	125
9.8	Policies and Recommendations	126
INFRASTRUCTURE OF THE SHIRES		
Chapter 10.	Transportation	128
10.1	Overview	128
10.2	Highway System	128
	Highway Classification	131
	Traffic Calming	133
	Access Management	134
	Parking	136
	Scenic Roads and Historic Bridges	136
	Highway and Bridge Maintenance and Improvement	138
	Highway System Improvement Priorities	139
10.3	Public Transportation	140
	Priorities for Public Transportation Improvements	142
10.4	Rail Service	142
	Rail Improvement Priorities	144
10.5	Air Travel	145
	Air Travel Priorities	145
10.6	Walking and Bicycling	145
	Walking	146
	Multi-use Paths	147
	Bicycling	149
	Priority Walking and Bicycling Improvement Projects	150
10.7	Alternative Fuels and Vehicles	152
10.8	Policies and Recommendations	153
Chapter 11.	Utilities, Facilities, and Services	154
11.1	Overview	154
11.2	Water Supply and Wastewater Disposal	154
11.3	Solid Waste Management	159
	12-Town Solid Waste Implementation Plan (SEIP)	160
11.4	Electricity	161

11.5	Information and Telecommunication Services	165
11.6	Health Care Facilities and Services	167
11.7	Public Buildings	168
11.8	Recreational Facilities	170
11.9	Public Safety and Emergency Management	171
11.10	Policies and Recommendations	172
Chapter 12.	Energy	174
12.1	Overview	174
12.2	Energy Sources and Utilization	175
12.3	Conservation	176
	Space Heating and Water Conservation Strategies	177
	Conservation of Electricity	179
	Commercial and Industrial Energy Conservation and Alternative Fuels	179
	Conserving Energy in the Transportation Sector	180
12.4	Renewable Energy	181
	Solar Energy	182
	Wood (Biomass) Energy	183
	Wind Energy	184
	Hydroelectric Energy	186
	Liquid Biofuels	187
	Geothermal Energy and Cold Climate Heat Pumps	187
12.5	Policies and Recommendations	188
Chapter 13.	Coordination and Implementation	190
13.1	Coordination	190
	Rutland County	192
	Windham County	192
	Berkshire County	193
	Rensselaer and Washington Counties	194
13.2	Implementation	194
	Comprehensive Municipal Planning	195
	Comprehensive Regional Planning and Regulatory Review	196
	Transportation Planning	197
	Environmental Planning	198
	Community and Economic Development	198
	Emergency Management Planning	198
	Energy Planning	199
	Solid Waste Planning	199
	Community Public Health	199

BCRC Commissioners

Keith Squires	Arlington	Suzanne dePeyster	Sandgate
Reginald Jennings, Jr.	Arlington	Judy Boehlert	Sandgate
William Deveneau	Bennington	Ken Harrington	Shaftsbury
Daniel Monks	Bennington	William Pennebaker	Shaftsbury
Robert Howe	North Bennington Village	Jean Kurpiel	Stamford
Charles Edson	Old Bennington Village	Ronald Plock	Stamford
Nancy Faesy	Dorset	Roy Johnson	Sunderland
John LaVecchia	Dorset	Peter Luca	Sunderland
Meg Cottam	Glastenbury	Chris Cranston	Woodford
Jerald Hassett	Landgrove	Edward Shea	Woodford
Alison Hopkins	Manchester	Susan Beal	Local Food and Agriculture
Rick Kelley	Manchester	John Broderick	Housing
Janet Hurley	Manchester Village	Bruce Lierman	Transportation
Paul Myers	Peru	Peter Odierna	Economic Development
Walter Klinger	Pownal	Scott Printz	Energy
Megan Randall	Pownal	Shelly Stiles	Conservation
Philip Chapman	Rupert	Sheilah Printz	Community Public Health
Charles Rockwell	Rupert		

BCRC Staff

Mark Anders	Transportation Program Manager
Michael Batcher	Solid Waste Program Manager/ Emergency Management Coordinator
William Colvin	Sustainable Community Development Program Director
Peter Domine	Planning Assistant
Collette Galusha	Financial Manager
Jim Henderson	Environmental Program Manager
Allison Langsdale	Emergency Management Program Manager
Mickey McGlasson	Regional Planner
Kiah Morris	Healthy Communities Coordinator
Jim Sullivan	Director
Katie Emerson	AmeriCorps VISTA
Elizabeth Thompson	AmeriCorps VISTA

Cover Credit: The Shires © Will Moses, 2009.

Note: this image is the copyrighted property of Will Moses and is for use for The Shires of Vermont publicity only - All other rights are reserved.

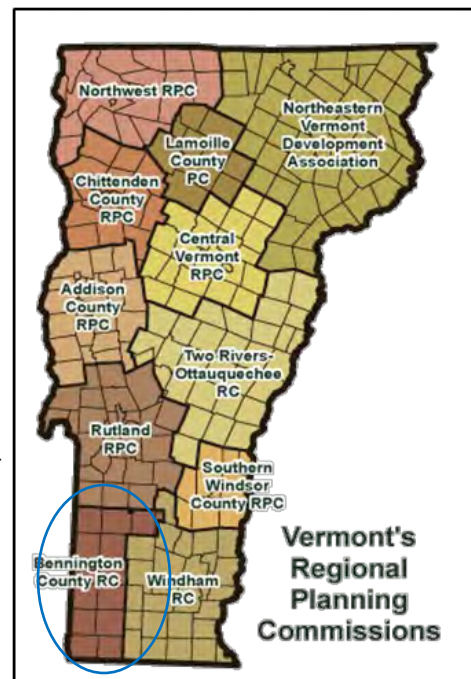
I. INTRODUCTION

The Bennington Region lies among the Taconic and Green Mountains of southwestern Vermont. Historic villages are located throughout the rural countryside in the “Valley of Vermont” that runs north and south between the two mountain ranges. One of the unique and historically important characteristics of the Bennington Region is the presence of two county “shire towns,” Manchester in the north and Bennington in the south. Bennington County is the only county in Vermont with this distinct political geography, represented by two county courthouses, and prominently identified in the well-established “Northshire” and “Southshire” labels that include the two parts of the region. These two areas are different, but the “shires” theme is used in this plan to highlight the unique characteristics of the northern and southern communities and to draw them together socially and economically.

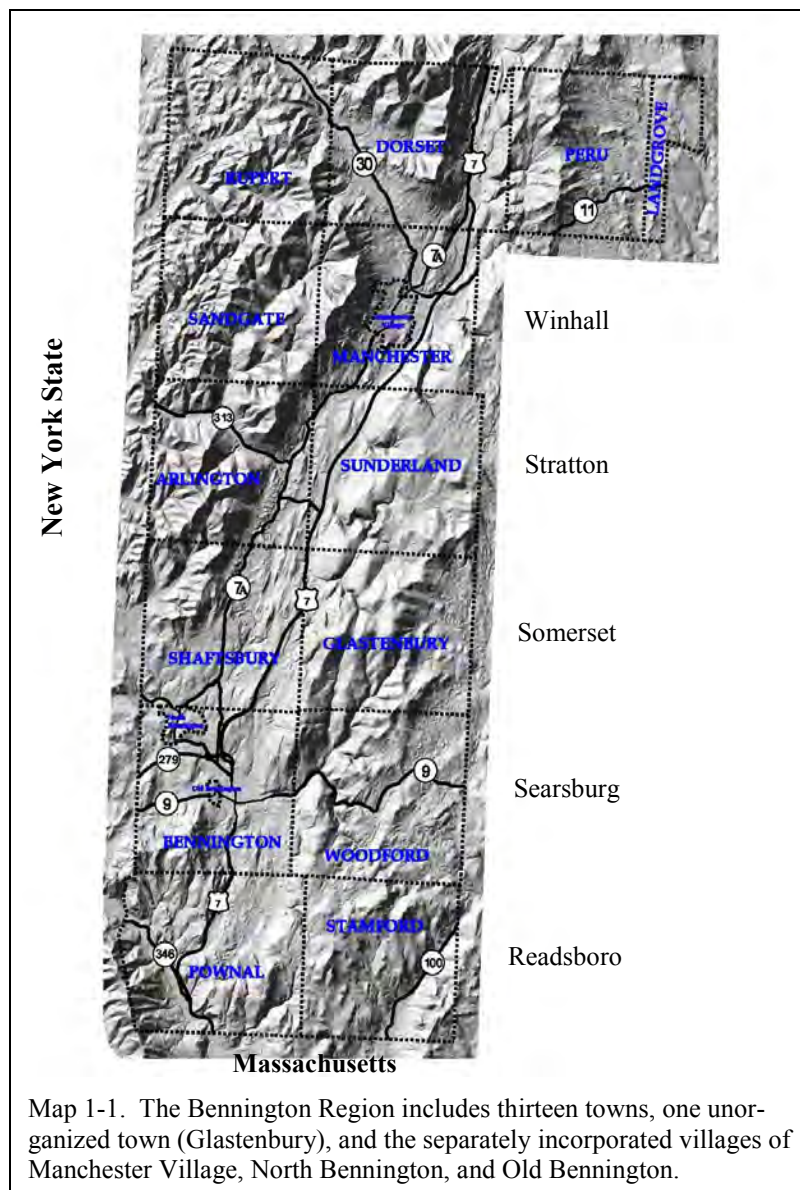
The significance of the Northshire and Southshire to the region has been used to highlight the unique characteristics of the region. For example, the formally designated “[Shires of Vermont Byway](#)” now runs the length of the region along the Valley of Vermont and the “[Shires of Vermont Marathon](#)” is an annual 26.2 mile long foot race contested over the back roads between Bennington and Manchester. The Shires concept helps promote the region’s assets to tourists and businesses and provides a valued sense of history and place for residents of the region.

The Bennington County Regional Commission (BCRC) was established by its member municipalities in 1967 ([24 V.S.A. Section 4341](#)) to provide technical assistance to towns and villages and to promote coordination of planning efforts among those individual communities. Thirteen towns, three villages, and one unorganized town, all located within Bennington County, are the municipal “owners” of the BCRC (Map 1-1). The organization is governed by commissioners appointed by those municipalities, along with representatives of interest groups (including economic development, conservation, housing, transportation, energy, agriculture and local food, local business, and public health) that are elected by the municipal commissioners. There are eleven regional planning commissions in Vermont, coordinating their work at a statewide level through the Vermont Association of Planning and Development Agencies (VAPDA).

The BCRC began working on its first regional plan in 1968; the effort involved close cooperation among all of the towns and villages in the region. The final product, reflecting the plans of each individual municipality framed within a regional context, was adopted in 1970. The region has been fortunate to have benefited from this early cooperative planning effort. The fundamental policy basis of the regional plan has not shifted significantly since 1970 and few conflicts exist among the



The Bennington County Regional Commission is one of eleven regional planning commissions in Vermont. Map 1-1 on the next page identifies municipalities that are members of the BCRC.



seventeen municipal plans. Subsequent comprehensive plan updates occurred in 1976, 1992, and 2007, with periodic minor updates in intervening years.

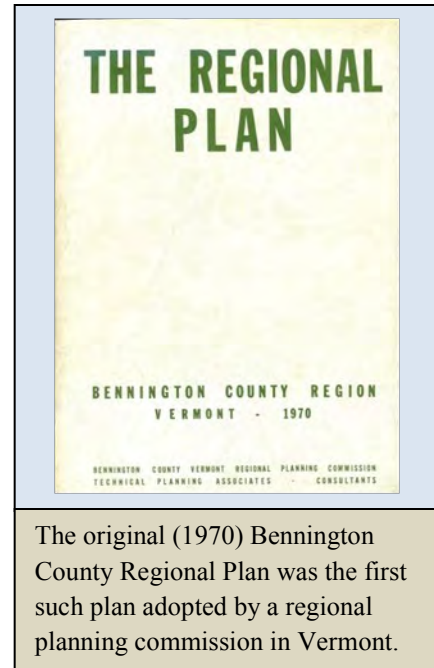
The municipal and regional planning and development act (24 V.S.A. Section 4347) describes the purpose of a regional plan as follows:

A regional plan shall be made with the general purpose of guiding and accomplishing a coordinated, efficient, economic development of the region which will, in accordance with present and future needs and resources, best promote the health, safety, order, convenience, prosperity, and welfare of the inhabitants as well as efficiency and economy in the process of development. The general purpose includes, but is not limited to recommending a distribution of population and of the uses of the land for urbanization, trade, industry, habitation, recreation, agriculture, forestry, and other uses that will tend to:

- (1) Create conditions favorable to transportation, health, safety, civic activities and educational and cultural opportunities;
- (2) Reduce the waste of financial, energy, and human resources that result from either excessive congestion or scattering of population;
- (3) Promote an efficient and economic utilization of drainage, energy, sanitary, and other facilities and resources;
- (4) Promote the conservation of the supply of food, water, energy, and minerals;
- (5) Promote the production of food and fiber resources and the reasonable use of mineral, water, and renewable energy resources; and
- (6) Promote the development of housing suitable to the needs of the region and its communities.

In practical terms, the Regional Plan serves as a general guide for the development of municipal plans and helps to ensure that those individual plans are consistent with each other and reflect a regional consensus. In turn, the Regional Plan may be amended in response to changing conditions and needs identified as municipal plans are updated. By defining specific regional policies and priorities, the Regional Plan also can be used to assure that state agency plans and projects, and other major public investments, are consistent with the interests of local communities.

Regional planning commissions are statutory parties to state land use (Act 250) regulatory proceedings and participate in many public utility (Section 248) hearings as well. An effective regional plan ensures that projects subject to those reviews support regional development and conservation objectives. The Regional Plan also can be used as an important educational and reference document, providing important information about the region, a vision for the future, and practical information about strategies that can help realize that vision.



This Plan is organized under three main categories covering the **People, Landscape, and Infrastructure** that together shape and define the region. The section on **People** includes separate chapters dealing with the region's history, economy, education and child care, and housing. Chapters on land use, flood resilience, and natural, scenic, and historic resources comprise the **Landscape** section of the plan. The **Infrastructure** section considers the region's transportation systems, utilities, facilities, and energy resources. The unique "Shires" aspect of the region is present as a unifying theme throughout, and there is, of course, some overlap between the various chapters because of the many interrelationships present.

A number of important regional planning documents, focusing on specific issues and resources,



The Bennington Region's extraordinary natural and built environments contribute to a high quality of life for residents.

have been produced by the BCRC over the years and were used in the preparation of the Regional Plan. Those documents include a long-range transportation plan, an energy plan, a forest stewardship plan, an economic development plan, and a multi-town solid waste implementation plan. Several of those plans are incorporated by reference in the Regional Plan and any future amendments or updates to those plans also will be incorporated by reference into this plan.

The Bennington County Regional Plan should be a living document, used by

the BCRC, local governments, state agencies, private developers, and citizens to help shape decisions that support statutory planning goals (24 V.S.A. Section 4302) through policies and actions that are deemed most appropriate for the communities of this region. Effective implementation of the plan will result in an enhanced quality of life for residents by promoting economic prosperity, developing and maintaining safe, convenient, and healthy communities, and by protecting the resources that make the Bennington Region an outstanding place in which to live.



II. VISION AND GOALS

2.1 Vision Statement

The Bennington County Regional Plan is part of a process that is intended to provide direction for the region as a whole and for its seventeen unique communities. For that process to be effective, it is important to present a clearly articulated vision. The following statement is based on aspirations and values that are common to the entire region:

The Bennington County Region will be a place where all residents have an opportunity to enjoy an outstanding quality of life through an emphasis on its distinctive sense of place. The essential elements of that place include its natural, scenic, cultural, and historic resources; its compact villages and urban centers surrounded by rural open spaces; an active and engaged citizenry; outstanding school systems; efficient and responsive public services; an efficient, safe, and convenient transportation system; a range of housing options that are pleasant and affordable for all residents; and a place where a strong, diverse, and sustainable economy offers opportunities for all residents.



View from Cedar Rock in Arlington looking over the valley lying between the Green and Taconic Mountain Ranges.

2.2 Goals

Specific goals provide focus and direction to the policy statements and recommended actions set forth in each chapter of the Regional Plan. These goals are consistent with the fourteen statewide planning goals set forth in 24 V.S.A. Section 4302.

Plan development to reinforce the historic settlement pattern of well-defined urban and village centers surrounded by rural countryside. Most new growth should occur in these compact centers and be consistent with the historic character and form of those areas. Mixed use development that encourages walking, healthy lifestyles, and efficient delivery of services should be emphasized. Development in rural areas should respect the need to protect important natural resources and scenic landscapes. Dispersed auto-dependent development outside of compact mixed use centers and in strips along highways is costly, inefficient, and unhealthy, and should be strictly limited. The forest lands in the Green and Taconic Mountains and at other steep, high elevation, and remote locations should remain free from permanent development and be reserved for forest and recreation uses.

Encourage development of a strong and diverse economy that provides satisfying and rewarding job opportunities while maintaining high social and environmental standards. Coordinated economic development strategies for the Northshire and Southshire that recognize the importance of a diversity of economic enterprises will be important tools for guiding and promoting economic activity. The provision of public investments and infrastructure necessary to support desirable business growth is essential. A strong educational system, workforce development programs, and quality housing in appropriate locations are among the key factors that must be provided to support the regional economy. The use of local resources and assets to support economic prosperity and the development of a sustainable regional economy should be a priority economic development consideration.

Provide outstanding educational and vocational training services that meet the needs of residents and area businesses. Maintenance of high academic standards and provision of an environment and instructional services that allow students to excel is essential. Efficiency in the provision of these services is essential so that costs to taxpayers are not excessive nor quality compromised. To ensure that regional economic development needs are met, it is critical that close relationships between educational providers and the local business community are facilitated and maintained. Area colleges should be encouraged to actively participate in local projects and develop partnerships with local governments and businesses. Access to higher education through advanced telecommunication systems is critical.

Provide a safe, convenient, and efficient transportation system that includes a well-maintained network of roads and bridges and expanded opportunities for walking, bicycling, public transportation, and rail and air transport. A physical environment that encourages walking, bicycling, and use of public transportation supports the vitality of downtowns, village centers, and neighborhoods, while contributing significant public health benefits to communities. Improved access to intercity passenger

rail service, rail freight services, and regional air transport services will provide long-term economic benefits to the region. Development of facilities that support a transition to a passenger vehicle fleet that is powered by electricity and other alternative fuels supports environmental, energy, and economic development goals.

The quality of the region's natural, scenic, and historic resources must be protected to maintain the unique character of the area and to support recreational, public health, and economic development objectives. Public investments, regulation, and creative development techniques should be employed, as appropriate, to protect valuable open spaces, air quality, water resources, wildlife habitat, fragile natural areas and critical ecosystems, scenic views, and historic sites, structures, and districts. Utilization of local natural resources should support regional economic and renewable energy development while ensuring that such development, including any resource extraction, is accomplished in an environmentally sensitive manner. The region's agricultural and forest resources should be conserved and developed in a responsible manner to support economic and quality of life goals.

Promote energy conservation and efficiency measures and appropriate utilization of renewable energy resources. Conservation should be the principal consideration in energy planning across all sectors. Opportunities for diversification of energy choices should be pursued along with strategies that reduce reliance on fossil fuels for space heating, transportation, and operation of machinery and equipment. Solar, hydroelectric, biomass, wind, and geothermal energy resources should be accessed to meet a significant share of the region's energy needs. Deployment of advanced technologies and a smart grid will support energy conservation and efficiency objectives.

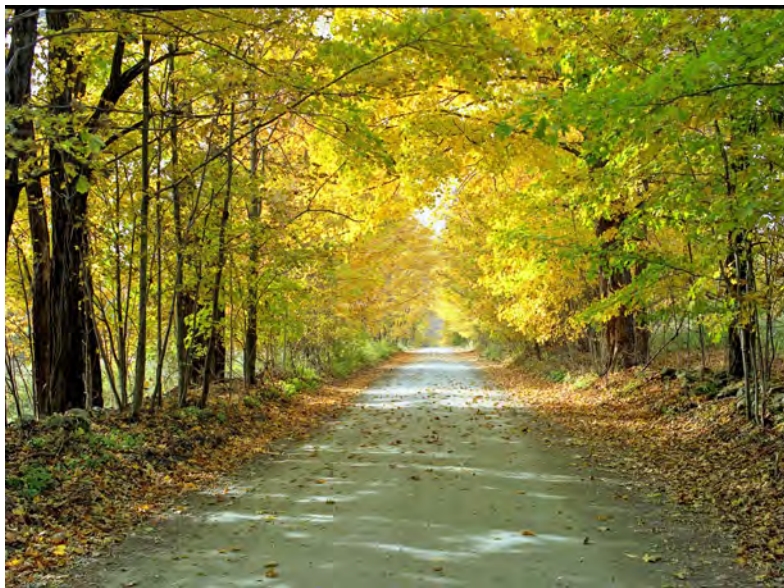
Maintain and enhance recreational opportunities for residents and visitors to provide public health, quality of life, and economic benefits. Natural resource based recreational opportunities and developed public and private recreational facilities are important to the region. Public recreational lands and facilities should be maintained and acquisition of new conserved lands and development of new or expanded facilities should be pursued to meet identified needs. The transportation system should be maintained and improved to encourage physical activity and provide safe and convenient access to recreational facilities. Actions should be taken to remove existing, or potential future, impediments to access to important recreational lands or facilities. Any conflicts between recreational users and impacts from recreational activities on natural resources should be studied and strategies to minimize those impacts implemented.

A supply of housing sufficient to meet the needs of a diversity of social and income groups should be available in all communities in the region. A variety of housing types should be available, including single-family, two-family, and multi-family, with options for ownership and rental. Concentrations of new housing should be located in existing compact centers and adjacent areas planned for relatively dense development where a mix of land uses and transportation options supports community public health objectives. Housing development in rural areas must be carefully planned to protect rural character and to avoid placing excessive demands on transportation facilities and public services.

Ensure that the systems of public utilities and community facilities and services are sufficient to support a growing resident population and the economic needs of the region. Public utilities must be maintained in good condition and any extensions or expansions coordinated with regional and local land use plans and growth objectives. Investments in new infrastructure and services should support growth and development in and around downtowns and village centers and/or address specific environmental and public health concerns. A modern and efficient telecommunication system, accessible throughout the region, is needed to enhance regional economic development, education, and to provide essential communication for residents. An efficient and coordinated regional solid waste management system must be provided to protect the environment and reduce waste disposal costs.

Safe and affordable child care should be available in communities throughout the region. Support for access to child care and early educational opportunities should be available to families and to service providers. Training for child care workers should be available as part of the local educational infrastructure. The importance of quality child care to regional economic development must be recognized.

Flood resiliency will be promoted through planning and regulation that limits and controls the extent and type of development that occurs in flood hazard, fluvial erosion, and river corridor protection areas. New development should be severely restricted except in historic downtowns and village centers where appropriate flood resiliency measures must be taken. All highways and other public infrastructure must be maintained and improved over time to reduce the potential for severe flood damage. Land conservation efforts that are designed to mitigate the impacts of flooding are strongly encouraged. Local communities should work cooperatively to ensure the availability of effective flood response and recovery systems.



A rural roadway during foliage season.

People of the Shires

III. HISTORY

Archaeological investigations have revealed evidence that the Bennington Region was used by Native Americans for hunting and fishing as early as 5,000 B.C., with some villages built and occupied along rivers between 1,800 and 1,000 B.C. A small population of Mohican and Abenaki peoples inhabited the region up until the colonial era, and the Iroquois traveled and hunted in the area during this time as well. The first colonial era town established in the region was Bennington, chartered in 1749 by Benning Wentworth, the governor of New Hampshire. Wentworth's purpose in chartering this first town on the western edge of what is today Vermont was to clearly establish New Hampshire's claims in the area, since New York was known to consider much of the land to be under its jurisdiction and control. The next towns to be chartered were Woodford and Stamford in 1753. Colonization of the area was not considered safe, however, until hostilities with the French and Native Americans ceased in 1760. Settlers from southern New England were led into the area in 1761 by Captain Samuel Robinson, who purchased a number of land grants in Bennington, Shaftsbury, and Pownal. Most of the remaining towns in the region were chartered in that same year.

These early residents quickly began shaping their new communities by clearing land for homes and crops, building grist mills and saw mills, and erecting important public buildings. A school and church were built in each town within a few years of initial settlement. The region's natural resources provided for the basic needs of the settlers and supported the earliest industries. The most productive



Dorset's marble quarries supported an important early industry in the Northshire; evidence of this history can be seen today along the [Stone Valley Scenic Byway](#).

soils were cleared for agriculture, forests were tapped for lumber, potash, and maple products, and by 1790 a marble quarry was operating in Dorset and a paper mill in Bennington.

A network of roadways was soon developed to connect the growing communities to each other and to major centers of commerce outside the region. One principal early road reached north from Bennington through Shaftsbury, Arlington, Sunderland, and Manchester, and another crossed Bennington west to east, connecting Troy, New York with population centers in eastern New England. Another important early road entered the region in Arlington, fol-

lowed the Green River into Sandgate, and crossed Beartown Gap before descending into Manchester and continuing to Springfield, Vermont on the Connecticut River. Before long, regular stagecoach routes were established and private entrepreneurs built toll roads to facilitate travel. Systems of secondary roads soon evolved to serve local travel and to avoid the fees of the toll roads. Inns and

taverns were sited along the roads to accommodate travelers.

All of this early growth and development did not occur in a particularly serene setting, however. A major dispute surfaced as early as 1765 when New York attempted to confiscate the land grants of many of the new inhabitants of the region. The "Green Mountain Boys," led by Ethan Allen and Seth Warner, were formed to resist these attempted incursions from New York. A larger conflict between the American colonies and England soon intervened, however, and occupied militia groups for several years. The Green Mountain Boys achieved considerable fame during the Revolutionary War and fought at the Battle of Bennington in 1777, setting the stage for the crucial American victory at Saratoga. An independent State of Vermont was declared in 1777, with Thomas Chittenden of Arlington becoming its first governor in 1778. All of these events helped to defuse the land claims controversy with New York, which was finally resolved in 1790.

Communities in the region grew steadily over the next several decades, with notable concentrations of activity in Bennington and Manchester, both towns having been named shire towns in 1781. Numerous small industries sprang up around the region; first grist mills, saw mills, and blacksmith shops, then tanneries, shoe-makers, paper mills, cloth manufacturers, iron works, the famous Norton and Fenton potteries, and a manufacturer of carpenter's squares ("Eagle Squares" established in 1823 in Shaftsbury). Many of the largest manufacturing concerns were located along waterways in Bennington and North Bennington.



This statue in Old Bennington marks the site of the Catamount Tavern, just below the Bennington Battle Monument, a frequent meeting place of Ethan Allen and the Green Mountain Boys.

A favorable climate and protective tariffs gave a strong boost to sheep raising in Vermont, and this agricultural enterprise became very important in Bennington County in the first decades of the 19th century. Many hillsides were cleared of trees to provide pasture for the region's sheep, which by 1840 numbered in excess of 100,000. An economic depression in 1837 resulted in the closure of many businesses and manufacturing concerns, and removal of the tariffs on wool products in the 1840s sent sheep farming into decline. Many farmers who had been raising sheep switched to dairying, and this has remained one of the region's dominant agricultural activities. A thriving cheese manufacturing industry developed as a result, with nine cheese factories operating in the region by 1880.

A number of other factors in the mid-1800s exerted a strong influence on the future development of the region. The arrival of rail service in 1852 significantly impacted the region in several ways. Obviously, communication and transportation for residents of the region was vastly improved. The trains also brought in people from outside the region in ever-increasing numbers, thus leading to the establishment and growth of the tourism industry. The Equinox House was opened in Manchester by Frank Orvis in the 1850s to accommodate summer visitors, and many similar establishments followed in the ensuing years. The industrial revolution followed the railroads into the region, with several old factories and mills being converted to new uses and a number of large new factories built; the "Holden



Manufacturing began to grow in importance in the Southshire during the 1800s. The Holden Leonard Mill in Bennington (left) was a major producer of textiles for many years; it now houses many small businesses, offices, and academic classrooms. Tourism began to become a major part of the Northshire economy during that same time; the historic Equinox Hotel in Manchester Village (right) stands as a testament to the continued importance of tourism to the region.

Leonard" mill in Bennington was built during this period (in 1865). The marble industry flourished in the northern part of the county, with the greatest quantity of marble being quarried in Dorset (at one time or another, 28 quarries were worked in Dorset) and milled in Manchester.

Similar growth patterns persisted for the remainder of the 19th century, although a few significant events affected the regional economy. The Civil War, while depleting the work force, did give a boost to local textile and machinery manufacturers with a strong wartime demand for those products. A nationwide economic depression slowed growth and caused some factories to close in the 1870s, but by the early twentieth century, textile manufacturing had become Bennington's dominant industrial activity. The arrival of telephone service (1881) and electrical service (1887) had a profound effect on people's lives and the type and character of new development in the region.

Electricity spawned a proliferation of trolley car systems in and between villages. These trolley lines enhanced local passenger transportation and also served a number of camp resorts and other vacation spots, such as an inn and casino in Glastenbury. The arrival of the automobile at the turn of the century foretold the end of the trolley era, and passenger cars and tractor-trailer trucks would eventually lead to a decline in the use and significance of rail service. Transportation improvements represented one of several causes that led to the consolidation of schools and school districts in the region (in 1869 there were 150 separate school districts in the county).

Forestry and related industries have been of great importance to the economy throughout the region's modern history. Tree harvesting was first undertaken to clear land for settlements and cropland, to serve early construction needs, and for potash production. In the 1800s trees were cleared for pasture land and to feed blast furnaces for iron foundries. The apex of logging activity in the county may have come around the turn of the 20th century when large lumber companies cleared vast acreages in the Green Mountains and sent the logs down rail lines and rivers to feed sawmills in cities and towns below. The Rich Lumber Company operated during this time in Manchester, logging in the Lye Brook and Bourn Pond areas east of town; the clustered houses of "Richville" stand as an inter-

esting reminder of this time. Commercial logging continues to be an important economic activity, both in the Green Mountain National Forest, and on private tracts of forest land. The region's forests also form the scenic backdrop to the region and include vitally important environmental and recreational resources.



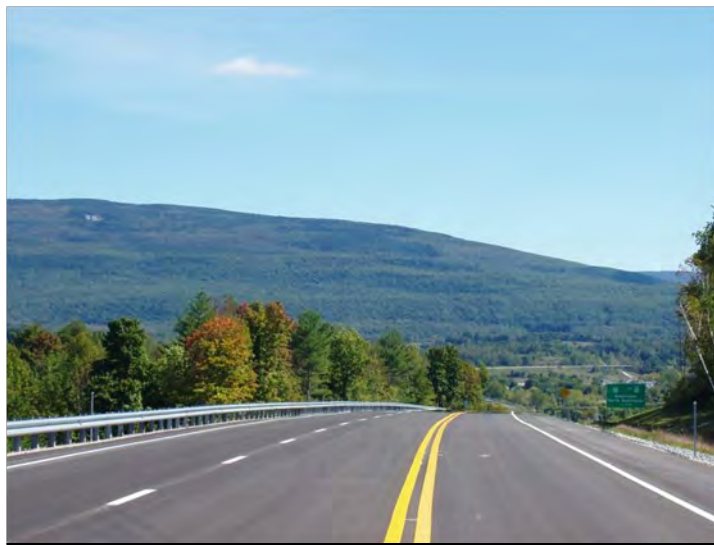
Although much of the land was cleared for agriculture and the timber industry during the 18th and 19th centuries, approximately three-fourths of the Bennington Region is now covered by forests. These resources have, therefore, contributed much to the history of the region and continue to be important to the region's natural environment, economy, and quality of life.

The first decades of the 20th century saw a number of important developments. An increasing reliance on automobiles led to a need to improve roads, and most of the main roads through the region were paved by 1940. The region's first hospital, Putnam Memorial, now known as the Southwestern Vermont Medical Center (and recently affiliated with the Dartmouth-Hitchcock Medical Center), was opened in 1918. A very severe flood in November of 1927 caused extensive damage to buildings, roads, and bridges, and washed out trolley and rail lines throughout the region (many of which were never rebuilt).

The stock market crash of 1929 ushered in a period of hard times for the regional economy. Particularly hard hit was the local textile industry. The failure of the Holden Leonard mill in 1938 idled 800 local employees, fully one-fourth of Bennington's work force at the time. Several events during this time, however, did suggest brighter years ahead. Bennington College opened in 1932. The Southern Vermont Artists was incorporated by artists in Manchester and Dorset, and today stands as the Southern Vermont Arts Center. And in Woodford and Peru, the ski industry took a giant step forward with the addition of mechanized lifts in 1939.

The post-World War II era has been a time of relatively rapid changes and growth in the region. A number of industries serving new technologies (e.g., automobile parts, batteries, specialized fabrics, plastics, computer supplies) have replaced older manufacturing businesses in Bennington, Arlington,

and Manchester. Some traditional industries, however, remain important to the region's economy, including dairy farming, lumbering, and wood product industries. With the region now very accessible to major population centers of the northeastern United States, the vacation and tourism industry has continued to grow in importance. Summer residents, outdoor recreation enthusiasts of all kinds (including the many skiers who visit the Bromley and other nearby ski areas), "leaf-peepers," shoppers, and people attending the many cultural attractions and events in the area all contribute to the region's economic health. The long-planned limited access highway running from Bennington to Dorset (Route 7) was completed in 1990 and Route 279 now provides a direct route between the east and west sides of Bennington – with a new state visitor center located at its intersection with Route 7.



Vermont Route 279 now serves as an important entry point to the region and a limited access route around Bennington. The state welcome center at the intersection of Routes 279 and 7, just north of Bennington, provides tourists with information about the region's history and today's attractions.

The last decades of the twentieth century have demonstrated a keen interest throughout the region and state in the conservation of natural resources and active planning for the future. The growth of the Green Mountain National Forest, establishment of state parks at Lake Shaftsbury, Emerald Lake, and Woodford Lake, creation of the Merck Forest and Farmland Center, and Hildene's environmental and agricultural programs are clear manifestations of this concern. Municipal plans and ordinances, and a number of state laws such as Act 250 and Act 200, were enacted to encourage economically advantageous growth while protecting the open spaces and natural environment that have been so important to the region's history.

More recently, heavy rains associated with tropical storm Irene led to major flooding throughout the region in August of 2011. A number of homes were lost, businesses damaged, and extensive damage done to local and state highways and to other important public infrastructure. This storm damage prompted a statewide reevaluation of where and how buildings and roads are constructed and maintained, and has focused attention on the need for improved emergency response systems. Changing climate and weather patterns will lead to severe weather events becoming more common in the future, thus highlighting the need to consider community resilience in all aspects of local and regional planning.

While the Bennington region has certainly seen profound changes, it is evident that the past has shaped the present and that the region will continue to benefit from its rich history. Additional information on the region's history can be found in the book: [The Shires of Bennington](#), by Tyler Resch, the source of the information presented in this chapter.

IV. POPULATION AND HOUSING

4.1 Overview

The Bennington Region includes all of the municipalities in Bennington County with the exception of Winhall, Readsboro, and Searsburg, county towns which are members of the Windham Region. The population of the full county is approximately 4.6% greater than the population of the BCRC Region (Table 4-1). The three towns not within the Region are similar demographically to adjacent towns in the Northshire (Winhall) and the Southshire (Readsboro and Searsburg), so county-level data is reasonably representative of the region and is used for much of the reporting in this Plan.

The population of the region has continued to increase, but at a declining rate in recent years. The region's population increased by only 0.3% from 2000 to 2010, with most of that increase occurring in towns in the Northshire, particularly in Manchester. Another interesting trend is the aging of the population; the median age of county residents increased by 4.8 years between 2000 and 2010. The median age increased in every municipality in the region except for North Bennington Village (the decline there is likely due to an increase in the number of Bennington College students registering the village as their home address). Bennington has the youngest population in the region, lower than the state median, while several Northshire communities (Manchester Village, Landgrove, and Dorset) are characterized by median ages significantly above the county and state medians.

Table 4-1. Population and Median Age of Bennington County Municipalities ** Towns and Villages with population changes in excess of +/- 3.0% are highlighted ** (Source: 2010 US Census)				
Municipality	2010 Population	% Change from 2000	2010 Median Age	Change (Years) from 2000
Arlington	2,317	- 3.3	45.2	+ 3.2
Bennington	15,764	+ 0.2	40.8	+ 2.9
North Bennington Village	1,643	+ 15.1	22.8	- 6.0
Old Bennington Village	139	- 40.1	52.8	+ 5.1
Dorset	2,031	- 0.2	50.9	+ 5.8
Glastenbury	8	+ 14.3	55.5	NA
Landgrove	158	+ 9.7	53.5	+ 8.2
Manchester	4,391	+ 4.9	49.2	+ 5.2
Manchester Village	749	+ 24.4	61.9	+ 9.9
Peru	375	- 9.9	47.8	+ 6.8
Pownal	3,527	- 1.0	43.3	+ 4.8
Rupert	714	+ 1.4	48.5	+ 5.1
Sandgate	405	+ 14.7	46.4	+ 0.3
Shaftsbury	3,590	- 4.7	46.4	+ 6.0
Stamford	824	+ 1.1	47.5	+ 6.3
Sunderland	956	+ 12.5	45.3	+ 3.5
Woodford	424	+ 2.4	47.1	+ 7.2
Bennington Region	35,484	+ 0.3	NA	NA
Bennington County	37,125	+ 0.4	45.1	+ 4.8
State of Vermont	625,741	+ 2.8	41.5	+ 3.8

The number of housing units in Bennington County increased steadily from 1970 until 1990, when the rate of increase declined (Figure 4-1). As of the 2010 US Census, there were 20,443 housing units of all types in the county. It is interesting to note that most of the recent increase in the number of housing units occurred between 2002 and 2007; the number of building permits issued in the county declined rapidly over the past several years (Figure 4-2), reflecting the national recession.

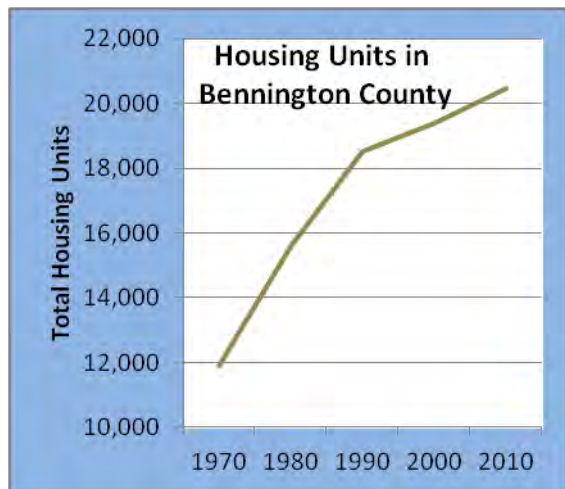


Figure 4-1. The number of housing units in Bennington County has continued to increase, but at a decreasing rate, in recent years.

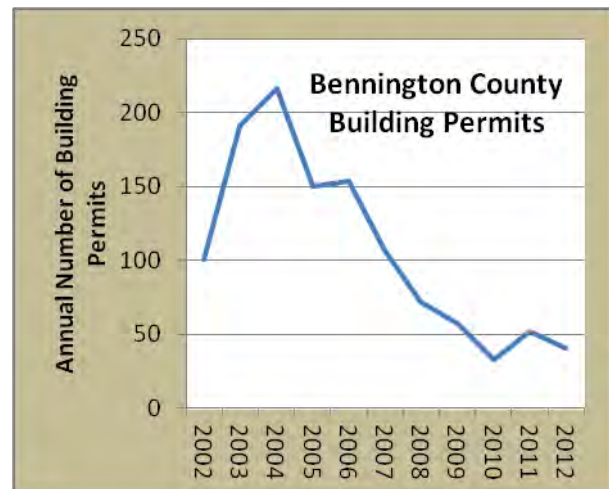
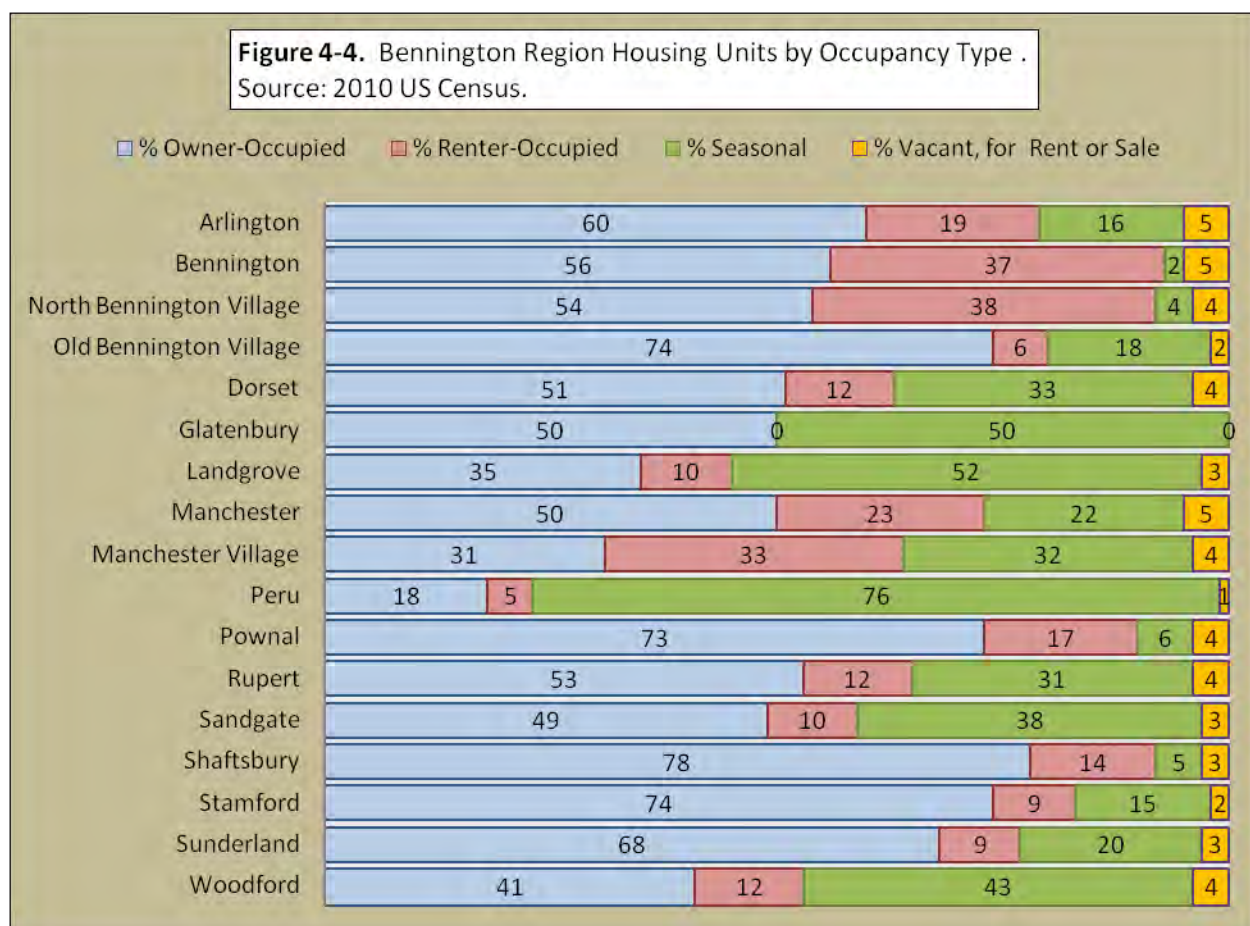
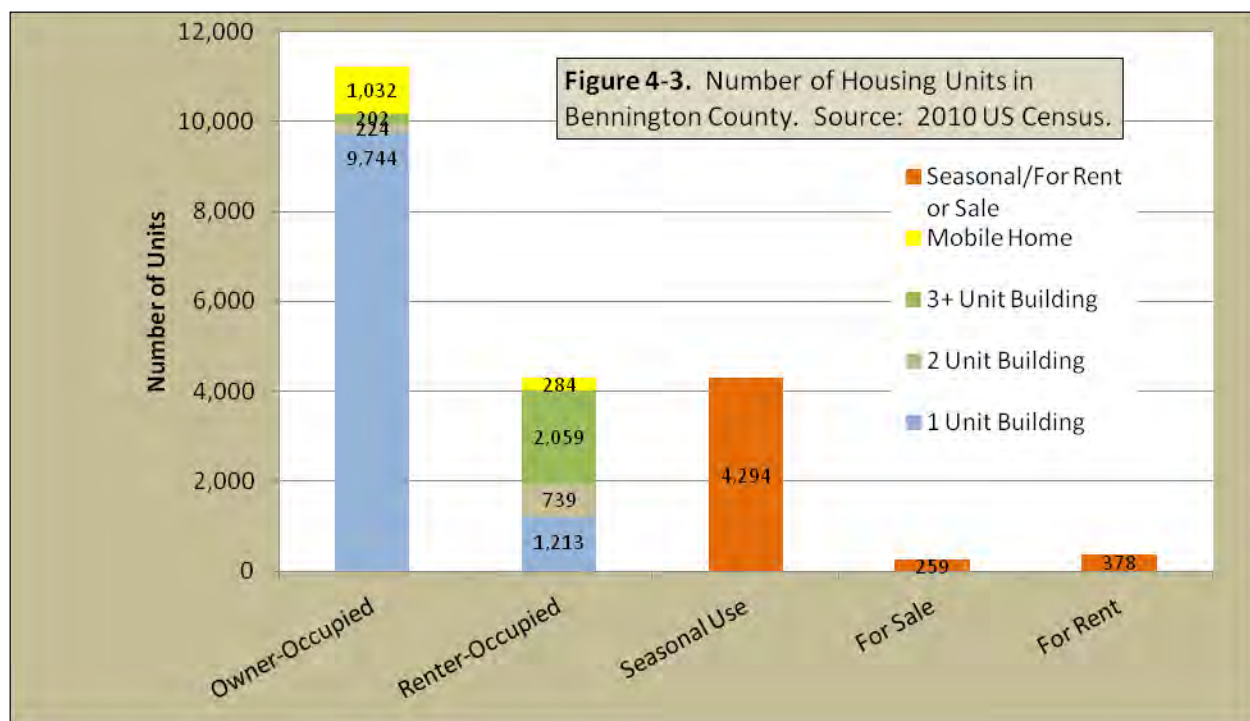


Figure 4-2. The number of building permits issued by towns and villages in the county decreased steadily beginning in 2005.

Over half of the housing units in the county are owner-occupied/year-round dwellings (Figure 4-3), and most of those are single family buildings. Rental units, on the other hand, are predominantly in two and multi-family units. Over twenty percent of the total housing stock in the region is seasonal, or vacation, homes.

There are some clear differences in the composition of housing among towns and villages within the region. Approximately two-thirds of the mobile homes in the region are located in the Southshire communities of Pownal (20.3% of that town's total housing stock) and Bennington (9.6% of the homes in that town). Several Northshire towns, notably the mountain towns of Peru and Landgrove, but also Dorset, Manchester, and Manchester Village, include large numbers of seasonal homes, while there are very few seasonal dwellings in Bennington and several of the larger Southshire communities (Figure 4-4). Over three fourths of the homes in Peru, home to the Bromley Mountain Ski Resort, are seasonal residences. In the Southshire, Woodford, a high elevation town with most of its land in the Green Mountain National Forest, also includes a large number of seasonal dwellings.

The largest numbers of rental properties are in the most populous communities in the region, particularly in Bennington, where approximately two out of five housing units are rentals, although quite a large number are located in Manchester, the Northshire's most densely settled town. The vacancy rate – housing units for sale or rent – for communities generally ranges from three to five percent, with lower rates in Old Bennington, Peru, and Stamford (Glastenbury has a vacancy rate of zero, but only four housing units).



4.2 Housing Cost and Affordability

Housing is a fundamental need and one that represents a major cost to any family or household. The cost of home ownership consists of the purchase price of a home (down payment and closing costs) plus recurring costs that include mortgage principal and interest, property taxes, insurance, and heating and utility costs. While over half of the housing units in the region are owner-occupied, the rental market is significant, particularly in some of the larger towns and villages. Rental properties usually require a significant advance payment to secure a lease. Monthly rental payments often, but not always, include heat, but generally do not include electricity and other utilities.

When seeking a place to live, people consider the location, quality, and cost of available housing. Many factors weigh on desired location, but a leading issue for many residents is proximity to work, schools, and services. It is important that good quality housing – for purchase and rent – be available in a variety of types and price ranges. Of course, housing also has to be affordable. People need to have sufficient income to pay all housing costs with enough additional income to cover the cost of food, clothing, transportation, and other necessities.

The cost of housing relative to income in Bennington region towns is quite high (Table 4-2).

Table 4-2. Median Home Value, Rental Payment, and Family Income in Bennington Region Municipalities.					
Source: Vermont Housing Finance Agency and U.S. Census					
				Percent Paying Greater than 30%	
Municipality	Median Home Value	Median Rent	Median Family Income	in Ownership Costs	in Rental Costs
Arlington	\$ 224,900	\$ 870	\$ 60,078	38.4	24.2
Bennington	162,300	745	51,446	31.6	60.7
North Bennington Village	185,100	818	61,875	23.8	60.7
Old Bennington Village	383,300	NA	120,625	25.0	0.0
Dorset	451,400	866	90,250	43.3	59.6
Glastenbury	NA	NA	NA	NA	NA
Landgrove	479,500	725	65,893	50.6	50.0
Manchester	341,700	704	81,029	33.3	55.6
Manchester Village	627,900	772	134,063	24.7	35.9
Peru	393,200	1,010	59,375	38.5	60.0
Pownal	169,900	670	59,063	27.2	28.9
Rupert	269,200	1,051	44,038	35.8	63.0
Sandgate	224,300	639	51,667	44.1	16.1
Shaftsbury	220,200	801	70,357	30.3	31.0
Stamford	203,600	850	78,438	40.0	64.9
Sunderland	253,500	726	70,500	39.7	8.2
Woodford	151,000	1,100	50,096	31.7	100.0
Bennington County	\$ 204,800	\$ 760	\$ 61,428	33.8	52.2

Home values vary across the region; in general, values are lower in the Southshire (Woodford, Pownal, and Bennington have the lowest home values in the region) and higher in some of the Northshire communities (Manchester Village, Dorset, and Landgrove having the highest valued homes in the region). There are exceptions, of course, as in Old Bennington Village, with its large and relatively expensive homes. Rental costs are more consistent, but the quantity and quality of rentals may vary from town to town.

Median family income in the county is \$61,428, with considerable variation around the region, north and south. One measure often used to assess housing affordability for residents of a community is the number of families paying over 30% of their income toward housing costs. While these households are covering their housing costs, they often are strained in meeting other basic needs with their remaining income, and are at risk of missing mortgage or rent payments if other unexpected expenses arise. Over 50 percent of renters in Bennington County are in this category and about a third of homeowners. The situation is most pronounced - in Bennington and countywide - in households with three or more family members (Figure 4-5).

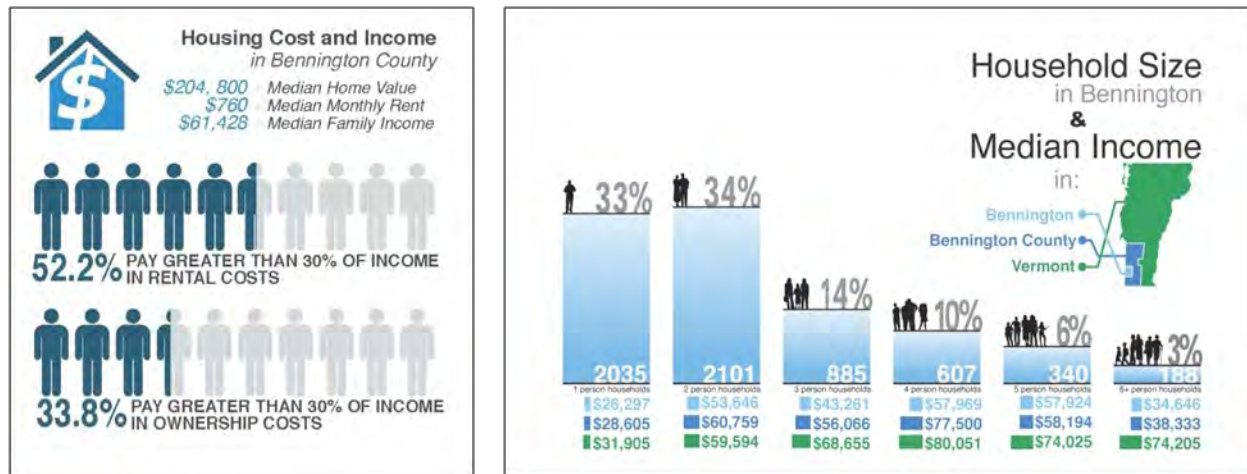


Figure 4-5. Many families in Bennington County pay over 30% of their income toward housing costs. The situation is particularly acute for larger families.

Often overlooked when considering the cost and affordability of housing is the cost of energy. The Bennington Town Energy Plan (July, 2012) estimates that the total amount of energy (heating and electricity) used in Bennington households costs in excess of \$23 million per year, an average of over \$300 per month per home. The Bennington County Regional Energy Plan contains detailed recommendations for reducing home energy consumption and cost. It is clear that weatherization of existing homes, new construction meeting “Energy Star” guidelines, and switching to less expensive local renewable energy sources (e.g., wood or geothermal/heat pumps for heat) can significantly reduce the cost of housing for most people. The location of housing also plays an important role in energy use and cost. Current transportation fuel use by Bennington town residents is estimated to cost another \$23 million annually (Bennington Town Energy Plan). Living closer to work, school, and services can significantly reduce fuel use and expense. The same principles apply in smaller towns as well; indeed, with fewer multi-family houses and longer commuting distances, the costs tend to be even higher. The

Dorset Energy Report and Assessment (February 2013), for example, estimated average heating plus transportation fuel costs to be close to \$700 per household per month in that town.

4.3 Housing Organizations and Services

A number of programs and organizations exist to help address the high cost of housing in the region. [Shires Housing](#) (formerly the Regional Affordable Housing Corporation) is a nonprofit housing organization that has developed quality and perpetually affordable housing, with an emphasis on housing for people in the local workforce. Shires Housing currently owns 225 rental units in Bennington County; 36 units in Manchester, 38 in Arlington, and 151 in Bennington. Supporting organizations include the [Vermont Housing and Conservation Board](#), [Vermont Housing Finance Agency](#), [Vermont Community Loan Fund](#), [Housing Vermont](#), and other local businesses and non-profits with similar missions. Housing Vermont was instrumental in the rehabilitation of 104 units of affordable housing in Bennington. Those units, in the Applegate complex in Bennington, are an important community asset and responsive and effective long-term management of the project is critical. [Habitat for Humanity](#) also has a regional division that develops housing for area residents. All of these organizations can continue to use housing development to support vibrant communities in a number of important ways:

- Creating new affordable rental units and homeownership opportunities.
- Promoting a sense of pride in the community by upgrading existing neighborhoods through renovation and restoration of existing housing stock.
- Restoring and reusing – as mixed use buildings whenever feasible –distressed historic buildings and other infill projects to create vibrant downtowns.
- Expanding the local tax base by increasing property values.
- Making investments that act as catalysts for additional improvements by other property owners in the neighborhood.
- Using energy efficient construction practices.
- Spending construction and operating dollars in the community and on local contractors.

Several other regional organizations offer important housing services to residents of the area. [NeighborWorks of Western Vermont](#) (NWWVT), operating out of offices in Rutland, provides a range of services to communities in southwestern Vermont. The Mission of NWWVT is to promote safe and affordable housing, focusing on sustainable home ownership. NeighborWorks offers education, counseling and access to affordable loans needed to purchase, improve and help keep their homes. An important home energy efficiency service, the “Heat Squad,” operated by NWWVT, offers discounted home energy audits and assistance with home weatherization projects. The BCRC should continue to work with NWWVT to increase awareness of their programs in the region and encourage more people to utilize their services. An expanded physical presence in the Bennington area would be particularly beneficial in increasing NWWVT’s local visibility and impact.

[The Bennington Rutland Opportunity Council](#) (BROC) maintains an office in Bennington and offers a variety of services to income-eligible residents. Housing-related programs include housing counseling and transitional housing, recovery from damage to homes, and home weatherization and

renewable energy projects. Approximately 1,500 people benefited from BROC's housing assistance programs in 2012.

A number of area residents receive "Section 8" vouchers that provide substantial long-term rental subsidies for eligible people. The Bennington Housing Authority, which owns 195 housing units serving low-moderate income families and elderly residents, also manages over 200 of these vouchers. The availability of these vouchers, however, is limited and does not meet the current demand for housing by very low income residents.

4.4 Special Housing Needs

The region's growing population of elderly residents has increased the demand for special senior housing facilities and services. A number of residential developments serving the senior community exist in the region. Emeritus at Fillmore Pond and Shires Housing's Cora B. Whitney Building in Bennington and the Equinox Terrace and Equinox Village developments in Manchester Village are examples of available senior housing. Demonstrated needs exist for additional assisted living senior housing and housing for seniors with very low incomes. Senior housing options are limited in smaller rural towns, where limitations on the ability to provide regular transportation to services poses an additional challenge. Consequently, there is value to concentrating new senior housing development near the center of larger communities where services are more readily available to a population with limited mobility. Shires Housing has taken a lead in providing services to seniors through the "Seniors Aging Safely at Home" (SASH) program. SASH coordinators work with program participants to provide health support, education, and social activities that help seniors live healthy and fulfilling lives in their own homes.

People with physical or mental disabilities constitute a significant population having special housing needs in the region. These residents typically have extremely limited incomes and often require special services. According to the US Bureau of Labor Statistics, in 2012 only 17.8 percent of people with a disability were employed. Organizations such as the United Counseling Service of Bennington County (UCS) provide housing, residential services, and employment support for many community members with disabilities.



Emeritus at Fillmore Pond is one of the region's senior living communities offering a variety of living and service options.

Another population with a critical housing need is the homeless residents of the region. The [Bennington Coalition for the Homeless](#) provides transitional housing and a warming shelter to meet some of the need in this area. Some residents with very low incomes may not live "on the street," but live temporarily with friends or family because of an inability to afford housing. This population is difficult to quantify, but its numbers are significant, especially in the Bennington area.

4.5 Specific Housing Issues Across the Region

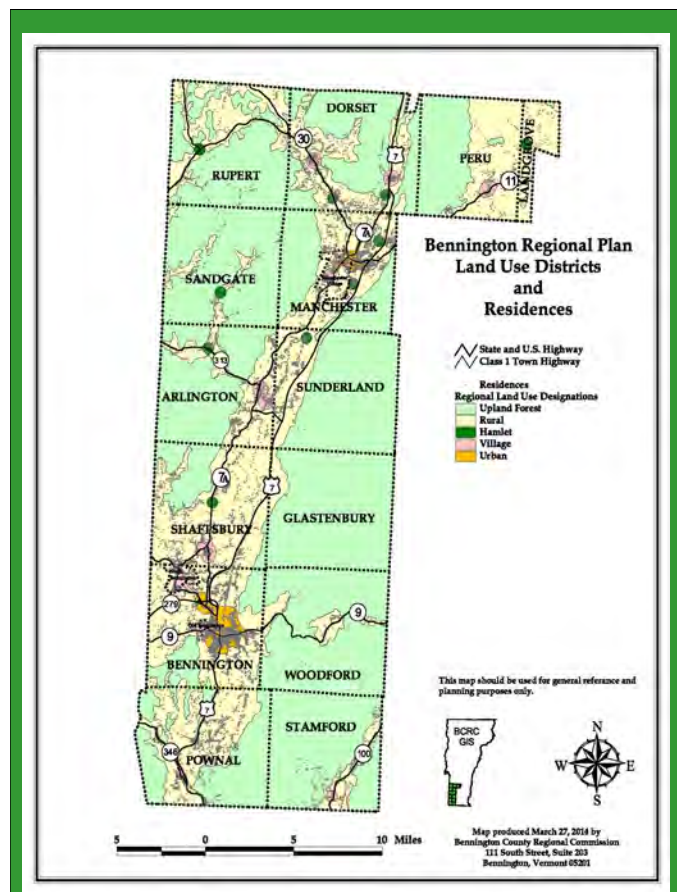
While the type of housing issues faced by communities varies across the region, three general regional themes are evident: development of housing related to local and regional land use plans, the high cost of housing, and the design of housing development. Those issues are discussed below and are illustrated using specific examples from several communities in the region.

Housing and Land Use Planning

Most residential development in the region is located within lower elevation valleys, and within those areas, housing is most concentrated in and near the historic centers of communities where services and infrastructure are available (Map 4-1). This development pattern is consistent with state and regional land use planning goals. Continued growth in these “compact centers” promotes public health, energy efficiency, the vibrancy of downtowns and village centers, and protects rural open space and natural resources.

Although there always will be residential development in outlying rural areas, the regional land use plan, as well as municipal land use plans and regulations, discourage or prohibit permanent development in high elevation, mountainous, and particularly remote areas of the region. These land use policies also limit the density of allowable development in rural areas. Nonetheless, considerable potential for scattered growth in the countryside does exist. In addition to the market demand for housing in rural locations, the lack of infrastructure, particularly public water and wastewater systems, limits the ability to locate new housing in existing village centers in the region’s smaller towns. Innovative technologies designed to address this problem may be appropriate in some communities (discussed further in Chapter XI), depending on the level of required public investment.

In Bennington, a lack of housing of sufficient quality for both home ownership and rentals in the town’s designated growth center is seen as a particular problem. Working families and potential employees often seek housing in these neighborhoods, and the



Map 4-1. Residential development is most concentrated in the region’s village and urban center land use areas, with lower density housing in rural valleys. Little permanent development is found in the mountainous “upland forest” areas in the Green and Taconic Mountain Ranges.

Rental Housing in Bennington

The large number of apartments in the center of Bennington presents one opportunity to address the town's concerns with the availability of workforce housing. In today's housing market, many people find renting a more attractive option than home ownership. Working with rental property owners to upgrade the quality of this housing and conversion of some of the town's many older multi-family houses to two or three family units with at least one owner-occupant are solutions that may help address this concern.

shortage of housing is thus an impediment to economic development. Workers frequently resort to finding housing well outside the town center, often in other communities, while others may move into houses or apartments that do not meet their needs, thus discouraging long-term residency and retention of workers. The town currently is studying this situation and is considering ways to improve the availability of housing that meets the needs of all residents and of individuals and families seeking to move to the area.

Pownal faces some similar concerns with the location and quality of the existing housing stock. The town has the newest public sewer system in the region, and was careful to design the system to support high-density development only in established village centers. At the same time, although there is a large amount of housing in the town that is considered "affordable," much of it is of poor quality and many of the town's mobile homes, in particular, are located in developments that are in flood hazard areas. There may be an opportunity for the town to work with the BCRC, Shires Housing, and other agencies and

organizations to develop plans for relocation and/or improvement of this housing. Projects of this nature can ensure that new or relocated housing is developed outside flood hazard areas and in or near the three village centers served by Pownal's municipal wastewater system.

North Bennington Village, an historic village with relatively little land available for new housing development, amended their Village Plan and adopted zoning regulations that allow and encourage redevelopment of historic industrial buildings for residential development. The owner of a complex of manufacturing buildings, several of which had been vacant for many years, has taken advantage of the new regulations and developed over thirty units of high quality affordable rental housing. The buildings now house a mix of residential, commercial, and light manufacturing uses, south of the village center, and overlooking a scenic waterfall on Paran Creek.



This historic industrial site in North Bennington Village has been redeveloped as a mixed use complex that includes over twenty new housing units.

Housing Cost

The high cost of housing relative to income is a problem, to a greater or lesser degree, in all of the region's towns and villages. Several organizations and programs, each serving a particular market niche, work to reduce the housing cost to income gap in the region. A recent example of such a program is the Roaring Branch

residential development in Bennington. This project involved construction of 26 units of high quality rental housing, 14 new units on an infill lot and 12 units in renovated historic mill housing, all in Bennington’s growth center. With rents ranging from \$575 to \$840, the cost is affordable for families with adults in the local workforce.



Attractive new residential units in the Roaring Branch development in Bennington.

Housing affordability issues tend to be particularly acute in the Northshire, where the high cost of homes and land make it difficult for people who grew up in these communities to stay and for workers to find housing near their employment. A number of strategies are available to address these concerns, in addition to, or in combination with, the housing agencies and programs discussed above. The Town of Manchester has developed a detailed “Planned Affordable Residential Development” (PARD) land use regulation to encourage the development of affordable housing in the community. Those regulations allow significant increases in the number of housing

units permitted on a parcel of land provided that most of the units are “affordable” as defined by the Vermont Housing Finance Agency. In addition to relaxing density requirements and providing a simplified review process, the town is authorized to waive or reduce utility costs, donate the use of town equipment or labor to support the development, extend town services or utilities to the project site, donate municipally owned land or buildings, and provide technical and/or financial assistance (see box below for an example of a PARD project).

Other municipal actions that can support the development of affordable housing include allowances for accessory apartments (now mandated by state law), inclusionary zoning (requiring a certain percentage of housing in a new development to be affordable), and transfer of development rights (whereby density increases in an area planned for concentrated development are permitted through a transfer from an area planned for lower density or land conservation).



Habitat for Humanity Development on Jennifer Lane in Manchester

This 22-unit residential development was approved under Manchester’s Planned Affordable Residential Development (PARD) regulations. The intent of those regulations is to:

- Create affordable housing as defined by Manchester's Housing Plan;
- Conserve land and create usable open space and recreation areas; and
- Efficiently use town roads and infrastructure.

Densities of up to ten units per acre are permitted, provided the design is compatible with the area and meets town housing goals.

It is important to note that centrally-located high density housing, while often relatively affordable, has many other benefits as well. Concentrated housing in these mixed use areas can be attractive places to live for people of all income levels. New developments in these areas can provide opportunities for comfortable and efficient living for people with a range of incomes. Housing and demographic trends show a preference by many professionals and active seniors for living in densely developed areas where the population supports vibrant neighborhoods with easy access to shopping, restaurants, and other services.

Design of Housing Developments

Certain characteristics should be common to all new residential development within the region. These features represent the best of the region's traditional development pattern and, as such, reflect principles of "Smart Growth" and "Healthy Community Design." Development during the second half of the 20th century came to emphasize designs that were more responsive to personal automobiles than to people. Modifying this trend only requires a renewed emphasis on the region's original form of housing development. In addition to the land use principle of encouraging relatively dense housing and mixed use developments in and around downtowns and village centers, the following design concepts support a human-scale environment that is consistent with the goals of this Plan:

- ✧ Architecture that is compatible with the character of the community, surrounding neighborhoods, and any historic districts, but that provides some variety in design among and between structures.
- ✧ Most residential areas should be served by relatively narrow streets that slow traffic and, when possible, form a connected network with existing streets to disperse traffic.
- ✧ Parking areas for cars and garages should not be prominent in building or site design.
- ✧ In compact centers and residential neighborhoods, buildings should be sited relatively close to the public street and include front porches with walkways connecting to public sidewalks.
- ✧ Sidewalks and pathways should traverse the development, along road edges or via more direct, protected, or scenic routes, to provide connections to public open spaces, adjacent neighborhoods, and any concentrations of public activity such as commercial areas or schools.
- ✧ Streets and sidewalks should be treated as public spaces and integrated with existing parks and new "pocket" parks to foster a sense of neighborhood and community.

Housing Location and Design Principle: Concentrated Mixed Use Development and Public Health

Building residential, retail, industrial, medical, and educational facilities close together creates walkable communities and encourages people of all ages and abilities to make physical activity a part of everyday living. Concentrated mixed-use development also can create a greater market for healthy foods, resulting in greater access to healthy food choices. It also concentrates infrastructure investments (such as sidewalks and bike paths), creates better options for public transportation, maintains green space, reduces air pollution, and promotes greater social interaction.

Fast Fact: People who live in walkable, mixed-used communities are more than twice as likely to be physically active 30 minutes or more each day, compared to those who live in communities oriented to motor vehicles.

*From "Active Living and Healthy Eating,"
Vermont Department of Health, April 2013*

- ✱ Landscaping should be carefully planned with appropriate trees and green spaces along streets and sidewalks.
- ✱ Whenever possible, a range of housing types (ownership, rental, one, two, or multi-family, as permitted in the local zoning bylaws for the district) at a range of price levels should be provided.

4.6 Policies and Recommendations

1. A variety of housing options should be available in both compact centers and more rural areas, with higher densities, multi-family buildings, and mixed use developments in suitable locations in and around downtowns and village centers (“compact centers”). Implement local land use regulations and pursue investments in infrastructure that support these development objectives.
2. Design of housing developments should reflect smart growth and healthy community design principles; useful references: Vermont Natural Resource Council’s Smart Growth Resources page at www.vnrc.org, and Vermont Health Department’s Healthy Community Design Resource: Active Living and Healthy Eating (<http://healthvermont.gov/>).
3. Municipalities should develop housing plans that include an identification of any housing issues and needs in their community, an assessment of resources available to address identified concerns, and a plan to implement solutions.
4. The BCRC and local governments should work with Shires Housing, other public and non-profit housing organizations, and private developers to identify housing needs and develop an adequate supply of quality housing that is affordable to residents of the region and to potential members of the workforce who are seeking housing in the area.
5. Support development of additional housing that meets the needs of the region’s elderly and disabled residents, as well as those with special needs and very low incomes. This housing should be in or near the center of towns where services are conveniently available.
6. Energy conservation and efficiency shall be an important consideration in new housing and redevelopment of buildings for residential use. Information on residential building energy standards and incentives are available at the BCRC, Efficiency Vermont (www.efficiencyvermont.com), and should be made available through local planning and zoning offices.
7. Development of housing on vacant “infill” lots, in the upper stories of downtown buildings, and remediation and redevelopment of vacant or underused buildings and “brownfield” sites for housing in compact centers is an important regional objective and should be a priority for public and private investment.
8. Consider use of public assets such as buildings, land, and financing, to help reduce the cost of housing development and support creation of affordable housing.

V. EDUCATION

5.1 Overview

The region's educational system, from pre-kindergarten through college, is critical to the social and economic well-being of the area. A good education provides the basis for a productive future for the region's children while teaching skills that are needed to sustain and grow local businesses. A recent comprehensive economic development strategy completed by the town of Bennington identified a quality local education system as the most important economic driver for a community.

Schools also provide the fabric that ties together local communities. Parents and other residents have a vested interest in their local schools and work to ensure that they are adequately funded and operated to meet the needs of community members. Schools also are a venue for people to come together for scholastic athletic events, cultural presentations, special events, public gatherings, and official public meetings.

The region's colleges present significant opportunities in a number of ways. Not only are they important economic assets in and of themselves, they provide training in a range of skills, attract diverse and talented students and faculty, contribute to the cultural landscape of the area, offer tangible benefits to the economy by supporting businesses that are frequented by students, and provide technical support through student internships and similar interactions.

More education and training opportunities are being provided through on-line courses and degree programs, many of which are coordinated through, and supplemented by, local schools and institutions such as the Community College of Vermont and Vermont Technical College. Organizations such as the Green Mountain Academy for Lifelong Learning in Manchester and the Vermont Arts Exchange in Bennington offer accessible and diversified educational programs to the public. Of course, a good telecommunication network makes course offerings from colleges and universities around the country available to local residents. Developing and maintaining comprehensive broadband to serve schools, colleges, libraries, and the general population is critical to achieving educational and community development objectives for the region.

Several organizations have some responsibility for supporting the advancement of local and regional educational objectives. In addition to the local school districts and school administrators and staff, supervisory unions work with public schools and school boards while also working with municipal



Stamford Elementary School, located in the center of the village, shares a building with the town offices and is an important center of community activity.

governments and business leaders to foster communication and coordination with local communities. The Southwest Vermont Supervisory Union has oversight and support for public school systems in most of the Southshire towns, the Batten Kill Valley Supervisory Union works for the towns of Arlington and Sandgate, and the Bennington Rutland Supervisory Union covers most of the Northshire towns. Stamford is a member of the Windsor Southwest Supervisory Union while Peru and Landgrove are part of the Mountain Towns Regional Education District.

The Bennington County School and Workforce Partnership recently was reorganized to function as the Workforce and Education Committee of the Bennington County Industrial Corporation. Representatives from public school systems, colleges, local government, businesses, and the BCRC work together on that organization to support educational efforts, provide a clear avenue of communication between the schools and local communities, and to oversee special programs and projects. Recent activities have included a business workforce/education needs survey and creation of a business-directed internship program for high school and college students.

Maintenance of a quality educational system that is affordable to residents while also meeting the needs of students, local communities, and businesses will require continuing communication and coordination between many involved public and private interests. The following sections provide some background on the existing educational institutions and challenges that will need to be addressed in the coming years.

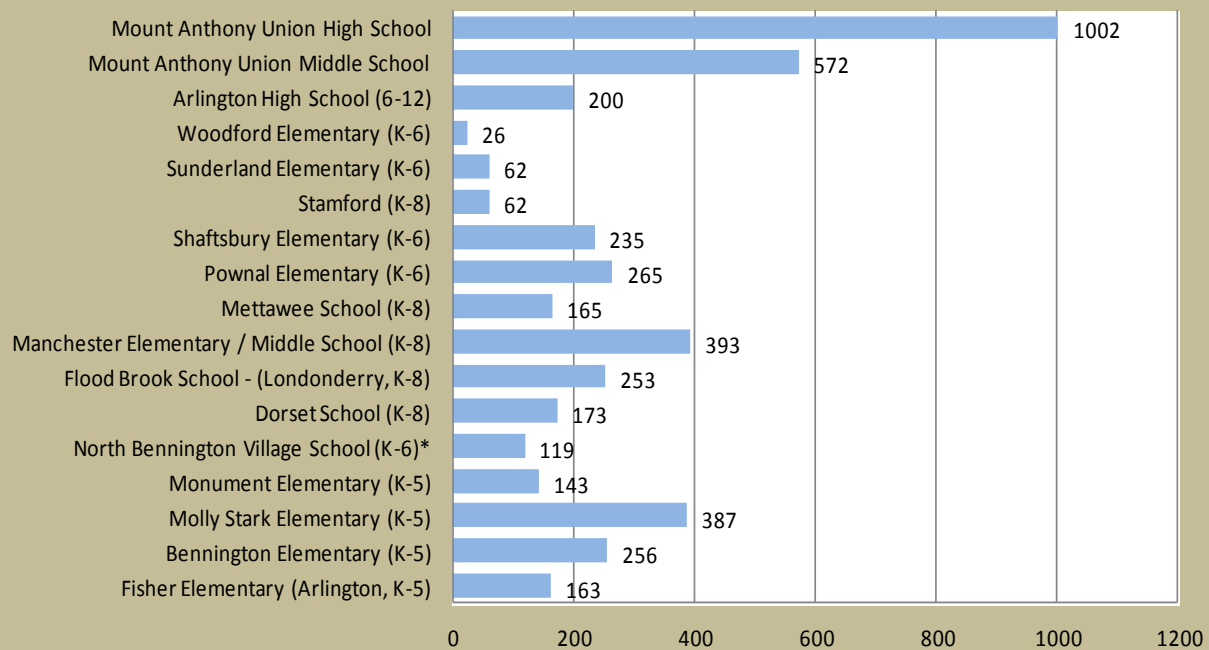
5.2 Schools and Colleges

Local school districts operate public elementary schools in Stamford, Pownal, Woodford, Bennington (three schools), Shaftsbury, Arlington, Sunderland, Manchester, and Dorset. Peru and Landgrove are part of the Mountain Towns Regional Education District; students from those communities attend elementary school (grades K-8) at the Flood Brook School in nearby Londonderry. Rupert and Pawlet participate in a union school district; with students in grades K through 6 attending the Mettawee Community School in Pawlet.

Enrollment in the region's public elementary schools ranges from a low of 26 in Woodford to a high of 393 in Manchester (a K – 8 school) and 387 at the Molly Stark School in Bennington (Figure 5-1). Total enrollment in most of these schools increased recently with the addition of pre-kindergarten classes. The various pre-K programs at these schools now include approximately 350 children. More information on early childhood education is included in Section 5.4, below.

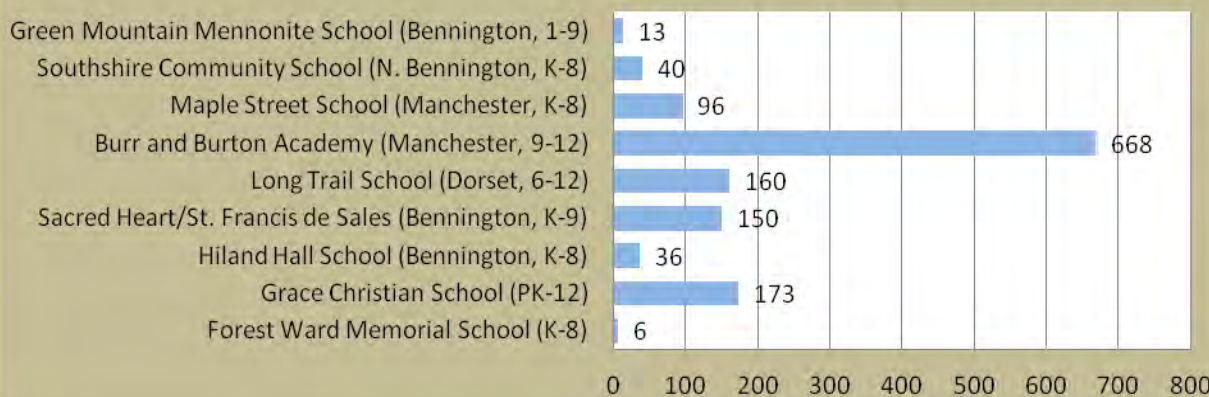
Mount Anthony Union High School in Bennington is the largest school in the region and the public high school serving most of the communities in the Southshire (high school students from Stamford attend high school in nearby North Adams, Massachusetts). The Mount Anthony Union school district also operates a middle school in Bennington; it serves Bennington students in grades 6-8 and students in grades 7-8 from most of the other Southshire towns. Arlington Memorial High School includes a middle school wing (grades 6-8) and the senior high school from a central location in Arlington. That high school serves students from Arlington, while residents of Sandgate and Sunderland have an option to attend Arlington or receive tuition to attend a high school of their choice (most often, Burr and Burton Academy in Manchester). Almost 1,800 students attend the middle schools and high schools in Bennington and Arlington (Figure 5-1).

Figure 5-1. Bennington Region Public School Enrollment, 2012-13. Source: Vermont Agency of Education. (Does not include pre-kindergarten enrollment, started by many of the elementary schools at various times in the past ten years.)



* The elementary school in North Bennington closed and a private academy was opened in the Village in 2013.

Figure 5-2. Bennington Region Private School Enrollment, 2012-13.
Data from individual schools.



A number of private and independent schools, both elementary and secondary, also operate in the region (Figure 5-2). During the 2012-13 school year, private school enrollment totaled 1,342, or 30 percent of the total public school enrollment. The numbers are slightly different for the 2013-14 school year, as the North Bennington school district closed its public school in June 2013. The same facility is now being leased to an independent academy serving the same student population and also is open to tuition students from anywhere outside the district. Of course, it is important to note that private

school enrollment does not necessarily reflect student population within the region as students from outside the region attend some of the those schools (just as students from within the region attend private schools in other areas).

While there are a significant number of students attending private schools at all grade levels, the greatest number attend the two private secondary schools in the Northshire, Burr and Burton Academy and the Long Trail School. Most of the Northshire town school districts, and several towns outside the region, provide tuition money for students in their com-

munities to attend Burr and Burton since there is no public high school in the northern part of the county. Some towns offer a tuition rate to students based on the current state average or on Burr and Burton's announced tuition, and families can opt to use those funds to attend a high school of their choice, such as the Long Trail School.

Some families choose to provide education to their children at home; 103 children within the region obtain their education through home-study based curricula. Those students are able to participate in certain activities at local schools. Information on home-study options is available through the [Home Study office of the Vermont Agency of Education](#).

The Southwest Vermont Career Development Center (SVCDC), sharing a site with Mount Anthony Union High School in Bennington, is a technical education center serving towns throughout the region. The Center's mission is to prepare secondary and post secondary students for career and life-long learning in a rapidly changing world. SVCDC offers 20 technical programs and related classes for high school age students. In the afternoons, evenings, and online, a wide variety of adult education offerings also are available. Vermont resident adults who do not have a high school diploma are considered secondary students and are eligible for tuition to be paid by their school district. Adults with high school diplomas are charged tuition. Recent cooperation between the SVCDC, and many of the public primary and secondary schools in the region, local businesses, and economic development interests have led to specific programs and course offerings that inform students of career opportunities in the region and provide the types of skills being sought by employers.

Bennington is home to five colleges: Bennington College, Southern Vermont College (SVC), units of the Community College of Vermont (CCV) and Vermont Technical College (VTC), and the Northeast Baptist College. Each of the colleges provides important services and imparts significant benefits to the region. Bennington College and Southern Vermont College are four-year liberal arts institutions offering a wide range of areas of specialization. Bennington College also offers graduate programs in



The public North Bennington Graded School became the Village School of North Bennington, an independent academy, in 2013, reducing the region's public school enrollment, and increasing the private school enrollment, by approximately 120 students.

writing, language, performing arts, and pre-medical studies. Those two colleges occupy sprawling campuses, Bennington College in North Bennington and SVC on the slopes of Mount Anthony, conserving valued open spaces and offering recreational opportunities for both students and residents. Each of those schools also presents regular lectures, concerts, plays, art exhibits, and other events that contribute to the cultural richness of the region.

Vermont Technical College offers a degree program in nursing from its Bennington location where it occupies two floors of an historic building that has been renovated for the school. The Community College of Vermont, occupying space in another renovated downtown Bennington building, offers classroom and online instruction in twenty degree and six certificate programs, workforce, secondary and continuing education opportunities, and academic and veterans support services.

The Northeast Baptist College is the newest post-secondary institution to locate in Bennington. It shares space with the (K—12) Grace Christian School while also utilizing buildings near the downtown. Degree programs in ministry, education, and music are offered.

There are nearly 2,000 students attending college among the five campuses. These students represent a tremendous asset to the town and region and efforts to more fully involve students in the community have been given considerable attention recently. Internships and other opportunities to work with local businesses and other organizations provide learning opportunities for the students while increasing productivity and developing interest in those jobs among people preparing to enter



Bennington's five colleges are an asset to the region; the world class visual and performing arts events at Bennington College are among the many ways the schools enrich the community.

the workforce. A greater student presence in the downtown also has mutual benefits as students spend money while enjoying local stores, café's, and restaurants. The possibility of establishing a college-operated business in downtown Bennington has been explored with both SVC and Bennington College. Such a business would provide another venue for students in town while encouraging growth and development of businesses to serve this population.

Bennington College, SVC, and the Northeast Baptist College are located some distance from the center of town; consequently, it is important to have regular and convenient transportation connections available to students. Both SVC and Bennington College operate shuttle buses and the Green Mountain Community Network includes the campuses on their regular transit routes. Enhancing these links by increasing the frequency of trips has been considered and expansion of opportunities for bicycling also would increase community-campus interaction. Another important way to improve connections between the colleges and communities in the region is to improve communication links that provide information about happenings on the campuses and in the community.

Thanks to its location in the southwestern corner of Vermont, the Bennington region also has

ready access to colleges and universities of national significance such as Williams College (10 minutes south of Pownal), Rensselaer Polytechnic Institute (40 minutes west of Bennington), and the University at Albany (one hour west of Bennington). Many programs at these institutions are available to area residents, and municipalities and businesses have benefited from student and faculty projects. Examples include a lighting study of the Bennington Battle Monument, a traffic calming study for Old Bennington, and applications of advanced materials research for local composites manufacturers.

The college campuses in the region all are located in the Southshire, and colleges and universities in neighboring states are closer to Bennington than to Manchester and other Northshire towns. Town and economic development officials in the Northshire have initiated discussions with CCV and other institutions about offering some classes in Manchester and making use of interactive telecommunication technologies to provide distance learning opportunities for local residents.

5.3 Education Cost

The cost of education – at all levels – is considerable and presents challenges to individuals, families, and communities. For local public schools, costs are driven by total school district spending that includes salaries and wages for faculty and staff, building infrastructure (maintenance, utilities, bonded construction or improvements), transportation, administration, supplies, and other expenses associated with operating an educational facility. Towns and villages without a school, of course, pay tuition to a school district and that tuition is determined by those same factors. Most school funding derives from property taxes and because of the way that Vermont funds education, enrollment levels play a key role in determining those tax levels.

School districts receive funds from a statewide property tax based on the number of enrolled students and when a district's per student cost exceeds a state-defined amount, financial penalties are imposed on the district. With so many educational costs essentially fixed – primarily faculty and staff contracts and physical plant operations – declines in enrollment have a doubly adverse impact in that they result in both reduced state funding and increased per student costs. When enrollment levels decline sufficiently, districts are forced to consider eliminating programs and/or cutting teaching positions (often by increasing class sizes) and when the number of students hits a critical level it can threaten the viability of the school.

Regional public school enrollment has fallen by approximately fifteen percent over the past decade (Figure 5-3). In fact, the situation is somewhat more pronounced with the closing of the North Bennington Graded School in 2013 (an independent school now occupies that former public school building and provides an education option for residents of North Bennington and part of Shaftsbury). Most of the public schools in the region have seen some level of enrollment decline, although the Dorset School has seen a slight increase and there has been a significant recent increase in enrollment at the Shaftsbury Elementary School.

The Bennington School District responded to enrollment declines by closing the Catamount Elementary School in 2007. Several other school districts have struggled with declining enrollment and considered various options to reduce costs. Nearly all of the schools have added a pre-kindergarten class to attract additional students. Some schools have merged grades and reduced staffing, and various school consolidation plans have been considered throughout the region. The closing of a school in

a smaller town, where there is only one elementary school, tends never to be a popular option because it would result in the loss of a valued community asset, reduced “local control” over education decisions, and the need for young students to travel greater distances to attend school. On the other hand, certain school consolidations might reduce costs and provide students with a greater range of educational offerings. However, advances in technology are expanding educational opportunities for schools of all sizes.

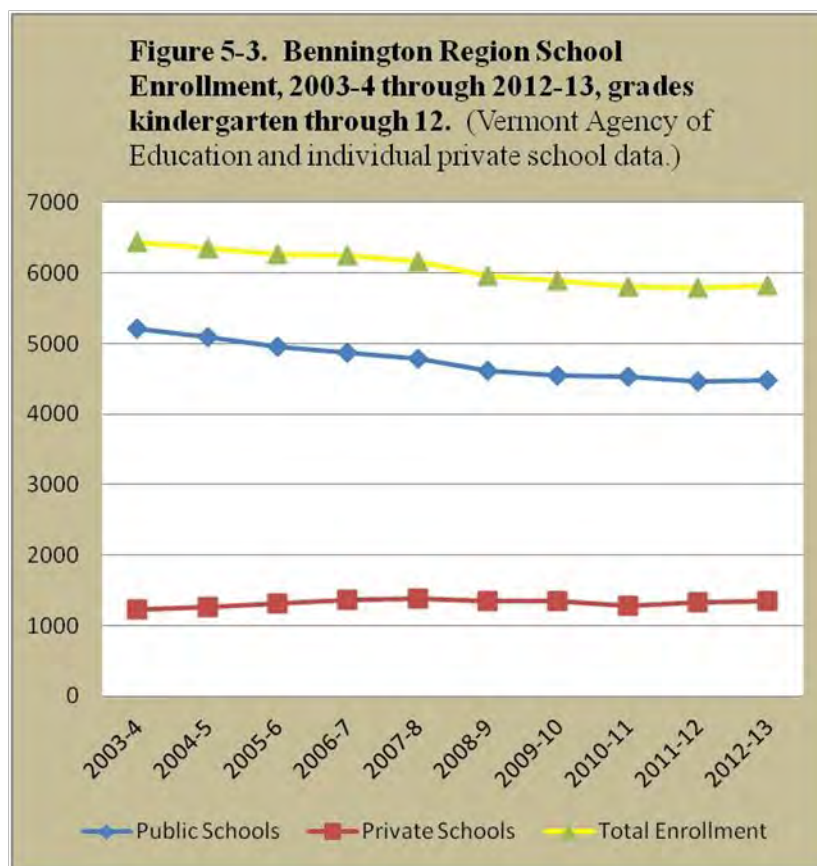
Those smaller schools tend to have the highest per-student costs. According to Vermont Agency of Education

data, Stamford and Sunderland saw the highest per-student costs (2009-10 school year), both above the state average, while Bennington, Pownal, Shaftsbury, and MAU (middle and high schools) experienced the lowest per-student costs. A related challenge for small schools and districts is the potential for extreme cost volatility from year to year based on enrollment fluctuations. In Woodford, for example, per-student costs jumped from \$12,265 to \$19,767 in one year as enrollment fell from 34 to 27.

School districts will need to continue to investigate cost-saving options if recent demographic trends continue. Relaxing policies related to maximum class size, sharing programs and resources between schools, administrative cost savings through establishment of regional education districts, and the potential for school consolidations all will be issues that will continue to be discussed to deal with cost concerns. Because local property taxes are a combination of school and municipal taxes, it is important for all school districts to communicate with officials in local government to ensure that expenditures are planned to avoid extreme year-to-year fluctuations in tax rates. Preparation of a multi-year capital budget that considers all major projected municipal and school expenditures can be a helpful financial planning tool.

The Cost of Higher Education

Acquisition of some type of post-secondary degree or specialized training is becoming increasingly important – for both residents seeking a good career and for businesses faced with a need for a workforce with the skills needed to compete in a global marketplace. At the same time, the cost of a college education has increased rapidly, deterring many people from pursuing a degree and saddling



many others with student debts that limit their ability to procure adequate housing or achieve the quality of life that their training should have helped to facilitate.

While there is no municipal or regional solution to this challenging set of circumstances, programs offered through the Vermont State College system (including CCV and VTC) can lead to a degree or certificate at a relatively low cost. Many people find that attending one of these local Vermont state institutions for one or two years and then transferring to a different college or university to complete a degree program significantly reduces the total cost and subsequent student debt.

Post-secondary vocational training and adult education courses, targeted to meet the needs of local employers, are available and should be expanded to help qualify local residents for jobs available in the local labor market. Employers may also be willing to help existing employees with the cost of such programs so that they can progress to more advanced jobs that meet the needs of growing and diversifying businesses. As noted earlier, another key – and affordable – way to obtain college level or other advanced training is through online learning. Availability of broadband throughout the region and communication about classes and degrees offered will help assure that such opportunities are available to residents of the region.

5.4 Childcare and Early Childhood Education

Childcare and early childhood education (pre-school and pre-kindergarten) are key components of the region's early childhood system; a system that also includes access to health care, developmental services, and programs that support a family's economic security and stability. All of these elements must work together to ensure that children have a strong foundation that offers the best potential for success in school and beyond.



The Northshire Day School is an important childcare center in Manchester, serving over one hundred children, from infants through school age.

Availability of high quality and affordable childcare services in convenient locations contributes to family economic security and stability by allowing parents to enter or stay in the workforce. With the supply of labor in the region limited, the ability of those parents to hold jobs at local businesses also is a key factor supporting economic development objectives. Some families may prefer to have their children in home-based

day care centers and others in a larger facility. In either case, the location of the childcare facility must be convenient for the family – generally either near their home or near their workplace.

The Bennington region is served by a significant number and variety of childcare facilities ranging from registered home providers to licensed centers that include Head Start programs in several towns, pre-school programs, and the pre-kindergarten programs that now are offered in most of the elementary schools. Licensed childcare centers are approved by the state to serve a certain number of

children of specified ages based on available approved space, staffing qualifications, and play and learning equipment. A licensed center is considered a public building and must obtain permits for water supply and wastewater disposal from the Department of Environmental Conservation and pass an inspection conducted by the Department of Labor and Industry. Registered childcare homes are limited to serving a relatively small number of children within the provider's residence.

The geographic distribution of those facilities around the region is interesting (Table 5-1). The three parts of the region (Northshire, Southshire, and the central towns of Arlington, Sandgate, and Sunderland) each have a number of licensed childcare centers roughly proportionate to their respective populations. However, while there are 34 registered home providers in the Southshire, and three in Arlington, there are none in the Northshire. It is possible that the large, established licensed centers in the Northshire – including programs offered at the schools – meets the demand for services in that area. It also is possible that because many people commute to work in Manchester that families are using providers closer to their homes.

Figure 5-1. Number of Childcare Facilities in Bennington Region Towns. Source: Vermont Department of Children and Families		
Town	Licensed Centers	Registered Homes
Bennington	18	20
Glastenbury	0	0
Pownal	2	6
Shaftsbury	1	6
Stamford	1	1
Woodford	0	1
Total Southshire	22	34
Dorset	3	0
Landgrove	0	0
Manchester	6	2
Peru	1	0
Rupert	0	0
Total Northshire	10	2
Arlington	2	3
Sandgate	0	0
Sunderland	0	0
Total Central Towns	2	3
Total Entire Region	34	37

Childcare providers face a number of challenges. The price charged to families has to be limited or the service will be unaffordable relative to the extra income that can be earned by a parent who is considering whether to enter the workforce or stay at home to care for a child or children. Another financial issue arose recently as public elementary schools began to offer pre-kindergarten classes at no cost to families, thus attracting children away from childcare providers and reducing their revenues. If childcare centers cannot raise adequate revenue it can make it difficult to hire and retain staff and maintain program and facility quality. Programs like Head Start, operated by or in collaboration with United Counseling Service at centers throughout the region, offer lower cost or free pre-school services

for income-eligible families. State subsidies also are available to help families pay for child care services. Federal community development grants also can help reduce the cost of establishing and/or expanding a childcare center; facilities in Arlington, Manchester, and Pownal all have received such grants.

It is important for childcare providers to have access to a supply of labor that includes people trained and qualified to provide services. The human services curriculum at the Southwest Vermont Career Development Center provides training that can lead to employment in childcare. Students should be made aware of childcare career opportunities during their secondary school years. Business assistance is another need for many childcare providers. The [Vermont Small Business Development Center](#) (local office at the Bennington County Industrial Corporation) can provide valuable support.

Regulatory issues tend not to be major constraints to establishment of childcare facilities in the region. Larger communities permit large new childcare centers in suitable locations and all towns and villages are required to allow small home-based childcare facilities as a permitted use wherever single family homes are allowed. Somewhat larger home-based childcare facilities are permitted by many municipalities as a conditionally permitted use in residential zoning districts.

5.5 Policies and Recommendations

1. A high quality educational system must be provided to meet the needs of residents of all ages and to support regional economic development.
2. School districts and supervisory unions should regularly assess spending levels and evaluate potential policy and operational changes that can improve cost effectiveness. Such studies should include evaluations of various models and levels of cooperation and coordination between schools and districts that can minimize per-student cost while maintaining or improving educational offerings.
3. Continue to monitor enrollment trends at public and private schools to aid in the evaluation of operational or structural changes that may be appropriate.
4. Facilitate cooperative financial planning between school districts and municipal governments to minimize year-to-year fluctuations in property taxes. Capital budgets and programs developed by municipalities and school districts can assist in forecasting major future expenditures.
5. Recognize and support local schools as centers of activity within a community that may consist of one or more towns. Pursue agreements that allow for community use of school facilities for physical activity and recreation.
6. Continue to support workforce development initiatives that emphasize increasing awareness among students of career opportunities within the region and which match education and training with the needs of area employers.
7. Broadband telecommunication access should be available throughout the region to enable access, at school or at home, to a full-range of online learning opportunities.

8. Expand the integration of Bennington's five colleges into the region's communities through student internships, development of student-oriented local businesses, and improved transportation and communication links. Explore the possibility of offering some on-site college classes in the Northshire.
9. Support adult learning and vocational training opportunities, especially those provided through the Southwest Vermont Career Development Center and the Community College of Vermont.
10. Continue to support the establishment and operation of quality childcare and early childhood education facilities. Assess whether all parts of the region are adequately served and if additional capacity is need to help grow the local workforce.
11. Support Farm to School programs and enhance coordination between food producers, public and private schools, and colleges.

VI. ECONOMIC DEVELOPMENT

6.1 Overview

The regional economy provides the framework needed to achieve many of the goals that have been identified by our constituent communities and which are reflected in this plan. A thriving economy generates the number and type of jobs which enable residents to enjoy a satisfying quality of life. Such prosperity also creates incentives and attracts the investment capital needed to support growth and revitalization in downtowns, village centers, and surrounding neighborhoods. Of course, it is those very attributes, things such as vibrant community centers, quality housing, and outstanding educational facilities, that are necessary precursors to a strong regional economy. The challenge thus presented is to simultaneously advance economic development initiatives while supporting community development programs and specific projects that ensure continued growth and prosperity.

Past regional plans have discussed the historic importance of manufacturing, tourism, and agriculture and forestry to the region's economy. While those activities remain important in Bennington County, recent decades have seen a growth in the prominence of many service industries, particularly health services and education (Table 6-1). Of course, the nature of manufacturing,

Table 6-1 - Bennington County Employment and Average Wage by Economic Sector: 2002 and 2012				
Source: Vermont Department of Labor				
Economic Sector	Employment 2002	Employment 2012	% Change	Average Wage 2012
Health and Social Services	3,082	3,043	-1.3	\$44,710
Retail Trade	3,317	2,922	-11.9	\$27,479
Manufacturing	3,001	2,617	-12.8	\$44,457
Leisure, Hospitality, Recreation	2,432	2,157	-11.3	\$20,377
Education	2,128	2,047	-3.8	\$39,172
Professional Services	942	1,330	+41.2	\$45,879
Government *	798	649	-18.7	\$42,796
Construction	648	572	-11.7	\$36,943
Finance, Insurance, Real Estate	631	520	-17.6	\$51,130
Other Services	547	428	-21.8	\$22,402
Information	467	329	-30.0	\$45,279
Transportation/Wholesale Trade/Utilities	583	318	-45.4	\$47,397
Agriculture, Forestry, Mining	97	92	-5.2	\$24,211
Total	18,673	17,024	-8.8	\$37,307
* Governmental employment exclusive of local and state education and health service jobs				

professional services, and other businesses have changed over time, and those trends will be discussed below. The highest average wages are reported in financial services, insurance, and real estate businesses and in the "transportation/wholesale trade/utilities" sector (combined because the

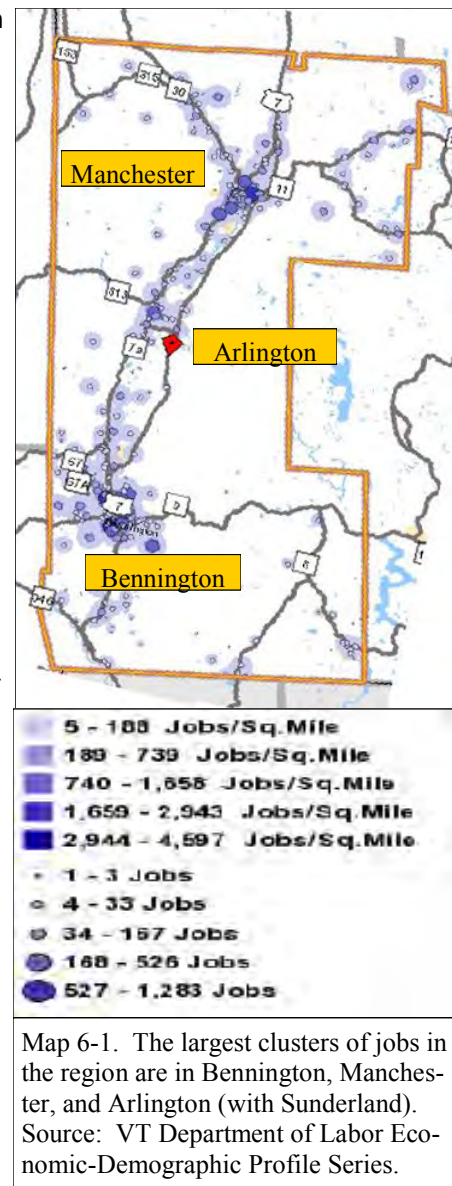
Department of Labor masks data due to low employment in each individual sector. Jobs in the information and professional services, health and social services, and manufacturing sectors also report relatively high average wages.

The most dramatic overall change in the region's employment picture in the past ten years has been the reduction in the number of jobs (a drop of nearly nine percent between 2002 and 2012). While this reduction has been evident across nearly all sectors, the most significant declines have been in the manufacturing, retail trade, information, transportation/wholesale trade/utilities, and government sectors. The large percentage increase in the number of jobs reported in the professional services sector may be partly attributable to a reclassification of certain businesses from some of the other service sectors (thus resulting in some over-reporting of declines in those areas). Only minor employment declines were observed in the health and social service and education sectors, reflecting the continuing demand for those services.

The distribution of jobs and employment data for communities around the region provides another important view of the area's economy. Jobs in the region reflect the general development pattern with most activity focused in the valley areas from Bennington to Manchester, and then into Dorset and East Dorset following VT Route 30 and US Route 7 (Map 6-1). Bennington and Manchester both are major employment centers, where the number of jobs in those communities exceed the resident workforce (Table 6-2). This situation is particularly evident in Manchester, which contains over 4,000 jobs with a resident workforce of just 2,430. The number of jobs reported in Arlington, while not nearly as large as in the job hubs in the Northshire or Southshire is substantial (a number of the jobs reported as being in Arlington actually are located in Sunderland, a portion of which shares postal zip codes with Arlington).

The highest average wages are reported in Arlington and Sunderland (Table 6-2) because many of the jobs located in those communities are in manufacturing, professional services, and utilities—businesses that include Mack Molding, the Orvis Company's corporate offices, and Green Mountain Power's regional office. On the other hand, average wages in a town like Peru are relatively low because many of the jobs in that community are seasonal positions at the Bromley Mountain Ski Area. Manchester and Bennington each have a mix of industries, so the average wages in those job centers are closer to the county average.

Median incomes (based on tax returns from residents) show that many people work outside their town of residence, with the highest per capital income being in Landgrove and the lowest in Bennington. The relatively high unemployment rates in



Arlington and Bennington probably also contribute to the lower median incomes. Interestingly, Stamford reports the region's highest unemployment rate, but also its second highest per capita median income; with few jobs in Stamford, many residents work in larger towns and cities, especially in Berkshire County, Massachusetts.

Table 6-2. 2012 workforce, employment, wage (jobs located in the town), and per capita income (town residents) for towns in the Bennington Region. Source: Vermont Department of Labor.					
Town	Resident Workforce	Jobs Located In the Town	Unemployment Rate (%)	Average Wage	Median Per Capita Income
Arlington	1,310	860	7.0	\$43,508	\$30,350
Bennington	8,280	9,877	6.7	\$37,529	\$26,016
Dorset	1,020	666	4.5	\$38,027	\$36,018
Glastenbury	NA	NA	NA	NA	NA
Landgrove	60	38	5.4	\$35,039	\$56,591
Manchester	2,430	4,095	5.4	\$36,569	\$32,638
Peru	240	207	5.1	\$24,649	\$34,634
Pownal	1,970	177	6.3	\$27,075	\$29,886
Rupert	350	54	3.4	\$39,793	\$31,905
Sandgate	220	NA	3.7	NA	\$37,041
Shaftsbury	2,020	509	3.9	\$40,341	\$37,362
Stamford	470	66	8.2	\$27,136	\$39,927
Sunderland	500	79	3.8	\$42,944	\$39,614
Woodford	230	13	4.3	\$31,944	\$31,541

Unemployment data for the region is particularly interesting when considered in the context of the significant job loss experienced between 2002 and 2012. The annualized unemployment rate for Bennington County in 2012 was 5.9 percent, while the rate for 2002 was 4.7 percent. The slightly higher rate in 2012 certainly doesn't account for the much larger reduction in the number of jobs, and, in fact, the estimated 2013 unemployment rate is equal to or lower than the 2002 rate, but there has been little job growth associated with these lower unemployment numbers. There are numerous factors affecting this apparent inconsistency. The "Great Recession" that began in 2008 led to a significant decline in employment and it is possible that many people who lost their jobs during that time moved out of the area, reducing both the number of jobs and the size of the regional workforce. Some people who were laid off may eventually have stopped actively seeking employment, also simultaneously lowering both workforce and employment numbers. Finally, the region's aging demographics may have an effect, as older workers retire from jobs that may not be filled after their departure.

The data and recent trends indicate that economic conditions in the Bennington Region are

changing and that significant challenges must be addressed. The next sections of this plan will include an assessment of major economic sectors, principal economic development needs, and key regional assets that can be leveraged to direct an evolving future. Individual towns already have taken major steps to identify specific actions to support strong and sustainable businesses. By working together the region's communities can take advantage of opportunities to support local businesses and to attract desirable new enterprises to the area.

6.2 Economic Sectors

Many types of businesses contribute to the region's economy and this diversity will be a major contributor to long-term prosperity. As national and global economic conditions change, diversity in the region's economy will allow for adaptation to meet new challenges and to take advantage of new opportunities. The relative emphasis on the region's traditional and core industries will change over time and innovations within each industry will be necessary as well. Large employers will continue to provide a strong base for the economy, but a wide range of small businesses in each sector will be equally important in ensuring stability over time.

Manufacturing

The Bennington Region has a long history as a manufacturing center. The earliest manufacturers were mills and factories—many developed along streams and rivers to take advantage of water power—that provided lumber, grain, and other materials needed by the first residents and businesses of the area. During the 19th and early 20th centuries many large manufacturing buildings were built in town centers and along waterways. A number of those historic structures still house manufacturing businesses while others have been converted to mixed use centers, such as the Holden Leonard Mill in Bennington and the industrial buildings along Paran Creek in North Bennington. Much of the region's recent manufacturing growth has taken place in new industrial parks and other areas specifically planned to support this type of business.



The region's largest manufacturing businesses are found in Bennington, Shaftsbury, Arlington, and Manchester. In Bennington, the Eveready Battery plant is located in a large facility near the town's

center, while other manufacturers are found in the Maneely Corporate Park, Bowen Road Industrial Park, and the Morse Industrial Park. Mack Molding occupies two sites in Arlington, one a new facility and the other a historic factory building in the center of town. Other manufacturing sites exist along Warm Brook in East Arlington and in Sunderland near the US 7 interchange. Most manufacturing in the Northshire occurs in planned industrial parks near Richville Road, north of Manchester Center near the town office complex, and in East Dorset.

Some of the largest manufacturing businesses in the region produce parts for the automobile industry (NSK), specialized plastic (Mack Molding, K & E Plastics, and Quadra-Tek) and carbon composite components (Kaman Composites and Plasan North America), and other materials that require advanced technological equipment and processes. Other businesses create high quality products from natural resources, such as J.K. Adams (wood products) in Dorset and Bennington Pottery; Wilcox Ice Cream, a Manchester-based maker of premium ice cream for many years, has been looking to re-establish a local manufacturing center in the region. Of course, small manufacturers, many of which are in the supply chain for some of the larger local businesses, are critical parts of the region's manufacturing base.

All of the manufacturers in the region need similar resources to ensure their success and growth, assets that also will be requirements for new manufacturing businesses considering development in the region. Manufacturers require an adequate inventory of available industrially zoned land and/or buildings, well-maintained highways (and certain manufacturers specifically require freight rail service), high-speed telecommunication service, water supply and wastewater disposal facilities, a reliable source of reasonably priced energy (including electricity) for plant operations, and an educated and trained workforce. The Bennington Town Plan includes a summary of manufacturing business retention and recruitment needs that is relevant for other types of businesses throughout the region (sidebar).

Recent plant closings and layoffs in the manufacturing sector in Bennington highlight the need to identify factors that are likely to result in long-term business success and sustainability within the region. Economic development studies undertaken in the region have confirmed general findings that a high priority should be placed on utilization of local assets and resources. Those features include established businesses that can grow and diversify locally, manufacturing that makes use of abundant local raw materials and the skills of local workforce, and industrial processes that supply products for local and regional markets.

Business Recruitment and Retention Needs

- An adequate supply of properly zoned land. Industrially zoned land located outside downtowns and village centers should be maintained for those uses rather than converted to retail or other uses. Reclaimed "brownfield" sites offer prime opportunities for various types of business growth.
- Transportation facilities that provide ready and efficient access to suppliers and markets. In addition to a well-maintained highway network, improved rail lines and the WH Morse (Bennington) State Airport are critical.
- Reliable and reasonably priced energy for business operations and transportation. Local sources of energy, including biomass for space heating and a distributed electricity network benefiting from local renewable resource based generation, will provide lasting economic benefits.
- An educated workforce trained in the new technologies required by today's businesses.
- Housing, childcare, and related services for employees.
- Access to adequate financial resources.
- A high quality of life made possible through support for important community services, and recreational and cultural resources.

Information and Microtechnology

Significant potential exists in the region for development and expansion of businesses that specialize in information and microtechnology applications. These businesses include data processing, internet-based operations and publications, software engineering, website and graphic design, microtechnology manufacturing, and similar businesses. Many of these businesses operate out of relatively small sites in and around downtowns and surrounding mixed use districts. Some of the larger enterprises, such as Global –Z in Bennington, occupy office space in industrial parks. Hemmings Motor News, established sixty years ago as a print publication, now serves a major online Marketplace as does the Vermont Country Store. The nature of the work performed by these businesses in many cases allows people to work from home offices and share data with other employees in remote locations. A major new computer chip manufacturing facility in Malta, NY could lead to additional microtechnology-based business opportunities.



These technology-driven businesses have specific requirements for success. Principal among them are an outstanding telecommunications infrastructure and an educated and skilled workforce. Businesses with substantial physical plants also require an inventory of available building space. And because businesses of this type have a great deal of flexibility in where they locate, quality of life issues are of extreme importance to recruitment and retention. A diversity of quality housing types, outstanding school systems, cultural and recreational activities, vibrant downtowns, and the beauty of the natural environment are key economic drivers for this sector.

Health Care and Social Services

Over the past decade the health care and social services sector has become the region's largest employer (Table 6-1). Health care and social services are essential to ensuring a healthy population and are important contributors to the overall appeal and quality of life within the region. In addition, jobs in this field offer good salaries across a variety of professions. Although the region has quality health care facilities and health care professionals, there remain deficiencies in service. Despite this sector being the largest in the region, a shortage of primary care and mental health professionals persists.

The regional hospital, [Southern Vermont Medical Center](#) (SVMC), is located just southwest of Bennington's downtown. It is surrounded by a cluster of medical and dental office buildings offering a wide



SVMC's Northshire campus in Manchester is an important part of the region's health care system.

range of services for residents of Bennington and surrounding communities. SVMC maintains a campus in Manchester (SVMC – Northshire) that provides primary care services to the Northshire. The Battenkill Valley Health Center recently opened in Arlington with the help of a \$775,000 federal grant, improving access to primary care for residents of Arlington, Sunderland, and Sandgate. It is a federally qualified health center (FQHC), and can thereby receive enhanced reimbursement from Medicare and Medicaid, as well as other benefits, which will help maintain its viability and help to attract clinical professionals to the region. Employing over 270 people, community based mental health and social services are provided by the federally qualified United Counseling Service (UCS) with multiple offices in Bennington, and an office in Manchester serving the Northshire. Many private practice physicians, dentists, chiropractors, and alternative therapy professionals throughout the Region also contribute to this economic sector.

Workforce, education, quality of life, and telecommunication infrastructure issues are critical to health care and social services businesses in the region. Of particular concern is the need to attract additional health care providers to the region, particularly in the primary care and mental health fields. Berkshire Medical Center emergency care and outpatient imaging facility at the former North Adams Hospital and SVMC's proposed facility in Pownal both will help to ensure that sufficient services are available to residents of Stamford, Pownal, and residents of nearby communities in Massachusetts.

The sector also is facing a period of major transition as fundamental changes to reimbursement methodologies are taking place, moving away from a fee for service structure toward an outcome-based system. In addition, there is a major push toward implementing electronic medical records. These changes are being fueled by federal laws such as the Affordable Care Act and by Vermont's Blueprint for Health, as well as by health care providers themselves. The Blueprint for Health, for example, is designed to be a program that "integrates a system of health care for patients, improving the health of the overall population, and improving control over health care costs by promoting health maintenance, prevention, and care coordination and management (18 V.S.A. Chapter 13). Many challenges remain as changes have yet to be implemented. Continued adequate state and federal support for systems implementation will be essential for a successful transition.

Education and Governmental Services

The region's public and private elementary and secondary schools, the regional vocational center, and the five colleges located, or providing space for program instruction, in Bennington provide vital education and training for the current and future employees and business owners of the region, while also being employers and economic engines themselves.

As discussed in Chapter 5, a quality school system is a fundamental requirement

for successful regional economic development. Maintaining and improving the quality of the region's



The new state office building in Bennington houses the offices for several state agencies and court functions.

public and private schools, and ensuring that they are teaching students the skills that will be demanded in local businesses is essential. Providing adequate funding to maintain school quality will be critical as well, and this may require further reforms in governance structure and financing systems.

One of the most significant developing business “clusters” in the region is the group of five colleges—Bennington College, Southern Vermont College, Community College of Vermont, Vermont Technical College, and Northeast Baptist College—currently operating in Bennington. Those institutions provide many jobs for residents, attract dynamic new faculty, administrators, and students to the region, and support many local businesses. The Bennington Region is well-positioned for further growth in the post-secondary education sector, as the concentration of colleges and students will itself prove a driver for local expansion of those, and perhaps other, institutions. A vibrant downtown and a range of cultural and recreational opportunities will ensure that the town and region effectively support further growth in this area. The Town of Manchester has established a working group, as an outgrowth of the Manchester 2020 project, to pursue college-level learning opportunities in the Northshire. These efforts are consistent with local and regional economic development objectives.

Employment in state and local government positions has been falling as the recession and sluggish economy has limited the ability to raise revenues from broad-based taxes. State workers in the region continue to provide essential services, from highway maintenance to health and human service functions, and continued efficient delivery of those services is important to the region’s economic competitiveness. At the local level, towns and villages have struggled to maintain the infrastructure and public services critical to economic development because of an escalating property tax burden. Cooperation among towns in the delivery of services through inter-municipal agreements at a regional or sub-regional level may help improve the cost-effectiveness of some functions. In the Northshire, for example, Manchester and Dorset are exploring options for consolidation of emergency service functions and Landgrove and Peru have joined the state’s first multi-town regional education district. The Green Mountain National Forest, the Vermont Veteran’s Home, and the Veteran’s Administration health care facility are other significant public sector employers.

Other Professional Services

A wide variety of professional service businesses—financial, insurance, real estate, legal, and other administrative and technical fields—are an important component of the region’s economy and offer support services for all economic sectors. Jobs in these fields also provide some of the region’s best salary and wage levels.

Professional offices are generally found in and near downtowns and village centers, locations convenient to their clients, and also positioned to add significant vibrancy to these vital economic districts. It is important to ensure that sufficient building space is available for these uses. Regulations and financial incentives that encourage mixed use development and full use of upper stories of buildings can help existing businesses expand and new businesses become established in these areas. Persons employed in these businesses must be educated, skilled, and very familiar with the technology that allows for information sharing and analysis. Consequently, a well-educated workforce and robust technology infrastructure are critical requirements for this sector.



Manchester's busy commercial district is home to a large number of retail stores serving both local and tourist markets.

Retail Trade

The retail sector is the second largest employer in the region. Retail stores, small and large, are found throughout the region. They provide essential goods for residents, an important market for the tourist trade, and are central to the character and strength of the region's downtowns and villages.

Bennington and Manchester both support a thriving retail trade in their central business districts. Manchester's retail market is particularly large for the size of the

community, with many stores attracting tourists as well as area residents. The Northshire Bookstore and the Orvis Company's flagship retail store are two examples of businesses that provide an anchor for Manchester's retail sector. Bennington's retailers also serve both a local and tourist market, but many of the large department stores and specialty shops offer products that are needed by residents of the town and surrounding communities.

This mix of retail markets supports desirable regional economic diversity. Tourism brings badly needed revenues in to the region while stores that provide a range of goods needed by local residents are not only convenient, but also keep more dollars in local communities.

Most retail development in the region is confined to compact community centers, but Bennington also includes areas along Kocher Drive and Northside Drive that contain large department, grocery, home supply, and chain outlet stores. These businesses provide low-cost goods to consumers and employment for many residents. At the same time, over-development of this type of commercial use would have a negative impact on the viability of other commercial areas and downtowns. Achieving the proper balance and implementing regulations and guidelines that require high quality development will support both the Northshire and Southshire retail hubs.

Good transportation infrastructure is needed to support these important shopping destinations. Maintenance of local and state highways and careful site planning and implementation of access management principles will ensure safe and convenient access, while promotion through the region's four byway programs (discussed below) will drive tourist traffic to the area. Improved access to intercity rail service also will open local retail markets to a vast potential customer base in the urban areas of the Northeast.



Retail businesses in Bennington are found both in the downtown and in the "planned commercial" area along Northside Drive and Kocher Drive.

Tourism and Recreation

Tourism and recreation have long been important to the region's economy. Lodging establishments within the county can accommodate approximately 6,000 people, the region is within a few hours of several million people in the Northeast's major metropolitan areas, and many people own vacation or seasonal homes in the area. These factors combined with the region's abundance of natural resources and historic sites suggest that the potential for growth in this sector is considerable.

Visitors to the area have ready access to many developed recreational and cultural facilities, including golf courses, swimming pools, skating rinks, museums, art galleries, live theater, specialty retail stores, restaurants, and walking and biking tours. In addition, numerous camping areas, trails, lakes, and rivers, as well as cross country and downhill ski areas offer endless opportunities for outdoor recreation and tourism.

Information and facilities for visitors to the area are critical to successful tourism and recreation related economic development. Marketing campaigns through the chambers of commerce, downtown organizations, and other business entities need to utilize print, radio/tv, and internet-based communication to reach a wide and diverse audience. Information on area attractions also should be readily available at local businesses and at the new welcome center that is located at the Route 7/279 interchange in Bennington. Of course, delivery of this information requires funding and a workforce skilled in delivering visitor-oriented customer service.

The region is fortunate to be home to [four state-designated scenic byways](#): the Molly Stark Trail (following Route 9 across the southern part of the region), the Stone Valley Scenic Byway (running north from Manchester along Route 30), the Shires of Vermont Byway (following the Route 7/7A corridor north from Pownal to Manchester), and the southernmost section of the Scenic Route 100 Byway in Stamford. Local businesses have an opportunity to work cooperatively with byway organizations and [the Vermont Department of Tourism and Marketing](#) to ensure that byway-related marketing efforts have a national, and even international, reach.

The Green Mountain National Forest covers a vast area in and adjacent to Bennington County. Its recreational resource base offers tremendous potential for attracting tourists from around the country and the world, and yet it appears to be an underdeveloped and underutilized economic development asset. Better information, directions, and facilities at trailheads and other access points would be helpful. A compelling idea presented at a recent economic development forum in Bennington should be given serious consideration. The suggestion was made that establishment of a Green



Mountain National Park, perhaps carved out of a portion of the national forest near a particularly scenic natural area, would be a sure way to promote interest in the area's natural beauty and recreational opportunities. Although a major undertaking that requires an act of Congress based on a detailed study, this type of economic development initiative has a high probability of success because it centers on the region's indigenous assets while offering an experience to visitors not available at a national park anywhere in the northern Appalachian Mountains. The southern Green Mountains do meet all of the [criteria for establishment of a national park](#): an area of national significance with outstanding natural and/or cultural resources not already represented in the national park system.

Bennington County annually includes a remarkable number and diversity of events that draw tourists to the area. Those include auto shows, art and craft fairs, street festivals, a garlic and herb festival, bicycle and running races, and similar events. These events bring thousands of people to the region, benefiting local businesses while also introducing visitors to the area and the opportunities it provides for return visits or even for business owners who may consider relocation to one of the local communities.

All tourism and recreation based economic activity relies heavily on good transportation infrastructure. Maintaining the region's highways and bridges, and those which lead to the region from major population centers, provides convenient access for visitors. Because so many potential visitors to the region do not have access to a personal automobile (e.g., millions of residents of the New York metropolitan area) and rely on alternative transportation, especially passenger rail, for travel, improved access to key alternative transportation hubs, especially the Albany-Rensselaer Amtrak station would greatly expand the potential tourism economy.

Natural Resources and Energy

The Bennington Region includes a number of businesses based on agriculture, forestry, and manufacturing of value-added products derived from local resources. Agricultural areas are found throughout the region, with concentrations of farms in Pownal, west Shaftsbury, and in the Mettawee Valley in Rupert. Forest resources are found in woodlots throughout the region's lower elevation lands and covering most of the Green and Taconic Mountain ranges.

The working landscape of the region has seen considerable change over the years. Recently, diversification into specialty areas such as dairy goats, cheese, organic vegetables, tree farms, maple products, orchards, and wood product manufacturing has taken place.

The most recent data from the [US Census of Agriculture](#) shows that while land dedicated to agriculture in the county remained about the same between 2002 and 2012 (41,307 acres), the total value of agricultural products sold increased by 35 percent (to \$10,518,000). With the growing interest in local food systems, it is expected that the upward trend in locally produced food crops will continue. The [Bennington Farm to Plate Food System Action Plan](#) (2014) notes that approximately \$100 million dollars is spent on food annually in Bennington County. That plan goes on to observe that expanded production of food within the region for local consumption benefits economic development in two ways:

- ◆ Every dollar not exported from the region through food purchases is available for people to spend and invest on local goods and services, and

- ◆ In addition to the direct employment of new farm owners and workers, many new opportunities would be created in a wide range of secondary and support businesses (e.g., food storage and distribution, food processing, and agricultural support services).

The Bennington Farm to Plate Plan focuses on the Southshire, and identifies 35 projects that can be advanced to expand the local food system; planning efforts underway in the Northshire are expected to lead to similar initiatives. Because most local food system businesses are small, coordination and cooperation is critical to the success of individual enterprises and the overall system. The BCRC can continue to work with local food councils and other organizations to develop relationships, secure grants, and successfully market products.



The BCRC completed a [Forest Stewardship Plan for Bennington County](#) (2012) that points out the importance of the region's hardwood harvest as well as the significant growth in Christmas tree, maple syrup, and wood chip production from the area's forests. That plan also notes the potential for growth in various forest industry sectors, identifies strategies to help improve forest resource management and business profitability, and discusses the tremendous potential for greater use of locally produced woody biomass for residential and institutional space heating.

Production of energy from local renewable sources and conservation of energy can both have profound impacts on the regional economy. Imported fossil-fuel based energy presents inherent economic development problems because it is a finite resource facing inevitable future supply disruptions and its cost will exhibit dramatic fluctuations while rising significantly over the long-term. Development of the region's available renewable energy resources (specifically biomass for space heating and solar, wind, and small hydro for electricity) will help reduce reliance on unstable and expensive imported energy. Of course, greater utilization of those resources also will benefit the regional economy by directing money that would otherwise be exported from the region to employ people locally to develop and operate the energy systems.

The Bennington (2012) and Dorset (2013) Town Energy Plans both estimate the amount of money currently spent on energy in their communities: approximately \$96 million in Bennington and over \$11 million in Dorset. With total region-wide expenditures on all energy uses (i.e., transportation, electricity, space heating) likely exceeding \$200 million per year, it is clear that energy conservation can have a tremendous positive economic impact as well. Even a five percent reduction in energy use—through use of less fuel-intensive transportation systems, weatherization of buildings, and deployment of more efficient electrical appliances and manufacturing processes—would save \$10 million dollars, money that would be redirected to regional economic activity rather than exported to national and foreign markets.

Natural resource and energy related economic development initiatives rely on strong local resources and assets and as such hold promise for sustainable long-term benefit. Many organizations such as the [Vermont Sustainable Jobs Fund](#) and [Efficiency Vermont](#) are available to help local communities and businesses take advantage of economic development opportunities in these areas.

An estimate of one town's energy spending.

The 2012 Bennington Town Energy Plan estimates that over \$96 million is spent annually on energy use in that town alone. The residential sector accounts for 24% of the spending, commercial and manufacturing 39%, government, schools, colleges, and major institutions (such as the hospital) 7%, and transportation 30%. The breakdown by energy source is:

Oil and LP Gas	\$31,048,332
Wood/Biomass	592,395
Electricity	35,183,996
Transportation Fuels	29,383,614
Total	\$96,349,212



The SW Vermont Career Development Center offers programs that provide trained workers for the local construction sector.

Construction and Trades

Construction and related trades and services are very important to the region's economy. There are 175 businesses of various sizes that erect, reconstruct, and improve the buildings and structures that form the built environment of each community (Vermont Department of Labor data). The availability of a skilled local workforce is essential to this market sector. If sufficient resources are not available locally, work will be exported to businesses from other areas. Quality programs at the Career Development Center and other training and

workforce development programs are important to these businesses.

6.3 Critical Regional Economic Assets

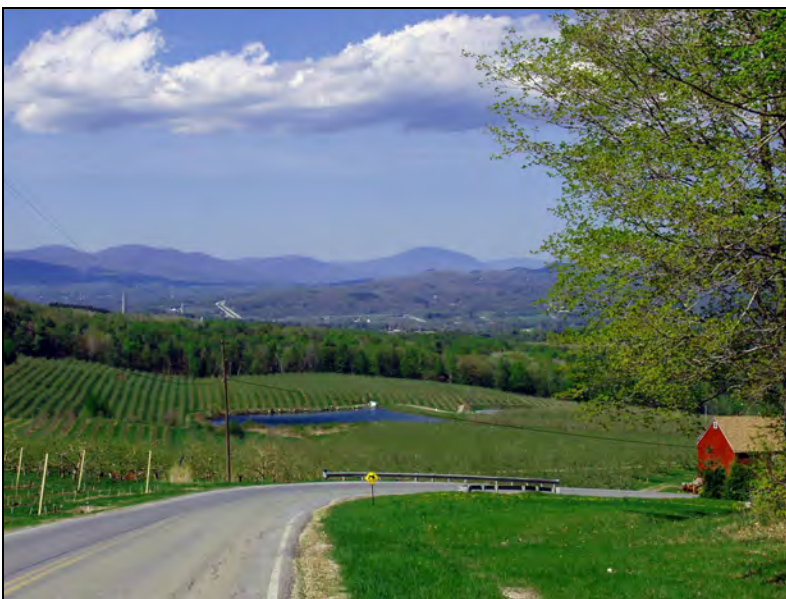
Economic forums and studies in several area communities all have agreed that economic success needs to be grounded in an understanding and effective utilization of the region's most important indigenous assets. Those assets are the features, elements, and characteristics of a community that make it unique and which can be leveraged to create additional wealth or other positive outcomes for the citizenry. While there are significant interrelationships between individual assets, in general they can be categorized as representing the physical, natural, institutional, cultural, social and political, and financial strengths of the community, or in this case, the region.

Physical Assets

One of Bennington County's most apparent physical assets is its location. The region lies in close proximity to major metropolitan areas, only four hours from New York, Boston, and Montreal. It also is less than one hour from the Albany, NY area that has a population of close to one million people and major hubs for interstate highway, rail, and air travel. Despite being so close to major population centers, the region has a distinctive rural character with a beautiful natural landscape dotted with historic towns and villages.

The infrastructure available to support economic development also is quite well-developed in the region. The larger towns have available capacity in their public water and wastewater systems; those systems serve downtowns and other areas planned for growth that have a good inventory of available commercially and industrially zoned land and buildings. Telecommunications infrastructure provides high-speed broadband internet coverage throughout the region and cell coverage is good and improving. This communication system also create an opportunity for small businesses, individual employees, or satellite offices to operate locally with occasional travel to primary business locations in a nearby urban area.

These physical assets support the establishment and growth of businesses that rely on access to major markets or the people who live in those areas. While the tourism and recreation sectors clearly benefit from the region's location, scenic character, and recreational amenities, many other businesses also can benefit from this location.



The scenic beauty of the landscape and productive capacity of forest and agricultural soils are important physical and natural assets.

Natural Assets

The Bennington County region is home to other valuable natural assets, in addition to the scenic qualities of the landscape noted above. With periods of severe drought becoming common in many areas of the country, the region's abundance of reliably clean water is an often overlooked, but vital, natural resource. The region also has productive forest lands that can produce large volumes of wood for a variety of applications. Prime agricultural land, only partially utilized, but largely undeveloped and

available for expansion of farming and related enterprises covers much of the valley lands in the region. The strong local food movement and three thriving farmer's markets further illustrate the potential for business growth in these areas.

The region also has extensive untapped renewable energy resources. The potential for woody biomass to be used to heat many of the region's buildings has been discussed earlier. The region also

has several locations identified as suitable sites for electricity generation from solar, wind, and hydro sources ([Vermont Renewable Energy Atlas](#)). These natural resource-based energy initiatives can provide the basis for new business growth (procuring, processing, and delivering biomass, erecting and operation electricity generation facilities) while also reducing the export of money from the region.

The outdoor recreational assets of the region and their potential have been discussed at some length, but it is worth repeating that the Green Mountain National Forest, Appalachian/Long Trail, scenic roads and bicycle routes, rivers, streams, and lakes of the region offer numerous opportunities for business growth. Attracting more people to use these resources for recreational activities will result in more demand for visitor services, create demand for complementary retail businesses, and enhance the visibility and reputation of the region nationally.

Institutional Assets

The quality of the local educational system is perhaps the most important economic development asset available to any community or region. Quality schools not only prepare the region's next generation of business owners, entrepreneurs, and skilled workers, they also are one of the principal factors determining whether a qualified employee or a dynamic business will choose to remain in, or relocate to, the area.

The Bennington region is home to many outstanding public and private primary and secondary schools, as well as a vocational school that offers a number of excellent programs. Maintaining and improving the quality of those schools and publicizing the quality of their offerings and the successes of their graduates is essential to regional economic development. The presence of five colleges in Bennington, and the major colleges and universities located just minutes away in New York and Massachusetts provide access to training and cooperative programs that can directly benefit local businesses and workers.



The quality of the local workforce itself also is seen as an important institutional asset, as capable workers must be available to fill positions in new and expanding businesses. The region's solid base of manufacturing businesses has created a climate that provides support for development of a skilled workforce.

The Southwestern Vermont Health Care medical system, now affiliated with the nationally recognized Dartmouth-Hitchcock health system, is another institutional asset essential to the area that also provides an economic base supporting many other health care related enterprises.

A less concrete, but no less important institutional asset for the region is the Vermont “brand” as well as the unique regional brand being developed by business and community leaders. Vermont is identified with quality products and a strong work ethic and the regional marketing efforts, including those focusing on the “Shires of Vermont” theme have expanded on that brand identity to the benefit of the region’s economy.

Cultural Assets

Towns in both the Northshire and Southshire are known for their cultural attractions and have a history of catering to visitors who appreciate these resources. The Bennington Region has a vibrant arts community and a growing “creative economy” energized by artists and galleries, live theater, and music venues and events. The Bennington Museum, Battle Monument, Bennington Center for the



The Southern Vermont Arts Center is one of the region’s cultural assets.

Arts, Lincoln’s Hildene, Southern Vermont Art Center, Vermont Arts Exchange, Dorset and Oldcastle Theaters, and the Manchester Music Festival are representative of the museums, historic sites, and cultural attractions that enrich the region. Numerous special events, from historical exhibits and colonial era reenactments to food and craft shows take place annually at locations throughout the region.

Many area residents involved in the arts came together with business owners and local officials in Bennington recently to hold a “cultural summit” designed to identify opportunities for capitalizing on this important asset. Regional marketing efforts will benefit from including a focus on these cultural assets. It would be valuable to develop a plan that identifies specific strategies for coordination and collaboration between the many arts groups and organizations in the region. Funding through an organization such as the National Endowment for the Arts could be helpful in developing this integrated approach to economic development based on regional cultural resources.

Social and Political Assets

The most important social economic development asset available to the region also forms the objective behind most of this plan: an outstanding quality of life for the residents of Bennington County’s towns and villages. A good quality of life attracts new companies and residents to the area, encourages established businesses to stay and grow locally, and provides a reason for talented young people to remain or return to the area after college.

Many people make note of the fact that the tight-knit local communities that are typical in our region also ensure good access for residents and business owners to local, state, and federal officials. This familiarity and engagement allows government to be extremely responsive to local needs and ensures that public economic development initiatives reflect the priorities of the local business communities.

Financial Assets

The local orientation of the region's financial institutions is another key economic asset. Local banks and other financial institutions are vested in the communities and work with business and government leaders to support community development objectives. Locally owned businesses ensure that money circulates within the regional economy and contribute time, expertise, and often money to local causes.

The accessibility of regional, state, and federal economic development officials also helps improve access to financial grants, loans, and incentive programs such as the Vermont Economic Development Authority, the Vermont Employment Growth Initiative, downtown and historic preservation tax credits, and federal programs such as the USDA's rural development grants and loans, new market tax credits, and the EB-5 foreign investment initiative.

Information on all of these programs is available to local officials and businesses through those state and federal agencies and cooperating local organizations such as the BCRC, the Bennington County Industrial Corporation, the Better Bennington Corporation, and the Manchester and the Mountains, Bennington, and Dorset Chambers of Commerce.

6.4 Regional Community and Economic Development Needs

Important economic development studies recently completed in both the Northshire and Southshire have identified specific community and economic development needs that will improve the region's ability to fully exploit its assets and drive economic growth and prosperity. Manchester completed a detailed local assessment and plan through the Vermont Council on Rural Development's "[Community Visit](#)" program. Bennington and Pownal participated in similar studies within the past few years and Bennington completed a [Strategic Economic Plan](#) in 2013. The BCRC also has cooperated with business groups and planning and economic development organizations in Windham County to study economic conditions and improvement priorities in southern Vermont. Several common themes have emerged from these efforts, including: workforce development, housing, quality of life, infrastructure, and investment capital.

Workforce Development

A trained and motivated workforce is essential to the economic development of the region. Developing the local workforce to take maximum advantage of the human resources already in the area ensures that businesses have ready access to labor and that residents have access to good employment opportunities. Consequently, it is important to establish a continuum of workforce development and targeted training opportunities.

At the most basic level, it is important that local schools provide not only a strong education in all core areas, but also consider the skills required by area employers when developing curriculum. The Bennington County Industrial Corporation's workforce and education committee, working with the Vermont Department of Labor, organizes programs that bring information about local jobs and careers into the schools, sets up tours of local businesses, and develops annual career week activities directed

at high school students. All of these efforts help to institutionalize the relationship between the education system and businesses. This connection between local secondary schools and colleges and regional employers can be further enhanced through a comprehensive internship program that is closely coordinated with, and based on the needs of, regional businesses.

Businesses and residents have access to specific job-based training through the Southwest Vermont Career Development Center and the Community College of Vermont. The [Career Readiness Certificate](#) program, offered in conjunction with the Vermont Department of Labor, provides important practical knowledge and skills that help prepare people for engagement in the workforce. Local and regional colleges and universities also provide training for area residents and for students originally from other areas that may want to stay in the region to pursue a career.

Housing

An adequate supply of a range of good quality housing is necessary to attract and retain business owners, entrepreneurs, and a diverse and skilled workforce. The nature of the housing need differs significantly between the Northshire and the Southshire. In the Northshire, the extremely high cost of housing makes it difficult for many employees to live anywhere near the employment center of Manchester or other nearby job sites, especially in Dorset and the mountain towns east of Manchester. In the Southshire, on the other hand, there is a considerable inventory of affordable housing, but much of what is available is of relatively low quality or does not meet the needs of the area's workforce.

[Shires Housing](#), the regional nonprofit housing development organization, develops quality rental housing units throughout the region, with a specific emphasis on providing the type of unit that appeals to working families. The municipal efforts described in the Housing chapter of this plan also are largely directed toward improving and expanding the stock of workforce housing. A particular need in the Bennington area is to improve the quality and range of housing types available in and around the downtown area, where many young workers would prefer to live. A similar need is apparent in Manchester, with an emphasis on provision of housing that is affordable to the town's service sector workers.



An active night life is an important community asset. Pictured is Bennington's "Funk in the Trunk."

Quality of Life

Every community in the Bennington region offers the potential for an outstanding quality of life for residents, but more can be done to provide the type of place that is welcoming and which encourages young single workers and families with young children to stay in the area once here. In addition to the need for suitable housing noted above, the key factors that would provide the quality of life being sought include active vibrant downtowns, bikepaths, restaurants, pubs, farmer's markets, and other social gathering

places, as well as diverse entertainment and activities.

Developing those types of dynamic places is, of course, an economic development initiative in and of itself. And many of the people who would be attracted by those great downtowns are the kind of people who might have an interest in opening a business there. The Better Bennington Corporation, community and economic development offices in Manchester and Bennington, local chambers of commerce, and organized [young professional groups](#) in the Northshire and Southshire have recognized this need and are working to encourage appropriate development and activities.

Infrastructure

The region's communities are generally well-served by public and private infrastructure, but clear needs exist in certain areas. While the area is served by a modern highway system, it lacks good access to the intercity passenger rail network. Extension of rail service to the region would not only provide direct access to the area from large population centers, but also would necessitate track improvements that would benefit freight rail service as well. Another concern on the transportation front is the quality of highway access between Bennington and Troy, New York, especially the section of NY Route 7 just east of Troy where commercial development and traffic volumes can lead to significant congestion and delays. These issues are discussed in greater detail in Chapter X of this Plan.

The region's two main growth centers, Manchester in the Northshire and Bennington in the Southshire, each are well-served by municipal water and wastewater systems. In many of the smaller towns in the region, however, a lack of either public water systems, wastewater systems, or both is a major impediment to all types of growth and development. In Arlington and Shaftsbury, for example, lack of a wastewater system severely limits potential for infill residential development in village centers and makes new commercial or industrial development all but impossible in these areas.

Vermont has invested and worked aggressively to bring broadband services to all parts of the state. High speed telecommunications currently is available throughout most of the region, with complete coverage still being pursued in some rural areas. Improvements in wireless/cell service for all carriers are still needed and all of the major providers currently are working to expand coverage. Bennington and Manchester also have each taken steps to assure the availability of free wifi internet service throughout their downtown areas.

Investment Capital

Economic development relies on significant investments of private funds, often leveraged with some type of public financing. The BCRC, BCIC, and municipalities are able to facilitate contact with state and federal agencies that potentially can provide loans, loan guarantees, tax credits, and other financial incentives to encourage private investment. Some towns also operate their own revolving loan funds, and can create other incentives through tax stabilization agreements, tax increment financing districts, and similar programs.

Another mechanism for incenting private investment is through active regional implementation of the US Environmental Protection Agency's (EPA) Brownfield Program. The BCRC has obtained funds to conduct environmental assessments and develop remediation plans for vacant or

underutilized properties in downtowns, village centers, and other areas planned for economic growth. Low-cost clean up funds also can be made available through the EPA or state environmental programs. The reduced cost for these strategically located buildings can provide a strong incentive for private investment. Projects resulting from this work include a new downtown furniture store, conversion of vacant industrial space to residential units, and development of a hydroelectric generating facility.



A Brownfield assessment grant managed by the BCRC led to redevelopment and reuse of this important property in downtown Bennington.

6.5 Achieving a Sustainable Regional Economy

Economic development always has relied on the availability of energy, and as pointed out in the energy chapter of this plan, the long-term cost and availability of energy is a serious issue that needs to be confronted when planning for the regional economy. As abundant and relatively inexpensive nonrenewable energy sources are depleted, local, regional, and national economies will have to adapt so that they do not rely on continual growth that requires expanded energy inputs. The reality is that within a very few years, energy constraints will require that our economies function with less energy than that which currently is being consumed. This realization has led to the formation of a number of organizations and efforts focusing on sustainable local economies. The premise of all such efforts is that economic systems must be developed that can function with less total energy. Such systems orient toward local production and markets, fueled by locally produced energy, and served by transportation modes that do not rely exclusively on gas and diesel fueled cars and trucks.

The economic sectors and needs identified in this chapter will remain important to the region, but will need to be adapted over time to take advantage of opportunities offered by things such as local renewable energy resources, manufacturing of goods using locally available resources, and industries that support economic sectors that function with lower energy inputs. Key points in the development of a sustainable local economy include:

- Conserving agricultural and forest land and supporting farm and forest product businesses. A strong emphasis on production of food for local markets significantly

- reduces energy use and keeps local money from being exported.
- When a community is faced with a particular need, the first methods considered for meeting that need should be those involving use of local resources.
- Develop properly scaled industries for local products that add value to those resources.
- Produce as much of the community's energy demand as possible using local resources (while working to significantly reduce total energy use through conservation measures).
- Ensure there are opportunities and incentives for money paid into the local economy to circulate within the community and decrease expenditures that lead to flows of money outside the community.
- Make sure the region's communities invest in themselves: maintaining their buildings, land, cultural, and recreational resources, as well as developing public transportation, rail infrastructure, and bicycle and pedestrian systems.
- Provide quality education for the region's children and retain and develop local human resources.
- Develop markets for local goods and manufactured products.

6.6 Policies and Recommendations

1. Support economic development that capitalizes on the region's strengths and provides opportunities for satisfying and economically rewarding careers for residents. Economic development activities should occur in harmony with the region's historic character, attractive physical environment, and traditional development pattern of a densely developed center surrounded by rural countryside.
2. Develop and maintain a diverse and sustainable regional economy that will thrive in changing regional, national, and international economic conditions. Support and strengthen the positive balance that currently exists between various economic sectors in the region.
3. Foster and encourage cooperation on economic development between the Northshire and Southshire. Bring officials and business organizations together to examine local economic development plans and work cooperatively to complete a US Economic Development Administration approved Comprehensive Economic Development Strategy (CEDS) for the entire region.
4. Work cooperatively with planning and economic development agencies in nearby regions, particularly with the Windham County Region in southern Vermont and Berkshire County in western Massachusetts, to explore opportunities for cooperative and mutually beneficial economic development initiatives. Recognize the strategic importance of the region's location close to major urban areas and use that fact to market the area for tourism and new business development.

5. Emphasize local physical and human resources and assets when pursuing economic development objectives. Expansion of existing businesses, new businesses within established clusters, and entrepreneurial start-ups that are consistent with regional development objectives are encouraged.
6. Make effective use of the region's abundant natural resources as a base for economic development activities. Emphasize investment in ventures and activities that support a sustainable local economy, with particular consideration given to local foods, forest products, renewable energy, and energy conservation.



7. Investigate the potential for creating a Green Mountain National Park in the region, and participate actively in any Congressionally authorized feasibility study.
8. Emphasize re-use of existing buildings and vacant commercial and industrial sites, including any brownfield sites that are identified.
9. Direct new growth and development to areas identified as suitable for such development in the Land Use section of this plan and municipal plans and bylaws. Ensure that an adequate supply of industrial land remains for future growth and that commercial development is focused in areas currently planned for such uses.
10. Recognize the value of the region's four scenic byways and structure coordinated marketing programs to take advantage of those assets.
11. Invest in programs that support workforce development outcomes that meet the needs of area residents and employers. Strengthen communication and coordination between

local schools, the vocational center, colleges, and area businesses.

12. Work to maintain and enhance natural, historic, cultural, and recreational resources that provide an outstanding quality of life to attract new businesses, employees, and tourists to the region.
13. Ensure that an adequate supply of quality affordable housing is available for new and existing residents in locations near major employment centers.
14. Maintain and improve the infrastructure that is necessary to support desirable economic development. Such facilities include municipal water and sewer, roadways, access to intercity passenger and freight rail transportation, the WH Morse State Airport, electricity supply and transmission, and state-of-the-art telecommunication facilities.
15. Recognize the growing economic importance and potential of specialized service and manufacturing market sectors, health care and education, and of tourism and recreation. Actively support efforts to develop these and other emerging businesses within the region.
16. Develop a plan that highlights the region's arts and cultural attractions, and identifies how those resources can enhance the area's economy.

Landscape of the Shires

VII. LAND USE

7.1 Overview

The landscape of the Bennington region is predominantly rural in character with relatively compact centers of development lying among rural and agricultural valleys. The forested slopes of the Green and Taconic Mountain Ranges provide a natural backdrop to these valleys, creating a diverse landscape of open and forested lands (Map 7-1). One of the central objectives of both Vermont state land use policy and this regional plan is to reinforce this development pattern, directing most new growth into discretely bounded urban centers and villages while preserving the open rural lands between those centers. The regional land use plan was developed in concert with local land use plans and regulations. It is intended to provide a clear framework for regional growth while ensuring that municipal land use plans are consistent with its overall policy and compatible with one another.

Maintaining a clear demarcation between centers of compact development and the surrounding rural landscape is a particularly important, and challenging, component of this land use strategy. If development sprawls outward from the Bennington and Manchester “urban centers” and the mixed-use villages that form the heart of many of the region’s towns, the intervening open lands

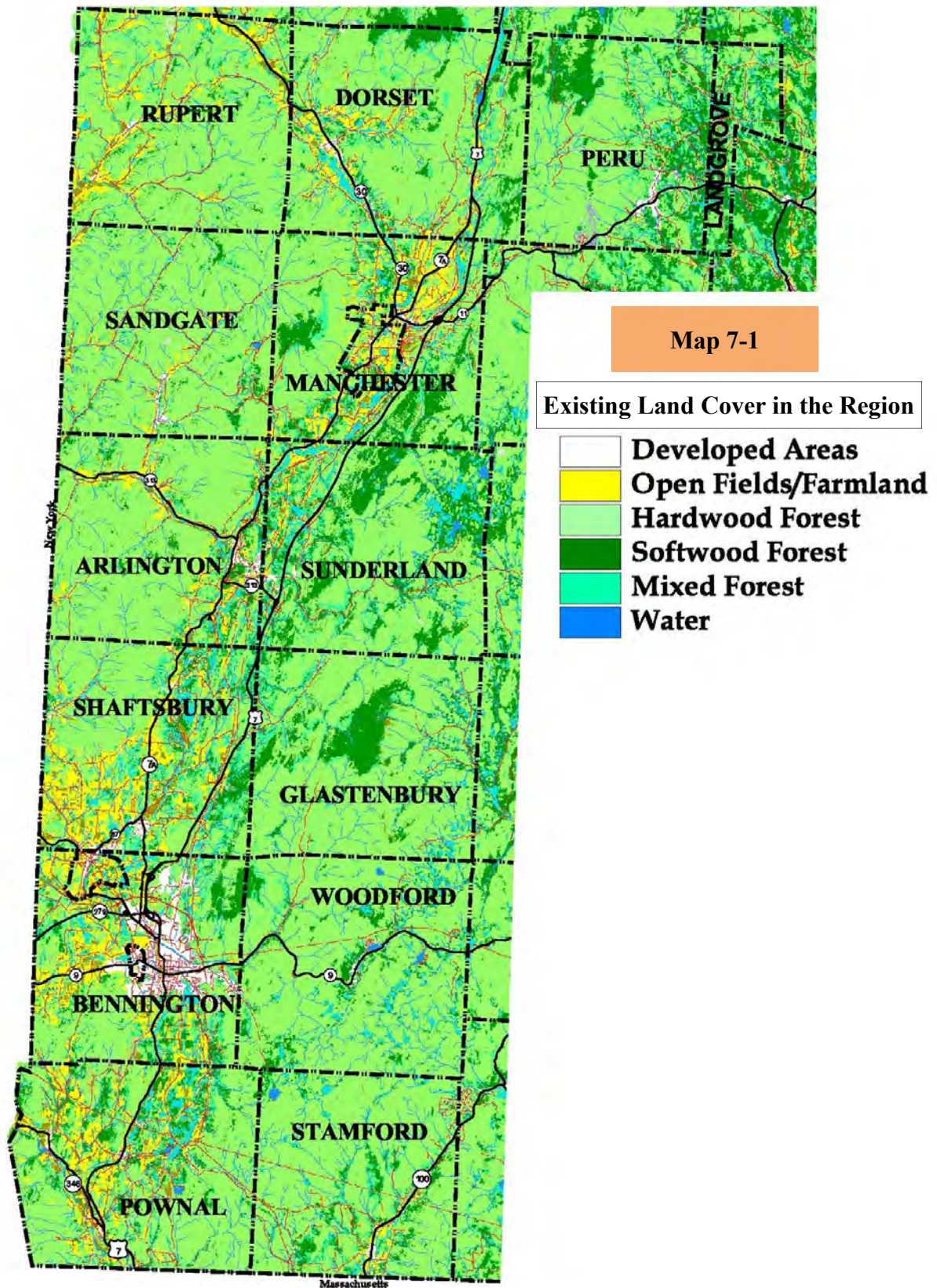
will be compromised and the area will have lost much of its unique character. If sprawl were to become pervasive, it would draw vitality from downtowns, urban neighborhoods, and villages, making it more difficult for those critical community centers to thrive and, in turn, attract additional desirable development. A dispersed development pattern also reduces the ability of towns to provide efficient and economical services and leads to unnecessary and excessive energy use. All of the land use policies and



This rural landscape is located just south of Bennington’s growth center. A clear separation between compact centers of development and rural open lands is a central goal of the regional land use plan.

strategies discussed in this chapter, therefore, should be considered in light of the central goal of encouraging new mixed-use development in compact village and town centers and protecting the natural and scenic quality of the rural landscape.

The regional land use plan is organized around four main land use districts: Urban Centers, Villages, Rural Areas, and Upland Forests. Characteristics, opportunities, and limitations specific to each district, and policies to guide various types of development activity are presented in the following sections of this chapter. This plan also includes guidelines related to special land use planning areas, including historic districts and sites, shopping centers, and other areas. Tools and techniques for land



use regulation, including open space design, form-based codes, performance standards, and other ideas are presented throughout the chapter.

7.2 Urban Centers

The region's two urban centers include the downtown areas in Bennington and Manchester, as well as the surrounding relatively densely developed mixed use areas and residential neighborhoods. These Southshire and Northshire urban centers share many common characteristics. Both areas are served by public water supply and wastewater disposal systems, allowing for greater concentrations of residential and commercial/industrial development than is possible in most other parts of the region. Businesses in both centers provide employment and a broad range of goods and services to people in multiple surrounding towns. As regional population centers and shire towns, both Bennington and Manchester are home to relatively large local governments and important cultural and institutional sites and activities.

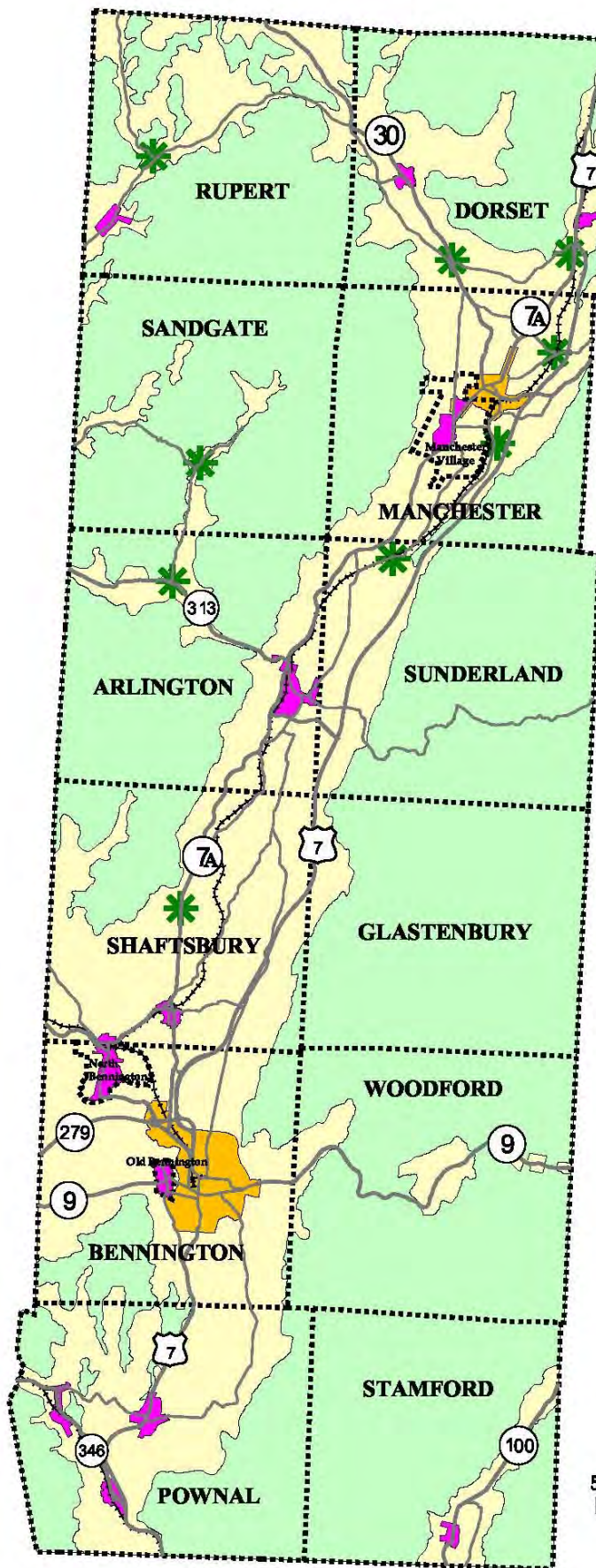


Bennington's busy downtown is at the heart of the Southshire's regional urban center.

The Bennington urban center surrounds its [designated downtown](#) and covers essentially the same area as its state designated growth center. Manchester's urban center is located around its designated village center. These [state designations](#) provide regulatory, financial, and other incentives to encourage compatible development within their boundaries. The regional urban center boundaries (Map 7-2) were established by delineating the areas surrounding the downtown and village centers that are fully served by municipal water and sewer infrastructure, a road-

way network that includes pedestrian facilities which promote walking, and a mix of residential, commercial, industrial, and institutional uses, as well as public open spaces. Both urban centers also include regulated historic and design review districts.

While sharing many physical characteristics and functions, the two urban centers also differ in many ways. Bennington has a much larger year-round population than Manchester, which has many more seasonal residents than does Bennington. Both communities have diverse local economies, but Manchester's historic association with tourism has resulted in a larger number of stores, lodging facilities, and restaurants that cater to people who travel to the area from outside the region. Bennington, on the other hand, includes a higher proportion of businesses that principally serve the population of southwestern Vermont and nearby communities in New York and Massachusetts. This distinction is most apparent along the highway corridors outside the downtowns, where commercial development in Manchester consists mostly of restaurants and motels and some professional offices and industrial businesses. In Bennington (especially along Northside Drive), those highways include

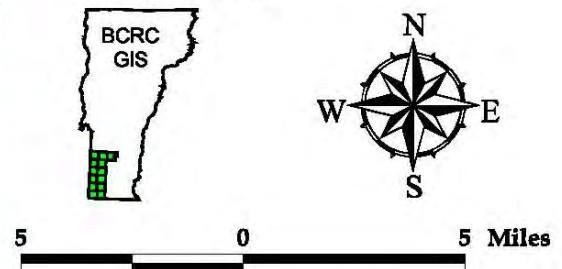


Bennington Regional Plan Map 7-2 Land Use Districts

- State and U.S. Highway
- Class 1 and 2 Town Highway
- Hamlet
- Village
- Urban Center
- Rural Area
- Upland Forest

The region is divided into four principal land use districts: **upland forests** which cover most of the mountainous backcountry, the **rural** valleys, and more densely developed **village** and **urban** centers. Hamlets are small historic settlements that are considered part of the rural land use planning district.

This map should be used for general reference and planning purposes only.



Map produced October 21, 2014 by
Bennington County Regional Commission
111 South Street, Suite 203
Bennington, Vermont 05201

shopping plazas with department and grocery stores, furniture stores, automobile parts and service businesses, restaurants, and other uses that provide convenient goods and services for residents. These distinctions may become less pronounced as the Northshire and Southshire work together to jointly market the region's economy and expand tourism, while Manchester focuses its economic development efforts on strengthening local businesses and markets.

A number of tools are available to Manchester and Bennington to help encourage compact mixed use development in their urban centers; among them: regulatory incentives, public investments, infrastructure improvements, downtown organizations (such as the [Better Bennington Corporation](#)), support for historic preservation, and governmental assistance for private initiatives that further local development priorities. These tools should be used to ensure that the urban centers contain a variety of commercial, professional, residential, industrial, and public uses that contribute to a diverse and stable economic base for the towns and surrounding communities. A mix of uses that supports a human-scale and pedestrian environment is appropriate for these areas and can be encouraged with flexible zoning that also permits compact development patterns with residential densities ranging from three to twenty units or more per acre, based on neighborhood character, local regulations, and infrastructure capacity.

Each municipality should be innovative in its efforts to ensure the full use and appreciation of these urban centers. Any such efforts should consider the historic character and unique physical design of the downtowns and surrounding areas. Design review regulations can help ensure the continued appeal and vitality of these key community assets. Another way to protect historic integrity while promoting new growth is through the adaptive reuse of buildings, often in developments that combine a range of commercial uses with upper floor residences. A significant residential population in the urban centers is critical to their vibrancy and long-term success, so a range of quality housing options in new, historic, and mixed use buildings should be an important part of local land use planning. The natural resources that fostered the growth of these urban centers also are important to their future. Therefore, waterways and other natural features should be protected and integrated with the urban design to increase the attractiveness of the areas and to provide opportunities for outdoor activities.



This new roundabout is located in the center of Manchester's busy downtown.

Shopping Centers

Shopping centers (see sidebar description on the next page) represent a form of commercial development that has become quite prevalent in and around urban centers. Different types and sizes of shopping centers are appropriate in different local planning areas. In urban centers, any of the shopping center types—convenience shopping centers, community shopping centers, and regional shopping centers—are acceptable provided they are designed in accordance with the guidelines for commercial development included in this plan and the requirements of local land use plans and regula-

tions. The specific location of a new shopping center within an urban center is particularly important since significant increases in traffic flow can be expected, potentially spawning additional commercial development in the area and changing the character of adjacent neighborhoods. A new large shopping center, or cluster of shopping centers, developed distant from established business centers can damage the vibrancy of existing commercial businesses. Consequently, shopping center development should be used to reinvigorate existing commercial areas rather than to create new ones.

Shopping centers initially were developed to be primarily accessible by auto, with the resulting development patterns emphasizing parking lots and vehicles over community character and people. To produce a more desirable physical environment, new and redeveloped shopping centers should include design elements such as those contained in the Town of Bennington's [design guidelines](#) for projects located within the town's "planned commercial district." Those standards include placement of buildings closer to the road with parking areas to the side and rear of the lot, attractive building design, landscaping, application of access management principles, and provisions of pedestrian facilities accessing the center and within the center.

Community and regional shopping centers often contain large "big box" retail spaces, with single tenants that may occupy 50,000 to 200,000 square feet, or more, of floor space. Although these large retailers provide jobs and offer consumers a variety of often low-priced goods, concerns have been raised about the relatively low-wage/low-benefit nature of most jobs as well as the impacts to smaller and locally owned businesses in the community. The potential impacts of such developments should be considered carefully, therefore, and should be permitted only if they include exemplary building and site design and are determined to have a net beneficial impact based on an independent economic and community impact study that may be requested by the town and/or BCRC.

7.3 [Villages](#)

The region's villages are historic centers community life that are key to properly focusing growth and development outside of urban centers. Villages provide rural communities with a unique

Shopping Center Definitions

A shopping center may include one or multiple stores, in single or multiple ownership, functioning together as one integrated complex. For the purposes of the Regional Plan, the following definitions apply:

Convenience Shopping Center: A shopping center with a store or stores that sell daily living needs and convenience goods such as food, medicine, clothing, and hardware, and may also include service businesses (e.g., laundry, hair salon, bank, auto or bicycle shops). These centers range in size from 10,000 to 30,000 square feet of gross leasable floor area.

Community Shopping Center: A shopping center with a store or stores that sell a broad range of goods (such as food, clothing, furniture, appliances, sporting goods) and which also may include personal and professional service establishments. Large grocery stores, department stores, and movie theaters are often found in these centers. Gross leasable floor area in a community shopping center may range from 30,001 to 300,000 square feet.

Regional Shopping Center: A shopping center (or "shopping mall") including stores that sell a wide variety of merchandise and services—similar to but larger and more extensive than a community shopping center—usually built around one or more large anchor department stores. These centers exceed 300,000 square feet in gross leasable floor area.

sense of place and contribute to the historic and scenic quality of the entire region. While differing in size and extent, villages generally include compact centers with residential densities higher than the surrounding countryside, some commercial development, and important community facilities (e.g., town hall, church, school, post office). A small network of public roads is generally present and some, but not all, villages are served by a public water supply system (and less commonly, a by public sewer system).

The regional land use plan identifies village districts in towns throughout the region (Map 7-2). A town may or may not have a village area within it, and some towns have more than one. Factors in determining the presence and boundaries of a village include: a state-designated village center, local road network and availability of public utility infrastructure, relatively dense development and smaller lot sizes, a mix of land uses, and a distinct se

Communities are faced with several challenges when planning for and promoting compact

mixed use development in villages. Frequently, the most difficult barrier to overcome is the lack of a public wastewater disposal system, and in some cases, limited availability of a public water supply system. The BCRC and its member municipalities should assess existing conditions, future service areas, alternative designs, and funding source for new or expanded water and sewer systems to support desired growth in village areas. Furthermore, identification of corridors for new roads or road segments in and around planned village areas as part of a local planning process, and support for construction of those roads and utility infrastructure, can help drive growth in a way that supports compact center development.

Towns may expand the geographic extent of existing village areas, and may even establish new village centers, provided careful local planning is completed prior to effecting any changes to the municipal plan or land use regulations. In general, priority should be given to expanding existing and historic village centers or rural hamlets rather than establishing entirely new villages in rural areas. Planning for new or expanded villages should consider factors such as proximity to existing neighborhoods, the adequacy of public roads, soil conditions, and the availability of public water and sewer infrastructure. Local land use regulations for existing and planned village areas should be structured to encourage mixed use development while protecting the character of the community through carefully constructed provisions for site plan review, performance standards, and when appropriate, historic preservation and design control standards.



The former Green Mountain Race Track presents unique planning challenges and opportunities.

Pownal Race Track Property

Redevelopment of the former Green Mountain Race Track, located on a large tract of land adjacent to Pownal Village, is an important regional objective and should be considered in the context of this land use plan. Much of the property has seen relatively little use since race track operations ceased in the 1980s. The large grandstand building is still standing, although many smaller structures have

been removed. Several redevelopment plans have been advanced in recent years, the most recent involving uses associated with renewable energy. A 2.2 MW solar electricity generating facility already has been constructed on the southern portion of the property. Other ideas for redevelopment have included an entertainment venue and various residential, commercial, and light industrial uses.

If the property is not entirely turned over to an “energy park” or a single planned commercial/industrial park, alternative scenarios should consider the property as an extension of Pownal Village and development should be pursued in that context. The property is level, has access to rail and to public water and sewer systems, borders the Hoosic River, and is surrounded by scenic mountain views. It has some limitations for development, mostly related to the presence of the river’s floodplain, but a moderate level of development can be accommodated and would benefit the community. The BCRC and other organizations such as the Bennington County Industrial Corporation should work with the town to pursue redevelopment efforts that are consistent with the land use and economic development objectives of the town and region.

7.4 Rural Areas

Most new development should be directed to established growth centers, but some development has occurred, and will continue to occur, in rural areas outside of villages and urban centers. Such growth must be planned to avoid impacts on the region's rural character and environmental quality, and must not result in excessive costs to municipalities. Historically, rural homesteads were established in conjunction with farms, sawmills, or other businesses associated with the working landscape. In addition, small settlements sprang up at many rural crossroads and other locally convenient sites. These “hamlets” consisted of a small cluster of homes and perhaps a school, church, store, or some other public building. Many rural hamlets still are evident today. These areas are important as focal points for local communities and contribute to the diversity of the rural landscape. For the most part, hamlets have no public water supply or sewage disposal systems, and most of the buildings are located along one or two roads. Examples of hamlets in the Bennington region include: Rupert, South Dorset, Landgrove, Sandgate, Richville and Barnumville (in Manchester), Sunderland (Borough), West Arlington, and Center Shaftsbury.

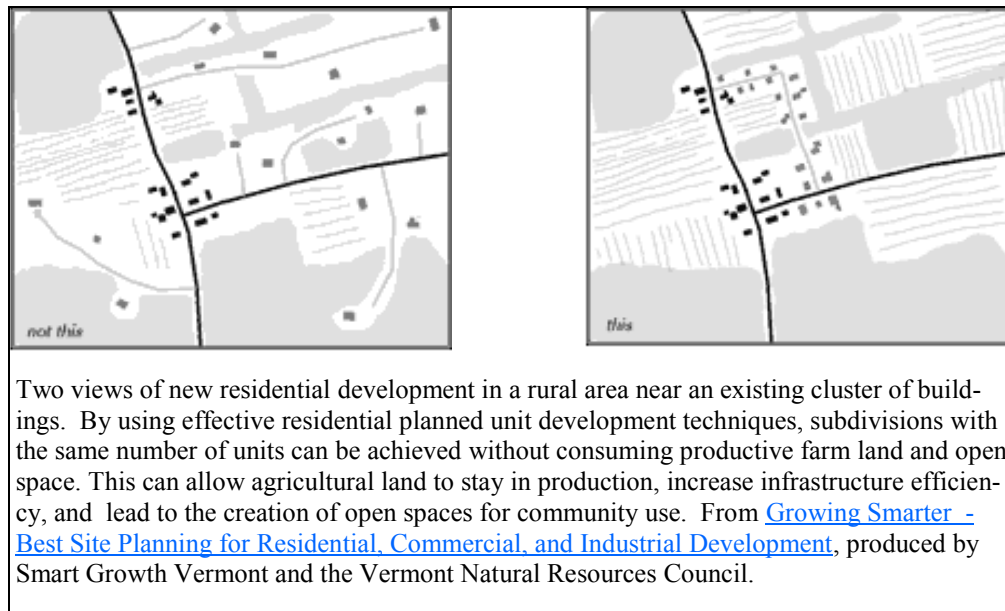


Preservation of the working landscape is a key objective for the rural land use planning area.

In recent decades, residential subdivisions have created new concentrations of settlement in rural areas. These developments are generally entirely residential, with self-contained road networks and on-site wells and septic systems (some subdivisions, particularly those with multi-family or clustered units, may have community water supplies and wastewater disposal systems). Subdivisions in rural areas range in size from a few to several dozen lots, and may consist of single-family homes on parcels of one to ten or more acres, clustered single-family homes on smaller lots, or multi-family

condominiums. A few examples of the many rural subdivisions in the region include: Dorset Orchard (Dorset), Bromley Brook Woods (Manchester), Wilcox Road (Arlington), the Bacon Hollow/Flynn Hollow area developments (Sunderland), and Hidden Valley (Shaftsbury). Subdivisions must be carefully planned to provide a desirable living environment for residents and to ensure that the rural character and natural resources of the area are protected. In areas containing important natural resources, including productive agricultural soils, proposals for residential developments must retain the integrity of those resources.

Significant amounts of scattered development in remote areas with poor access to town centers can be avoided by promoting development in and around urban and village centers and by using regulatory and non-regulatory techniques to maintain rural open spaces. In addition, municipal plans and bylaws can be structured to require that new developments in rural areas reflect historical settlement patterns. New subdivisions can be planned to incorporate the positive characteristics of earlier rural settlements, such as a community identity, public open spaces, and preservation of important resources (such as agricultural soils). Many of these objectives can be realized by clustering lots to create a hamlet-type character around the homes, while setting a significant percentage of the project area aside as open space reserved for agriculture, forestry, or public recreation. Such developments also are economically efficient because roads and other infrastructure need not be as extensive or costly to construct and maintain (see diagram below).



Agriculture, forestry, recreation, and other land uses that rely on the region's natural resources are appropriate uses in rural areas. Certain small-scale industries, especially those related to the region's agricultural and forest resources (e.g., dairy products, saw mills), may be compatible with, and most appropriate in, outlying rural areas. Properly planned residential development may be developed at overall densities of up to two acres per dwelling unit in valley areas where there are few physical or economic impediments to growth. Residential densities of three to twenty-five acres per dwelling unit are appropriate in rural areas that are more remote, at high elevations, have other physical limitations,

or which lie in agricultural zones (where clustered development to preserve open land also may be required). Rural developments also must comply with local and state regulations pertaining to water supply and wastewater disposal to ensure protection of public health and the environment. In any event, rural development must not be widely scattered throughout the countryside, but should occur as relatively compact and cohesive units that serve to reinforce, rather than to replace, the region's rural character.

A limited amount of commercial development, properly planned and sited, also can be accommodated in rural areas. The "country store" is, after all, a characteristic feature of rural Vermont. Although shopping centers (as defined in this chapter) clearly are not appropriate outside of villages or urban centers, small general stores, service stations, and similar uses that provide goods and services for nearby residents may be located in rural areas. These businesses should be sited only in hamlets or as part of rural planned unit developments. Towns should limit the number and size of such establishments to prevent a proliferation of scattered commercial development that does not serve the needs of the community.

Occupations that are customarily practiced in residential areas, and which do not affect the character of those areas, are another form of small-scale commercial use common in rural areas. Small professional offices, antique shops, and craft studios are examples of such "customary home occupations." These home-based businesses are protected by state law, and most municipal zoning bylaws clearly define the parameters within which they may operate.

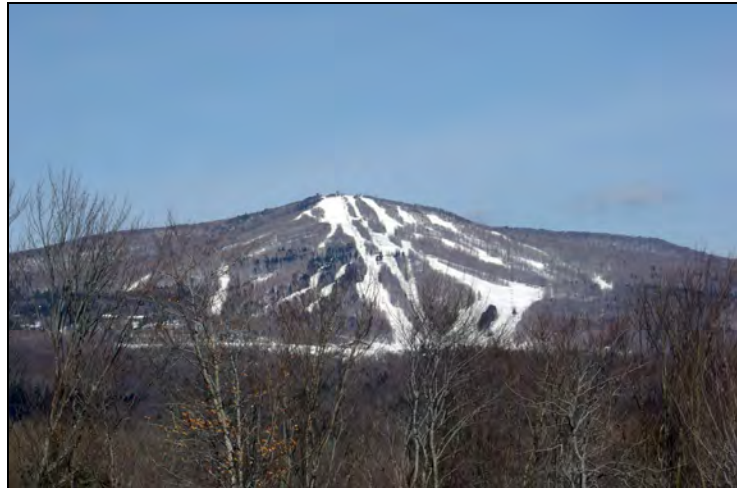
Roadside Commercial Development

In the past, more extensive commercial development was planned for and sited in certain rural areas that lie alongside principal state highways. These areas are found in current or former "roadside commercial" zoning districts that were established specifically in response to a perceived need to cater to an automobile oriented lifestyle and to tourists traveling by car. The area along Route 11/30 east of Manchester Depot is an example of one such roadside commercial district in the region. Towns should not pursue new roadside commercial designations because additional development in these areas would negatively impact the economic vitality of commercial areas in nearby villages or urban centers. Commercial uses that generate significant traffic volumes should be avoided along sections of highway that have low [sufficiency ratings](#) because of poor visibility, steep grades, poor alignment, or other factors. Moreover, local zoning regulations should include standards that will ensure that existing roadside commercial areas do not deteriorate into unsafe or unsightly "strip" developments. These standards should include provisions for adequate and efficient vehicular parking, ingress, and egress; location of parking lots (preferably to the rear or side of buildings); minimum lot size and road frontage; building siting and design; restrictions on signs, lighting, and other site structures; and landscaping.

Ski Areas, Golf Courses, and Other Outdoor Recreation Centers

Ski area and golf course development and other outdoor recreation centers are important forms of development in the region's rural areas. With its beautiful mountain slopes, attractive

villages, and proximity to metropolitan areas, southern Vermont is an important recreation destination. Several major downhill ski areas are located in the area, including Bromley Mountain in Peru. These major alpine centers include significant levels of recreational and commercial development as well as related residential uses. The region also is home to three cross country skiing centers (Prospect Mountain in Woodford, Hildene in Manchester, and Wild Wings in Peru); facilities with extensive trail systems and base lodges, but relatively little other commercial or residential development.



The Bromley Mountain Ski Area in Peru is an important economic asset affecting the region's rural land use district.

The Manchester Country Club is located in a rural area of Manchester, while the Equinox Golf Course and Ekwanok Golf Club cover extensive open land in Manchester Village. The Dorset Field Club lies just north of Dorset Village, and in the southern part of the region, the Mount Anthony Country Club is located near the center of Bennington between the Bennington Battle Monument and the Walloomsac River. Other important outdoor recreation centers that include some level of land development in rural areas include the Merck Forest and Farmland Center in Rupert, the Equinox Preserve and Hildene in Manchester, and the region's three state parks, in Dorset, Shaftsbury, and Woodford.

All of these outdoor recreation based developments are appropriate and economically important land uses in rural and other areas characterized by open space and low-density development. The associated commercial and residential uses complement the principal recreational uses and also are appropriate in these areas. These ancillary uses, however, must remain in scale with and in close physical proximity to the primary use. Secondary development associated with these areas should never lead to sprawl or growth patterns that adversely affect the vibrancy of villages or downtowns, or which could result in high costs to local governments.

A large ski area like Bromley Mountain is a destination resort, containing a large and diverse array of land uses. The resort has developed a number of attractions and facilities to promote year-round use, economic activity, and employment. These activities are economically beneficial to the region, and should be carefully planned to complement the natural and built environment and the area's scenic landscape. The Town of Peru has developed specific ski area planning guidelines and regulations in its municipal plan and zoning bylaw to ensure that development is consistent with town goals. Future growth at Bromley Mountain, compliant with local plans and bylaws, is consistent with the regional land use plan. The focus of alpine ski area development in the region should remain on the expansion of existing facilities (Bromley and nearby areas such as Stratton and Mount Snow) rather than development of new ones. Golf courses, cross country ski centers, and other outdoor recreational areas represent an economically viable means of maintaining rural open spaces with little secondary development; both expansion and development of new facilities are consistent with the regional land use plan.

7.5 Historic Districts and Properties

Several sections of this plan emphasize the importance of preserving the region's historic, archeological, and cultural resources. The town centers, villages, and hamlets in the Bennington region contain numerous historic structures that reflect the rich history and architectural heritage of those communities. Several historic village centers – Dorset, Manchester Village, Old Bennington, Bennington, North Bennington, and Arlington – have achieved special recognition by being placed on the National Register of Historic Places. In addition, many historically significant structures are found throughout the countryside.

Preservation of the region's historic resources has many benefits. The area's historic rural character, in large part attributable to those early sites and structures, is a key ingredient driving the success of tourism-related businesses. The unique historic character of each community also provides residents with an important sense of their heritage and a link with the past, thus promoting a sense of community identity and pride.

An important first step in any effort to preserve historic resources is to identify them. Fortunately, the [Vermont Division for Historic Preservation](#), with support from local residents and historical societies, has completed comprehensive inventories of historic and archaeological sites and districts in the region. These inventories document historic sites and architecturally significant



The Dorset Village historic district is one of several state and nationally recognized historic districts in the region.

structures in several identified historic districts and cover individual sites and buildings throughout the region. Communities may wish to expand upon or refine these inventories so that they better serve local planning purposes.

Regulatory tools can help towns preserve historic resources. The Vermont Municipal and Regional Planning and Development Act enables towns to protect their historic resources by designating historic districts and landmarks under their municipal zoning regulations. When an historic district regulation is in place, approval of the municipality is required prior to the erection of any new structure within the district and before any modifications are made to the exterior appearance of a structure within the district. The municipality also is able to review plans involving the demolition or movement of an historic structure. Design control districts, which may be created to give towns some control over the appearance of discrete areas of historical, architectural, or cultural significance, or other areas in which there is a concentration of community interest, also can help to protect historic resources and community character. A design review board may be created to assist the local planning commission or development review board in evaluating design proposals for new or altered buildings in those districts. Several towns and villages in the region currently have design control ordinances in effect. Another option is to include performance standards covering the siting and design of buildings

in site plan and conditional use zoning regulations. Finally, municipalities may have input on the design of major development projects through the state land use ([Act 250](#)) review process.



The Putnam Hotel building in Bennington is an example of an historic structure that could benefit from public and private efforts to preserve and reuse a downtown landmark.

Nonregulatory approaches to historic preservation are of equal importance. Local historical societies can continue to research, document, educate, and advocate on behalf of local historic resources and preservation. Developers can be encouraged to incorporate historic structures and important architectural details into their project planning. The adaptive reuse of old buildings that no longer serve their original function is often preferable to the destruction and replacement of those buildings. There also are opportunities for historic preservation grants and investment tax credits for people who wish to rehabilitate historic structures. Public acquisition and use of particularly important historic buildings may be appropriate when new or expanded public facilities are needed.

Maintaining the viability of historic structures remains a serious challenge in many of our communities, however, and should be a focus of local, regional, and state planning and historic preservation initiatives.

A combination of strategies is necessary to effectively preserve and utilize historic assets. Those

strategies can be used to further the region's historic preservation objectives, which can be summarized as follows:

- Maintain each community's special historic and cultural heritage and preserve a sense of place and pride for local residents.
- Maintain those historical and aesthetic qualities that are economic assets to the region and promote the economically viable reuse of historic structures.
- Ensure that the renovation and alteration of existing structures, and the construction of new structures, is done in a manner consistent with the character of the historic district in which they are located.
- Achieve overall visual compatibility within each district through careful attention to architectural, landscape, and site structure details.
- Save historic structures whenever possible.

7.6 Upland Forests

The 'Upland Forests' comprise the most extensive planning area in the Bennington region. This area includes the remote and rugged lands of the Green and Taconic Mountains, as well as isolated valleys such as Black Hole Hollow in Arlington; essentially all of the land outside of villages, urban centers, and rural valleys (Map 7-2). In total extent, upland forests cover approximately 266,500 acres, or 72 percent of the region's land area. Most towns in the region have zoned these areas as "Forest" or "Forest and Recreation" districts where most permanent development is either prohibited or allowed only in certain areas on very large lots with strict environmental controls. Such stringent regulations are appropriate because of the conditions characteristic of upland forests. Steep slopes, high



Upland forests are the largest planning area in the region, containing important resources, and forming a scenic backdrop to rural valleys and historic settlements.

elevations, and shallow soils predominate, year-round roads and structures designed for sustained use are largely absent, and population centers and public services are quite distant.

Lands 2500 feet or more above sea level (all of which are included in the upland forest planning area) demand special attention. In addition to the limiting characteristics noted above, lands at such high elevations are very fragile because of a relatively cold and moist climate, shallow, poorly drained, and easily eroded soils, and the presence of delicate ecological communities.

Conservation of these upland forest resource areas protects important ground water recharge areas and sources of clean surface waters while helping to prevent soil erosion and downstream flooding. The region's upland forests also are critical to the scenic character of the region, and provide a natural backdrop to rural valleys, farmland, and historic settlements. These remote areas also contain critical wildlife habitat and important archaeological sites and resources that should be protected from incompatible development.

Although presenting significant limitations to development, upland forests provide many tangible benefits and economic opportunities. These forests have long been used for harvesting wood for the construction industry, manufacturing, pulp, providing energy, and other uses; as a locally abundant resource expansion of these activities supports regional economic development objectives. When working in upland forests, it is particularly important for loggers to adhere to the [Acceptable Management Practices](#) (AMPs) prepared by the Vermont Department of Forests, Parks, and Recreation. Transporting and processing wood products also are appropriate uses in upland forests.

Numerous outdoor recreational activities benefit from the region's extensive upland forest areas. Hiking, camping, hunting (including camps for hunting or other occasional use), fishing, cross-country skiing, snowmobiling, and horseback riding are a few of the many recreational activities that are appropriate in upland forests. Limited commercial natural resource based recreation facilities (e.g., campgrounds, cross-country ski centers, alpine ski trails at Bromley Mountain) may be appropriate in areas with adequate access roads. Such facilities also may include lodging and other commercial and recreational facilities associated with carefully planned national or state parks. Particular care must be observed in areas above 2500 feet in elevation to avoid damage to fragile environments and ecosystems.

Energy Resources and Utility Development in Upland Forests

The region's upland forests contain vast biomass energy resources. As residential, commercial/industrial, and institutional uses all begin to reduce utilization of imported fossil fuels for space heating, greater use of wood obtained from the region's forests can be expected. Significantly higher levels of biomass extraction can be supported by the region's forests, provided logging practices avoid damage to critical resources, surface waters, and that soil nutrient levels are not depleted. Some level of biomass processing, especially for wood chip and cord wood production, also is appropriate in the upland forests.

Some of the high ridgelines and mountains of the upland forests also offer ideal locations for wind energy turbines and related electricity transmission lines as well as telecommunication installations. These facilities may become increasingly important to the region and can be sited in upland forests provided that sites are developed with proper environmental controls. While disturbance of high elevation lands during construction is inevitable, plans to mitigate damage and restore sites to stable conditions following construction must be developed and followed. Such facilities are, of course, visible over a wide area, so planning studies should be undertaken to ascertain locations that are both economically viable and acceptable to residents of the region. The amount of wind energy generation developed in the region should be limited so that it is not out of proportion with the energy demands of the region. The number of telecommunication facilities at high elevations should be limited to the extent possible through co-location of antennae on single towers and, whenever possible, use of multiple transmitters at lower, less prominent locations.



This wind energy development in Searsburg may soon be expanded. The region needs to carefully plan for the siting of future public utility development in upland forest areas.

Green Mountain National Forest

The United States Forest Service is the predominant land holder in the upland forest area, particularly in the Green Mountains, although it has purchased several large parcels in the Taconic Range as well. The [Green Mountain National Forest](#), with a regional office in Manchester, oversees management of these lands. The [Land and Resource Management Plan](#) for the Green Mountain National Forest stresses multiple uses of upland forest areas, including timber production, wildlife habitat, wilderness preservation, and recreational uses, all of which are important activities in the national forest. The Forest Service seeks input from local officials and the BCRC when developing management plans, implementation projects, and when identifying parcels suitable for acquisition.

7.7 Policies and Recommendations

1. New development should be concentrated in and around established growth centers; scattered development that is remote and has little relationship to existing settlement patterns should be avoided. Distinctive edges between urban and village centers and rural countryside should be maintained. Municipal plans and zoning regulations should strive to retain a clear boundary between the urban/village areas and countryside.
2. A variety of residential, commercial, industrial, cultural, and recreational uses, at relatively high densities, is appropriate and encouraged in urban centers. Public investments in infrastructure and public services, and private development activities, should seek to support the development or redevelopment of established urban centers rather than the creation of new concentrations of development. Development from urban centers must not sprawl into surrounding rural areas.
3. A variety of residential, commercial, industrial, and cultural and recreational uses is appropriate in villages, but at a significantly smaller scale and lower density than in urban centers. Public investments and private initiatives should support growth in existing or planned village areas. New development should respect the small scale and historic character of existing village development.
4. In rural areas, emphasis should be placed on the conservation and use of natural resources, and the avoidance of costly scattered development that is disruptive of the region's rural character. Low-density residential, commercial (small general/convenience stores, home occupations) and compatible recreational uses also are appropriate in rural areas. Development should reflect historic settlement patterns and preserve important resources, including productive agricultural soils. Creative land use techniques should be used to retain the integrity of special natural resources.
5. Planned commercial or mixed uses within existing roadside commercial zoning districts must be developed carefully to avoid sprawl, traffic congestion, and safety hazards. Roadside commercial areas should not be expanded and should be retracted when feasible and appropriate.
6. Land use in upland forest areas should emphasize the conservation and wise use of natural

resources. The development of permanent improvements and structures for year-round use is generally not appropriate in upland forest areas, although certain important public service facilities may be permitted with proper controls. Forestry and outdoor recreation also are appropriate activities in these areas, and facilities associated with national or state parks are consistent with these uses. Special care must be exercised in areas where the elevation exceeds 2500 feet because of the fragility of the environment. Acquisition of important upland forest parcels by the United States Forest Service is encouraged.

7. Important historic sites, structures, districts, and archaeological sites should be preserved. New development in historic areas should be architecturally compatible with its surroundings. The adaptive reuse of historic buildings is encouraged, and renovation work should maintain the architectural integrity of historic structures.
8. Municipalities should ensure that their implementing land use regulations remain consistent with their comprehensive plans.
- Towns and Villages also should consider use of innovative tools such as “form-based” land use regulations.
9. The following policies apply to new residential development:
- The density of development should be appropriate to natural conditions limitations, and consistent with historic and planned land use.
 - Residential development should be accomplished in a manner that protects soils and mitigates other environmental disturbances where predominant natural slopes exceed 15 percent; residential development should not be permitted where slopes exceed 20 percent.
 - Residential projects in rural areas should utilize open space planning techniques by including designs that cluster development in relatively small areas to preserve contiguous open land.

Form-Based Land Use Regulations

Form-based zoning has been developed to overcome the problems of sprawl created by use-based codes. Form-based zoning regulates land development with an emphasis on controlling urban and rural form with less focus on controlling land uses. Features regulated under form based codes, such as “[SmartCode](#)” include lot dimensions, size of blocks, building setbacks, height, and design, placement of buildings on lots, location of parking, pedestrian facilities, landscaping, and other important aspects of development.

Form-based regulations are well-suited to serve as unified land development codes that can include zoning, subdivision regulations, urban design, signs, landscaping, and basic architectural standards.

One of the basic principles in SmartCode and other form-based codes is that towns should be structured as a series of walkable neighborhoods. Such neighborhoods require a mix of land uses (residential, office, and retail), public spaces, and pedestrian-oriented transportation design.

The zones within a form-based regulatory scheme are designed to create complete human habitats ranging from the very rural to the very urban. Where conventional zoning categories are based on different land uses, form-based zoning categories are based on their rural-urban character. All categories within the a form-based code allow some mix of uses. These zoning categories ensure that a community offers a full diversity of building types, thoroughfare types, and civic space types, and that each has characteristics appropriate for its location.

- Residential development in village and urban centers should use a traditional grid street system whenever possible to improve vehicular and pedestrian connections.
- Residential and mixed use developments should include sidewalks, open space areas, and where possible, areas for recreation and community gardens. These development should be linked to neighboring developments where possible via roads, trails, and common open space. An efficient utility network should be provided.
- During construction, all necessary measures should be taken to minimize soil erosion.
- Natural vegetation, landscape features, and historic landmarks should be preserved to the greatest extent possible and incorporated in the development design. Streams, ponds, and wetlands should be maintained in their natural state, and access to these and other open spaces should be provided for residents.
- Prior to any large-scale residential development, a road system capable of handling traffic in a safe and efficient manner must either exist or be planned for immediate construction. The road system should be designed to safely accommodate vehicles, pedestrians, and cyclists, and to provide an attractive streetscape.
- Development which exceeds a town's planned growth rate, or which causes substantial economic hardship to a town because of the increased demand for facilities and services, is inappropriate and shall not be permitted.

10. The following policies apply to new commercial development:

- The intensity of commercial development needs to be consistent with the character of the land and surrounding area.
- Commercial developments should include an architectural and landscape design plan that complements the surrounding environment.
- Space and amenities for public use (e.g., pedestrian walkways/paths, landscaped areas with benches, bike racks, restrooms) should be provided.
- The amount of noise, glare, and lighting observable from off-site locations must be minimized.
- Adequate parking and loading spaces should be provided and sited/screened to minimize visibility from streets and neighboring residential areas.
- Provide for safe and efficient vehicular ingress and egress. Access onto roads where steep grades exist or within 400 feet of a major intersection should be avoided. Adjacent commercial developments should use combined curb cuts and connect parking lots and sidewalks internally whenever possible.

- Safe and convenient facilities for pedestrian access and circulation shall be provided.
- Commercial uses that generate large numbers of traffic turning movements should be avoided along sections of highway with low sufficiency ratings, unless located within an established downtown or village center.
- Small convenience shopping centers, reflecting the character of the surrounding community, are appropriate in villages, and urban centers may contain convenience, community, and regional shopping centers (see definitions in this chapter), but shopping centers are not appropriate in rural areas.
- Efforts should be made to improve the appearance, traffic flow, and pedestrian friendliness of existing shopping centers so that they enhance the region's urban centers. Careful planning should be conducted to ensure that any new shopping centers do not detract from existing commercial areas or appear out of character with the community.
- Large-scale ("big box") retail stores may be permitted in urban centers only if they exhibit exemplary architectural and site design and are shown to be in the best interest of the community after completion of a comprehensive economic/community impact study. Projects also should provide for a mix and balance of uses; site optimization including compact building groupings with parking located behind and to the sides of buildings, an architectural design that enhances the streetscape, and transportation facilities to accommodate and encourage access via public transportation, bicycling, and walking. Efforts must be made to minimize adverse impacts on existing highway operations and safety.

11. The following policies apply to new industrial developments:

- Large industrial developments should be located in or near urban centers or in village areas where adequate supporting infrastructure exists.
- Two or more adjacent industrial uses should be designed as a coordinated industrial park; land within industrial parks should be used primarily for industrial development.
- Utilities, roads, and other essential services should be available and adequate at the time of completion of the industrial development.
- Industrial parks should not be located in areas where truck or employee vehicle traffic would be channeled onto local streets in residential neighborhoods.
- The amount of noise, vibration, dust, odor, glare, and lighting that affects nearby residential areas must be minimized.
- Industrial development should provide meaningful well-paying jobs and should not pollute the environment. Industries that make use of locally available natural resources are encouraged.

12. The BCRC should continue to offer assistance to municipalities in the area of land use planning. Specific activities should include:

- Conduct workshops, prepare model bylaws, and undertake other educational projects covering topics such as: developing and implementing land use plans and bylaws, mixed use development, form-based land use codes, land conservation, historic preservation, and village and downtown development.
- Work with towns to help achieve and maintain village center, downtown, neighborhood, and growth center designations.
- Assist with planning for infrastructure that can accommodate additional development in downtowns and village centers.
- Cooperate with towns, the Bennington County Industrial Corporation, and other interested organizations in promoting new industrial development in the region consistent with regional plan policies.
- Continue to work with the United States Forest Service and towns to develop land and forest management plans and to establish criteria for identifying land that is appropriate for public acquisition.
- Promote continued coordination among municipalities to ensure that local land use plans remain consistent with the regional plan and compatible with each other.
- Offer assistance in promoting the development or redevelopment of historic downtowns through planning for capital investments, preparation of creative land use regulations, assistance in planning for the adaptive reuse of buildings and brownfield sites, and the development of riverfront parks and other public spaces.
- Work to minimize sprawl and support the efficient use of energy and other resources. A [Resilient Communities Assessment Tool](#) prepared by the Vermont Natural Resources Council can help towns and villages evaluate the effectiveness of those efforts.

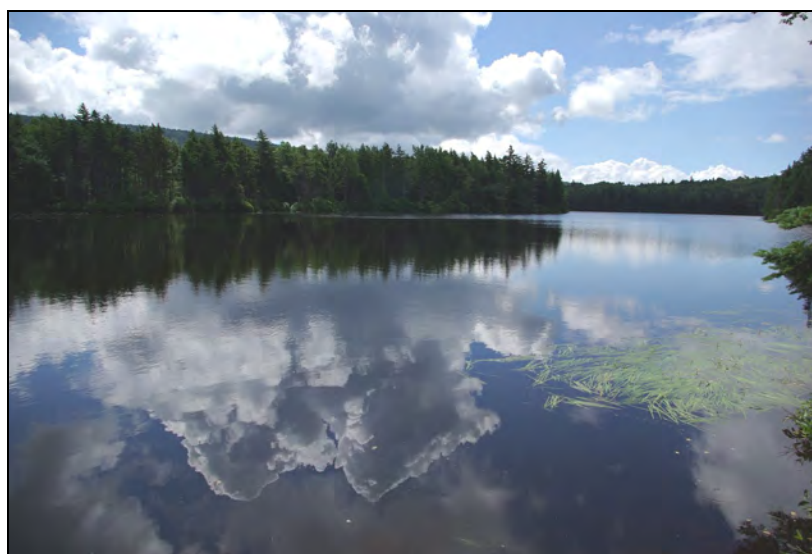
VIII. NATURAL RESOURCES

8.1 Overview

The natural resources of Bennington County are integral to the region's landscape and way of life. The contrast between agricultural valleys and forested mountainsides provides the overall visual context for the region while farm and forest-related industries offer great economic potential. The streams, rivers, wetlands, lakes and ponds of the region represent another critical component of the region's natural beauty and provide important recreational opportunities and habitat for fish and wildlife. Much of the region relies on another water resource—ground water—for domestic use and commercial and industrial applications. The region has a long economic and social history related to earth resources, particularly marble, slate, and sand and gravel. The most ubiquitous natural resource, and one that is particularly crucial to the health of the public and the prosperity of the region, is clean air. These natural resources are extraordinarily important assets, contributing to the health and quality of life of residents while also playing an important role in supporting economic prosperity and future development.

It is the combination of all of these resources, together with the human activity that happens among them, that gives the region its unique character. Wise management and planning is needed to ensure that we benefit from our natural resources today, and that they are conserved so that those benefits and more can be realized by future generations. Although all of the region's natural resources are interconnected and dependant upon each other, the principal resources are discussed in the following sections:

- | | |
|---------------------|--------------------------------------|
| ✧ Water Resources | ✧ Earth Resources |
| ✧ Clean Air | ✧ Fish and Wildlife |
| ✧ Agricultural Land | ✧ Unique Natural Features, and |
| ✧ Forest Resources | ✧ Scenic and Recreational Resources. |



Griffith Lake is located at 2600 feet above sea level in Peru.

Conservation and wise use of these resources is the primary focus of this chapter, but effective planning for future land use, economic development, and public investments must be considered as well. The information, policies, and recommendations presented in this chapter should be considered in combination with those other factors, as discussed in other parts of this document.

8.2 Water Resources

The quality of surface and ground water resources is vitally important to residents of the region and to the economy. Clean, pure, and abundant water is essential for drinking supplies, agriculture, recreational activities, fish and wildlife habitat, and to the scenic quality of the region's landscape. Protection of these resources is an important goal of this plan and is preferable to costly remedial actions that may become necessary following some form of contamination. Several types of water resources, each with special attributes and requiring distinct conservation strategies, are discussed in this section.

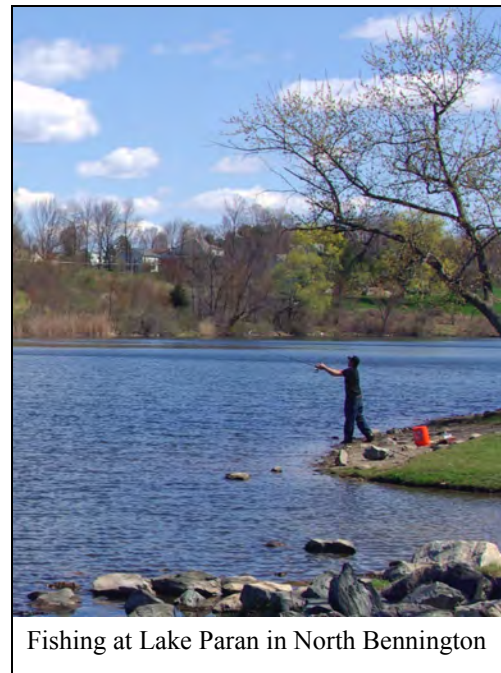
Lakes and Ponds

The many small lakes and ponds that dot the landscape of the region (Map 8-1) are irreplaceable natural resources that serve many important functions. There are 33 lakes and ponds in the region at least five acres in size, the largest being Sucker Pond (aka Lake Hancock) in Stamford and Bourn Pond in Sunderland (Table 8-1).

Fishing is a popular activity on several of the lakes throughout the year and swimming and boating are important recreational activities during the warmer months. These waterbodies also provide important habitat for waterfowl and many other wildlife species. Moreover, the beauty of glistening ponds nestled among the hills contributes a critical element to the area's scenic values. For all of these reasons, it is important to protect the quality of these resources and to ensure that reasonable public access to them is maintained.

Emerald Lake (Dorset), Adams Reservoir (Woodford), and Lake Shaftsbury (Shaftsbury) are located within state parks and have swimming beaches and facilities for boating, hiking, picnicking, and camping. Hapgood Pond, located in the Green Mountain National Forest in Peru, offers a similar array of recreational amenities. A small, but popular park operated by a non-profit organization is located at Lake Paran (just outside North Bennington Village). These parks all are maintained to provide for public recreational use and their geographic distribution ensures that residents and visitors can conveniently access a lakefront park from anywhere in the region.

It is important that lakes and public lands surrounding them are accessible to the public. Access to the state parks should be available throughout the year, not just during the few months when the parks are officially open. Access to other lakes and ponds may be facilitated through the use



Fishing at Lake Paran in North Bennington

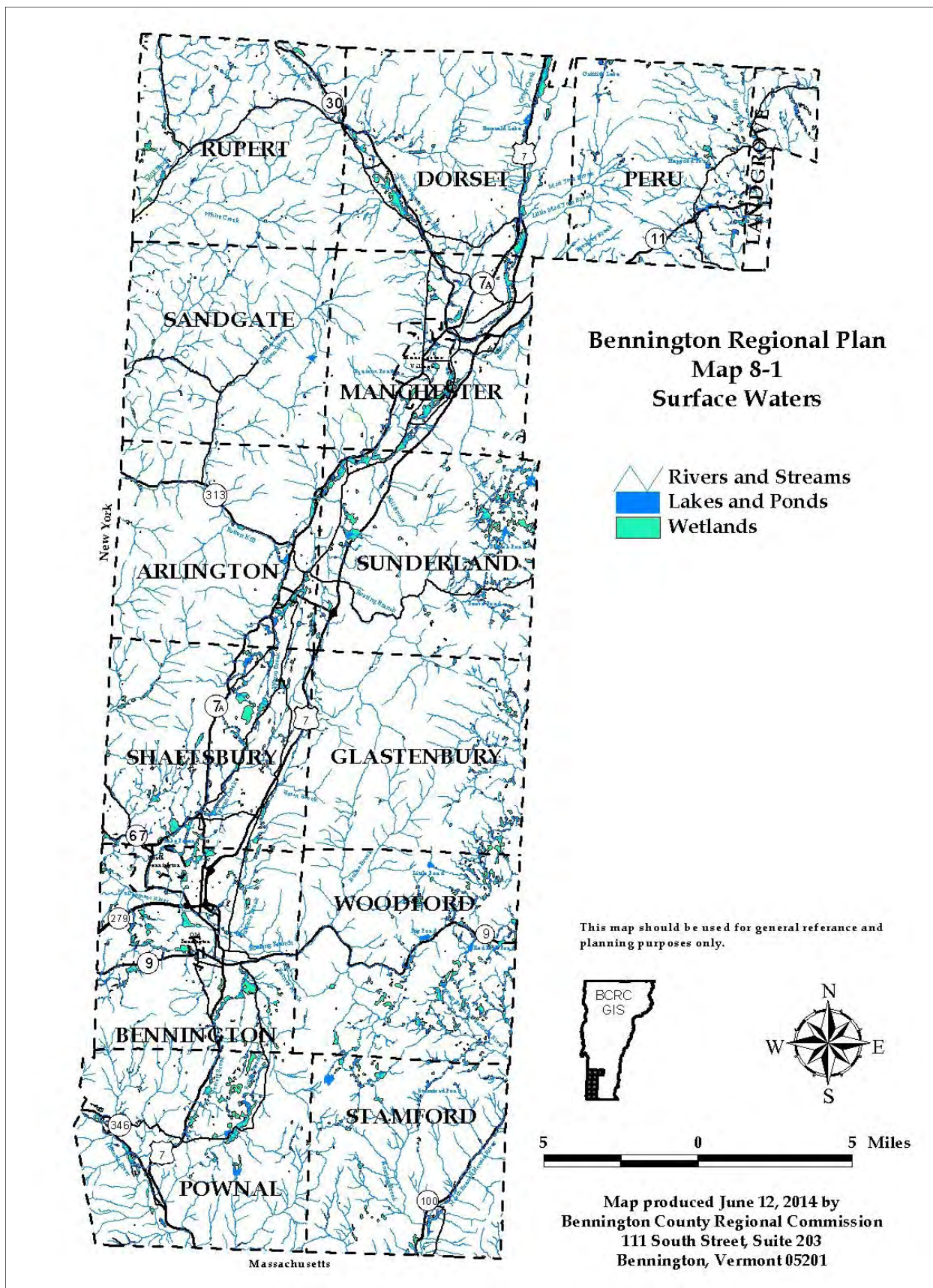


Table 8-1. Lakes and ponds in the Bennington Region (> 5 acres in size)				
Lake or Pond Name	Location	Surface Area (acres)	Basin Area (acres)	Elevation (Feet)
Warm Brook Pond	Arlington	11	3,636	762
Lake Paran	Bennington/Shafterbury	40	9,312	647
Emerald Lake	Dorset	28	3,630	711
Prentiss Pond	Dorset	5	207	929
South Village Pond	Dorset	5	85	760
Bullhead Pond	Manchester	5	29	740
Pickrel Pond	Manchester	9	31	740
Equinox Pond	Manchester Village	15	537	1,100
Griffith Lake	Peru	18	164	2,600
Hapgood Pond	Peru	7	1,568	1,540
Mud Pond	Peru	10	371	1,420
Barber Pond	Pownal	19	170	1,103
South Stream Pond	Pownal	24	3,456	1,100
Thompsons Pond	Pownal	28	548	1,406
Barbos Pond	Sandgate	7	48	1,844
Lake Madeleine	Sandgate	20	100	2,175
Lake Shaftsbury	Shaftsbury	27	2,311	848
Sucker Pond	Stamford	51	259	2,267
Stamford Pond	Stamford	12	260	2,380
Beebe Pond	Sunderland	8	148	2,460
Bourn Pond	Sunderland	48	410	2,552
Branch Pond	Sunderland	34	330	2,632
Lye Brook Pond (N)	Sunderland	10	96	2,600
Lye Brook Pond (S)	Sunderland	18	253	2,600
Adams Reservoir	Woodford	21	817	2,320
Big Pond	Woodford	31	715	2,265
Bugbee Pond	Woodford	8	1,428	2,171
Little Pond	Woodford	16	326	2,602
Mill Pond	Woodford	7	988	2,040
Mud Pond	Woodford/Stamford	6	23	2,240
Red Mill Pond	Woodford	7	1,258	2,260

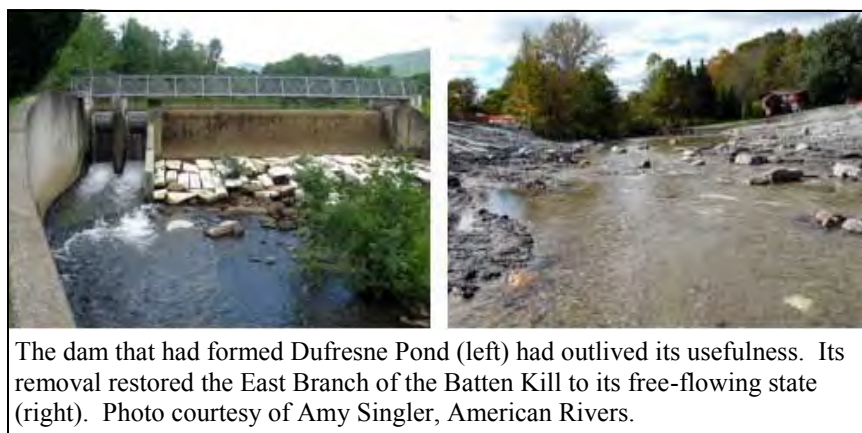
of conservation or access easements and public acquisition of particularly valuable shoreland areas. Recreational use and access must be managed, however, to ensure that excessive or inappropriate use does not damage the environment or result in conflicts among different user groups.

All of the lakes and ponds in the region should be afforded a significant level of protection to maintain water quality (see section below on Maintaining Water Quality), but those lying at high

elevations should be given special attention. These waterbodies support especially fragile ecosystems that thrive only in a relatively narrow range of water quality conditions. Disturbances in nutrient flow, water temperature, or water chemistry can have serious ecological effects. Fortunately, most of these lakes and ponds are located within the Green Mountain National Forest or in remote areas where development pressures are minimal. The impacts of logging in these watersheds can be minimized through conformance with the [Acceptable Management Practices](#) (AMPs) prepared by the Vermont Agency of Natural Resources. A threat to the water quality in these upland lakes that is more difficult to deal with results from airborne pollutants which originate outside the region, often hundreds of miles distant. These pollutants can cause contamination through acidification of lake water and leaching of chemicals from soils. Such inter-regional and inter-state problems can be effectively addressed only through strong federal air quality standards.

Invasive species present a challenge for management of lakes in the region. One major concern in this part of the state has been the spread of Eurasian watermilfoil. This plant adversely affects fish and wildlife habitat and can render areas unsuitable for recreational use. The weed can be spread easily when pieces of a plant become attached to boats and are subsequently released in another part of the lake or in a different lake. Lake Paran currently is suffering from a severe infestation of Eurasian watermilfoil. The Agency of Natural Resources maintains an [Aquatic Invasive Species Program](#) to help towns, lake associations, and other lake users manage and control these plants and animals.

Many lakes and ponds in the region have been artificially created through impoundments of streams. Several of these waterbodies have become important scenic and recreational assets and it is important that the dams that create them are maintained in good condition. The [Dam Safety Program](#) at the Agency of Natural Resources administers a permit program for construction and alteration of



non-hydroelectric dams, conducts dam inspections, educates dam owners and the public about public safety issues and operates and maintains a number of dams around the state. Occasionally, a dam may no longer be safe or provide significant benefits to communities and the impounded stream may be more valuable in its natural state. In such a case, a procedure is available that will lead to removal of the dam and restoration of the stream to its natural condition. Such a project recently was completed in Manchester, resulting in the drainage of what had been Dufresne Pond on the East Branch of the Batten Kill. A smaller dam on the Walloomsac River in Bennington was removed, draining a much smaller impounded area, but also enhancing safety and improving fish habitat.

Rivers and Streams

The rivers and streams of the Bennington region always have been of great importance to people in the area. Native American encampments and the first white settlements were located near rivers and streams. These waterways provided a travel route through the rugged wilderness and served as a source of drinking water and food. As communities grew, streams were relied upon to power mills and factories and to carry away industrial and domestic wastes. As the importance of waterpower declined, many streamside industrial sites were converted to commercial and residential uses. Most often, these buildings were oriented toward the street, and the rivers and streams were ignored or used only for disposing of wastes. Over time, waterways in rural areas became surrounded by agricultural activity occurring on the rich bottomland soils found in the river valleys. Some mountain streams served, and were likely disturbed by, the logging industry, while other remote upland streams remained in a relatively pristine state.

In more recent years, considerable emphasis has been placed on maintaining and improving surface water quality. Fishing, swimming, and canoeing have become important recreational activities



The Mettawee River is an outstanding fishing stream that flows through a rich agricultural valley in Rupert.

on many waterways in the region. Rivers and streams also have come to be recognized as important aesthetic resources, particularly since many roads run parallel to them. Considerable development (and redevelopment in some village and urban areas) along rivers and streams has taken place in the past few years as waterfront property has become more valued and as land has been removed from agricultural use. The towns of Bennington, Pownal, and Manchester also rely on rivers for the disposal of effluent from municipal wastewater treatment facilities.

Four main river systems drain the Bennington region (Map 8-1). The

Mettawee River rises in Dorset and flows north through Rupert, Pawlet, and New York State where its waters are directed into a canal that leads to Lake Champlain. The Batten Kill also rises in Dorset, but flows south through Manchester, Sunderland and into Arlington, where the river turns west and flows through a gap in the Taconic Range toward its confluence with the Hudson River in New York. The two rivers that drain the southern part of the region, the Hoosic and Walloomsac, also flow westward to meet the Hudson River. A relatively small area within the region, lying east of the spine of the Green Mountain Range, is drained by streams that are located in the watershed of the Connecticut River. And Vermont's longest river, Otter Creek, flows north from its source waters near East Dorset.

The Mettawee River Valley is one of the most productive and well-established agricultural areas in the region. The Vermont Land Trust has been successful in its efforts to preserve farmland

along the Mettawee through the acquisition of development rights. Both aesthetically and functionally, the Mettawee River is an intrinsically important element of that agricultural landscape. The Mettawee is also a popular fishing stream, supporting native populations of brown, brook, and rainbow trout. Maintenance of a vibrant agricultural economy in the Mettawee Valley will help to ensure that the river remains a valuable public resource. At the same time, farmers should manage their land to prevent excess run-off of fertilizers, pesticides, and other contaminants into the river, and take measures to protect the stream banks from erosion that can be caused by livestock.

Perhaps the premier recreational resource in the Bennington region is the Batten Kill. This river has been nationally recognized as an outstanding native brook and brown trout stream. Studies in the early 2000s by the Vermont Department of Fish and Wildlife documented a significant decrease in the river's trout population. Factors leading to the decline may have included loss of large woody debris that serves as in-stream habitat and the decrease in vegetated stream banks, sedimentation, and an increase in the use of pesticides. The [Batten Kill Watershed Alliance](#) (BKWA) was established in 2001 to address these and other concerns. Efforts undertaken by the BKWA and the Bennington County Conservation District, in cooperation with local and state governments, landowners, and other river users have significantly benefited water quality and improved fish habitats and populations.



The Batten Kill in winter, looking south toward Ball and Grass Mountains.

The same characteristics that make the Batten Kill a productive and attractive fishery – a swift current, cool clear water from mountain tributaries, a gravel substrate, and the beauty of the surrounding landscape – have drawn many people to the river for recreation. Swimming, canoeing, kayaking, "tubing," and sightseeing are becoming ever more popular recreational activities in and along the river. The segment of the river lying within the Town of Arlington receives the heaviest use by all of these recreational users. The intensity of use has raised concerns over both potential environmental effects (e.g., litter and stream bank erosion) and conflicts between the various user groups. Providing additional public access opportunities along the Batten Kill and its tributaries may mitigate some of these problems. New access points could disperse some of the use and thus reduce

environmental impacts and conflicts among different recreational uses. Of course, regardless of any such efforts, the main channel of the Batten Kill will continue to support intense and varied recreational use. Cooperation among principal users and careful land use planning by local governments will become increasingly important.

The Walloomsac River flows out of the Green Mountains in Woodford, through Bennington, North Bennington, and the southwestern corner of Shaftsbury. While its upper reaches and tributaries lie in relatively undeveloped mountain areas, considerable development has occurred on the banks of the Walloomsac in Bennington since the eighteenth century. The Walloomsac traverses a diverse landscape that ranges from old mills and factories to residential neighborhoods to rural fields and woodlands, all within a few miles. The Walloomsac is stocked with rainbow and brook trout. The Bennington



Three covered bridges, including the Henry Covered Bridge, span the Walloomsac River in Bennington.

municipal sewage treatment plant also is located on the river. Several projects have been undertaken to better integrate the Walloomsac into the fabric of the community. A new pedestrian bridge has been constructed, a pathway providing access to the river is being planned, and a private landowner has developed a small park and interpretive site on an island near the Paper Mill Covered Bridge. New mixed use development and rehabilitation of historic structures along the river and additional public greenspace and walkways in suitable locations would serve to direct interest and attention toward this valuable resource.

The North Branch of the Hoosic River runs through the principal north/south valley in the town of Stamford. After merging with several streams and the river's main branch in North Adams, Massachusetts, the Hoosic turns toward the northwest and flows through Pownal. Like the Walloomsac, the Hoosic River flows through a diverse landscape that includes agricultural fields, residential neighborhoods, and industrial developments. Restoration and cleanup of a former tannery site in Pownal has improved water quality, river access, and led to interest in reestablishing hydroelectric generation in North Pownal. A part of the tannery property is now home to the recently completed Pownal Wastewater Treatment Plant. Although these measures have improved water quality in the river, sediment beneath the river remains contaminated with heavy metals and PCBs. The [Hoosic River Watershed Association](#), a tri-state organization, has been formed to determine ways to continue to improve its water quality and to enhance the public's appreciation of the river.

The many smaller streams within the region – the Indian River, Green River, Bourn Brook, Roaring Branch (Woodford and Sunderland), Roaring Brook, Paran Creek, and Bolles Brook, among them – are very important, both because they directly affect water quality in the larger rivers and because they provide many of the same recreational and environmental protection benefits. Efforts

should therefore be made to protect these streams and to provide for reasonable public access. Some streams and watersheds, such as Bolles Brook which is a primary source of Bennington's water supply, require special management practices.



Tropical Storm Irene, in 2011, caused massive damage to the Roaring Branch in Sunderland and to the adjacent Kelley Stand Road (remnant of the road pictured above on the left side of the photograph).

Tropical Storm Irene (2011) had a major impact on some of the region's rivers and streams. The most significant damage to streams and adjacent lands and properties occurred along the aptly named Roaring Branch streams in both Sunderland and Woodford/Bennington. While flood and fluvial erosion hazards will be discussed in much greater detail in Chapter IX, it is important to note here that the disruption to the aquatic ecosystems, fisheries, and recreational uses of these streams was profound. Local governments have worked with the Vermont Fish and Wildlife Department and, in the case of Sunderland, the US Forest Service to develop and implement plans to reconstruct the streams and adjacent floodplain areas in an effort to both restore ecosystem quality and reduce the risk of future flood damage.

Work on the Roaring Branch in Sunderland has focused on moving the stream back to its pre-flood course, adding in-stream features to pro-

vide suitable habitat, and stabilization of the adjacent road and embankments. In Bennington, an effort has been made to provide a broader area to contain future flooding and erosive events—giving the stream room to move more naturally within its floodplain. Whenever such extensive rehabilitation work is undertaken it is important that stream engineers and environmental experts be involved during the planning and design phase to ensure that a reasonable balance between stream quality and protection of public infrastructure and private property is maintained.

In summary, the guiding principle for river and stream management is that rivers and streams best serve our communities when preserved in their natural state and maintained for the use and enjoyment of the public. In forested mountain areas, this objective may be realized through public acquisition (as in the Green Mountain National Forest) and encouragement of low-impact recreational uses such as fishing, camping, and hiking. In rural areas, planning and development should emphasize protection of streamside vegetation and wildlife habitats, and public access for recreation. Areas along waterways in village and urban areas should be priority sites for investments in building renovation and reuse, riverfront parks and walkways, and similar projects that will encourage a renewed focus on these natural resources. In addition, certain waterways may provide a source of electricity through the development of small and environmentally sound hydroelectric facilities. Planning for any of these land use, ecosystem, recreation, or economic development objectives also must consider the need to minimize the potential for severe flood-related damage.

Wetlands and Floodplains

Wetlands are transitional areas between aquatic and terrestrial systems where the water table is usually at or near the surface or the land is covered by shallow water. A wetland has one or more of the following attributes: (1) at least periodically, the land supports predominantly hydrophytic vegetation; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season each year. Benefits provided by wetlands include: flood and storm water control, maintenance of surface and ground water quality, open space and aesthetic appreciation, fish and wildlife habitat (including habitat for a large number of threatened and endangered species), ecological research and educational opportunities, and sources of nutrients for freshwater food chains.



Concentrations of wetlands in the Bennington region are found in river valleys and on the high plateau of the Green Mountains (Map 8-1). There are approximately 10,889 acres of wetlands in Bennington County (U.S. Fish and Wildlife Service data); of these, 4,916 acres are forested wetlands and 4,576 acres are of the "scrub-shrub" variety. Open water wetlands, including those characterized by emergent vegetation, cover about 1,253 acres of land.

The [Vermont Wetlands Program](#) is responsible for identifying wetlands and the functions and values they provide. Activities to achieve these goals include education, project review, and enforcement. The Wetlands Program staff is responsible for the administration, implementation, and interpretation of the [Vermont Wetland Rules](#). Wetlands meeting the following criteria are subject to those rules:

- ◆ Any wetland on the [Vermont State Wetland Inventory](#) (VSWI) map;
- ◆ Any wetland contiguous to a VSWI mapped wetland;
- ◆ Any wetland 1/2 acre or larger of the same type and size as shown on the VSWI map;
- ◆ Any wetland that is:

- ◇ Adjacent to a stream, lake, pond, or river;
- ◇ A vernal pool;
- ◇ A special and unique wetland such as a bog or fen;
- ◇ Above 2,500 feet in elevation;
- ◇ Adjacent to an impaired water.

Many of the region's wetlands lie in the same lowlands where most future development will occur. Consequently, it is important that any regulated activity that could impact a significant wetland be referred to the Wetlands Program for review. Federal wetland reviews of any wetland dredging or filling are conducted by the Army Corps of Engineers, Environmental Protection Agency, and Fish and Wildlife Service through provisions of the Clean Water Act. Several other federal agencies, including the National Park Service and Natural Resource Conservation Service, administer grant programs that encourage the protection of wetlands.

Local communities may wish to inventory wetlands within their jurisdiction in order to identify particularly important wetlands. This information may be used to improve the effectiveness of the state and federal regulatory process. Municipalities also can include measures in their zoning bylaws to protect wetland areas. One local initiative led the state to reclassify the "Dorset Marsh" to a more strictly protected "Class I" status. Bennington is working with the Vermont Land Trust, the Bennington County Conservation District, and the BCRC to inventory and permanently protect a large wetland complex located near Morgan Street and the confluence of Jewett Brook and South Stream.



The "Morgan Street Wetland" is the subject a locally driven conservation effort in Bennington.

Floodplains are areas adjacent to rivers and streams that are subject to inundation during exceptionally high water events. Like wetlands, floodplains perform a critical stormwater control function, help to maintain water quality, and provide important habitat for fish and wildlife. Inappropriate development in floodplains can not only degrade these beneficial functions, but also can result in damage to structures through flooding and/or erosion of land. Such development also can lead to an increase in the amount and severity of downstream flooding when built-up areas are no longer able to retain flood waters adequately. The [Rivers Program](#) at the Agency of Natural Resources provides technical and regulatory assistance for projects in floodplains to avoid and mitigate flood and fluvial erosion hazards and to restore and protect floodplain functions including stormwater control, retention of sediments, nutrients, and riparian habitat features. Municipalities can obtain assistance through the Rivers Program for development and implementation of flood hazard regulations that restrict development in floodplains while allowing residents and business owners to obtain flood insurance through the National Flood Insurance Program (covered in greater detail in Chapter IX).

Surface Water Quality Management

Maintaining and improving the quality of surface water resources requires planning and coordination at the watershed level. All of the land that drains into a body of water is considered its watershed and a wide range of activities that occur throughout the watershed can affect surface water quality. Discharges from stormwater flows, effluent from municipal sewage treatment plants and private septic systems, building development, road construction and maintenance, agricultural practices, chemicals from residential lawns and golf courses, and logging activities all can increase the flow of sediments, nutrients, or other pollutants into surface waters. Alterations to streams, floodplains, and wetlands within the watershed can increase the rate at which contaminants enter a water body.

The [Watershed Management Division](#) of the Vermont Agency of Natural Resources is responsible for protecting, maintaining, enhancing, and restoring the quality of the state's surface waters. Toward that end, the Division conducts a wide range of activities including assessment and planning for individual watersheds (structured around 17 "basins" statewide), regulating stormwater and wastewater discharges, carrying out ecosystem restoration projects, and implementing regulations and projects for the protection of rivers, streams, wetlands, and lakes and ponds. The basis for these programs and specific activities is the [Vermont Water Quality Standards](#) that outlines the process for developing basin management plans and include classifications and management standards for all of the state's surface water resources. Water quality types are identified as Class A or B and are managed according to criteria established for each Class: A1 and A2, and B1, B2, and B3. Class A waters are managed for enjoyment of water in its natural condition, including high quality waters with significant ecological values (A1) and waters that serve as public drinking water sources (A2). Class B waters are managed for a variety of uses that may require additional treatment or control, but are still suitable for fishing, swimming, and consumption (with treatment), and agriculture applications. Portions of Class B waters may be designated as "Mixing Zones" or "Waste Management Zones" to allow for proper management of wastewater system effluent and other direct discharges.



Towns and villages can require rain gardens (shown above) and other stormwater management strategies that capture, slow, infiltrate, and treat runoff from impervious surfaces, including rooftops, streets, parking lots and driveways.

A variety of activities result in contamination of surface waters from "nonpoint" sources such as agricultural runoff, stormwater runoff from impervious surfaces, streambank destabilization and erosion (often resulting from removal of vegetation), and various development activities. The Watershed Management Division requires [state permits](#) for certain agricultural and construction activities that will lead to increased stormwater discharges and municipalities can include stormwater management criteria and "[low impact development](#)" requirements in their local zoning and subdivision regulations. When

incorporated as part of a site design the result is improved water quality, aquatic habitat protection, reduction of peak runoff flow and rate, reduced risk of flooding, improved community value and aesthetics, and long term cost savings from reduced infrastructure maintenance.

Municipalities also can regulate through zoning and subdivision, and work with river, lake, and watershed interests, to maintain and enhance vegetation along and near lakeshores and streambanks. Buffers of natural vegetation in these areas are essential to water quality in streams, rivers, lakes, and ponds. These buffers provide the following benefits:

- Support the soil and prevent erosion;
- Intercept and filter pollutants;
- Reduce surface runoff;
- Maintain cooler water temperatures;
- Provide food and shelter for fish and wildlife;
- Increase wildlife diversity; and
- Reduce the impacts of flood damage.

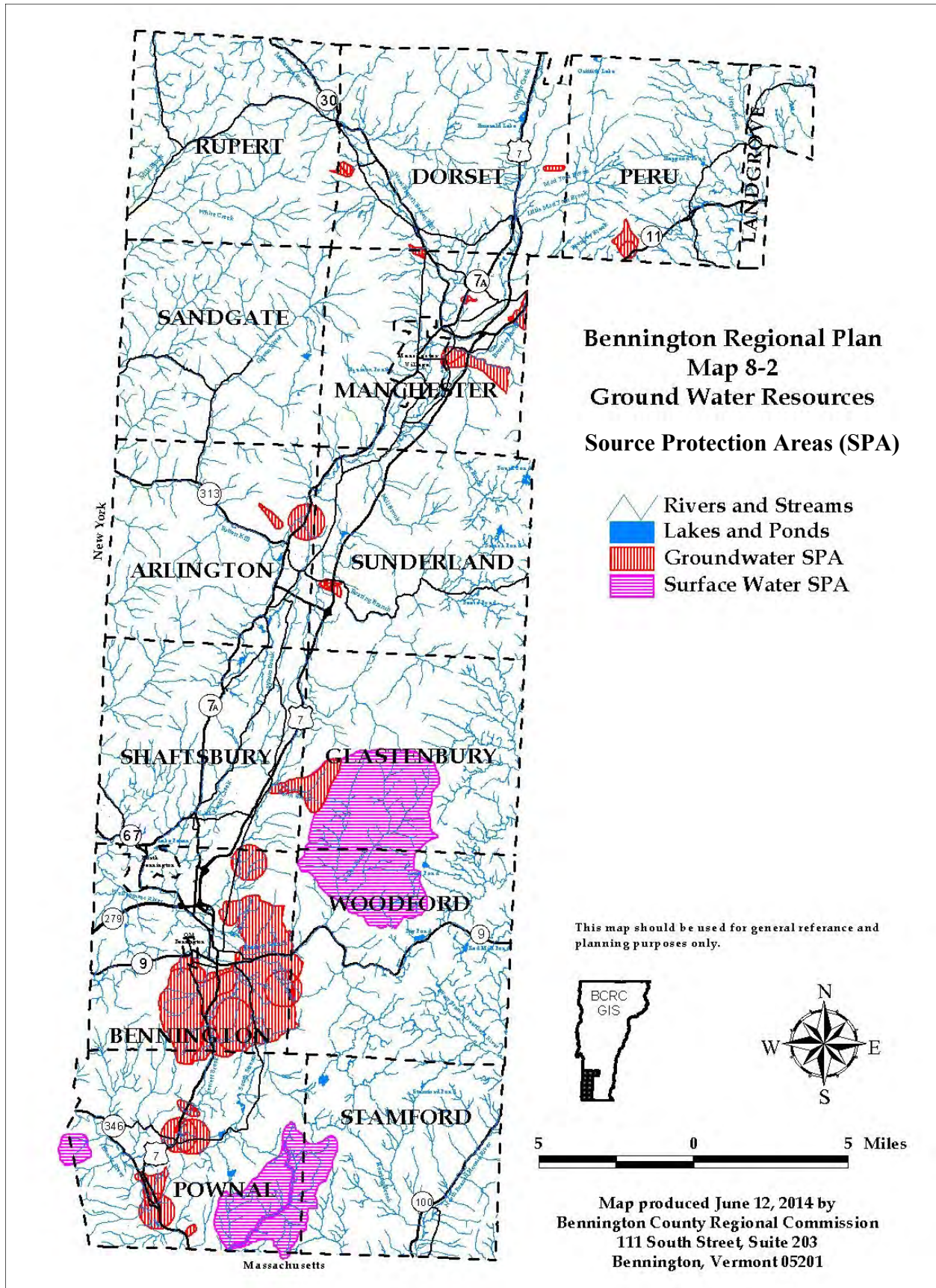
Buffer zones along rivers and streams should be from 50 to 100 feet in width, although a narrower or wider buffer may be recommended through an on-site investigation conducted by an environmental professional. The buffer zone should generally be at least 100 feet from the shore of a lake. In general, wider buffer zones are needed in areas characterized by steep slopes, the presences of critical natural resources, or when developments being proposed could pose a significant threat to water quality. The [Vermont Department of Fish and Wildlife](#) maintains information on riparian buffer standards that can be useful to municipalities.

Groundwater

Groundwater is an important natural resource in Vermont. A significant percentage of the state's population depends on groundwater for its drinking water supply. Groundwater also is used for manufacturing, agriculture, commercial enterprises, and to support aquatic habitat. Groundwater is dynamic, responding to internal and external conditions, its quantity and quality varying with climate, precipitation, overlying land use, and the rock and soil types through which it moves. Vermont's geology, characterized by multiply deformed (folded, faulted, fractured) rock and a variety of unconsolidated glacial deposits, is the vessel for Vermont's groundwater resources.

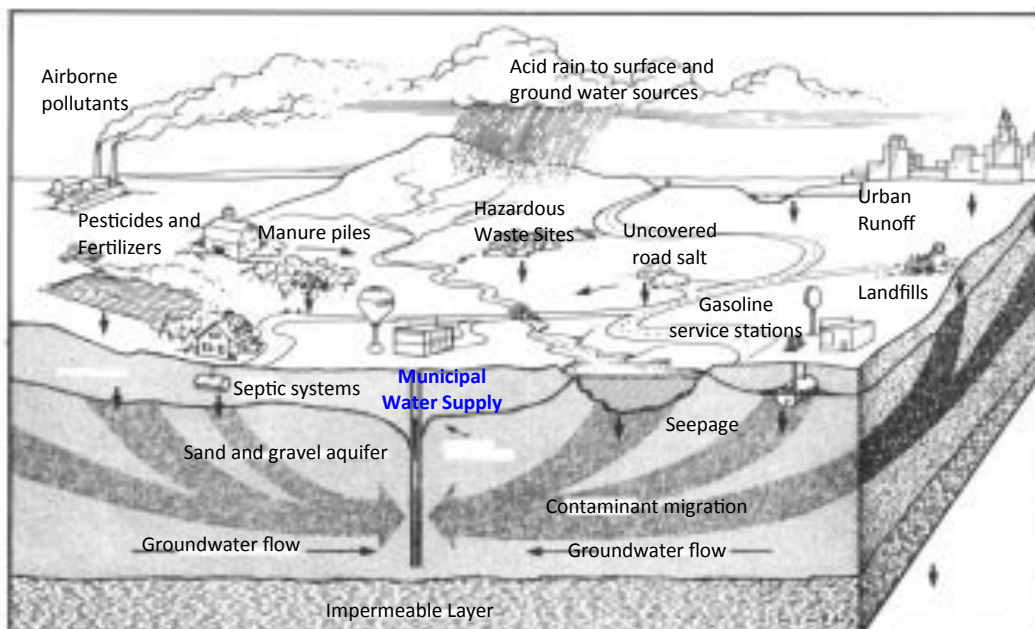
A number of public or community water supplies (water systems with at least 10 service connections or serving at least 25 individuals) are located in the region (Map 8-2). Some of those systems are privately owned and some are owned by municipalities. Major municipal systems exist in Pownal, Bennington, North Bennington (also serving South Shaftsbury), Manchester, and Dorset. The privately held Arlington Water Company is considering a sale of its assets to the town. All of these systems, and the many private systems that serve smaller neighborhoods and individual developments, rely on a sufficient quantity of clean ground water.

Some of those water supply systems obtain water from springs, some from wells that draw



water from aquifers, and some from surface waters that are fed by various groundwater sources. All of these sources require protection from contamination that could degrade groundwater quality, making it unusable or requiring costly treatment. The state's [Drinking Water and Groundwater Protection Division](#) establishes source protection areas and administers regulations and technical assistance programs for operators of public water systems. The Division also has published a [Groundwater Protection Handbook for Local Officials](#) that provides information measures that local governments can take over the short and long term to protect groundwater sources. A particularly important responsibility of local government, discussed in the Handbook, is regulation of land use within source protection zones.

Of course, many residences and businesses rely on individual on-site wells to serve their water needs. Protection of these water supplies is also of great importance, and is best accomplished through strict adherence to municipal and state health regulations. Because many of these wells are in areas that are not served by public wastewater disposal systems, proper design, installation, and maintenance of on-site wastewater disposal systems is essential, as are maintaining regulatory isolation distances from wells.



Potential sources of groundwater contamination must be monitored; land uses can be controlled through appropriate local regulations. Source: 1998 National Water Quality Inventory, US Environmental Protection Agency

8.3 Clean Air

Air is a resource that, although critical to our well-being, is generally taken for granted until it becomes polluted. Air quality in the Bennington region is generally excellent. Maintaining and improving air quality serves to protect public health and supports economic prosperity by making the region attractive for new residents and tourists and by ensuring that new businesses can locate in the area. If air quality conditions deteriorate, certain businesses may be impacted as it becomes difficult or expensive for them to operate without causing violations of ambient air quality standards, exceeding prevention of significant deterioration (PSD) increments, or by impacting the federal Class I air quality area in the Lye Brook Wilderness area.

The [Air Quality and Climate Division](#) of the Vermont Department of Environmental Conservation is responsible for monitoring air quality in the state and in ensuring that activities are regulated to limit emission of air pollution.

Several sources of air pollution are of particular concern in the Bennington region. Disposing of trash through “backyard burning” was a fairly common practice in rural areas that, although much reduced, still occurs with some frequency. The chemicals that are created and released by burning trash increase the risk of many health problems including headaches, heart disease, asthma, emphysema, and cancer. The proximity of the source of the pollution to affected people, including children who experience a greatly elevated risk of illness and disease, makes this practice particularly dangerous. Information for towns and villages can be found at the Agency of Natural Resources [Don’t Burn Vermont](#) website.

The increasing cost and environmental concerns associated with the use of oil and propane for space heating has caused some shift toward the use of wood as a heating fuel. Modern and efficient wood and wood pellet stoves and furnaces and large-scale wood chip based heating systems are relatively clean-burning and do not result in a net increase in greenhouse gas emissions (discussed further below). On the other hand, older wood-burning stoves, furnaces, and especially outdoor wood-fired boilers produce heavy smoke and large amounts of dangerous fine particulate pollution (up to 90% more than modern state-certified models). The Agency of Natural Resources has adopted regulations governing outdoor wood-fired boilers and also oversees an [incentive program](#) for people to replace old and inefficient systems with new units. Energy efficient siting, design, and construction of new buildings, and weatherization retrofits to existing buildings will reduce all fuel use and resulting air pollution.

Emissions from motor vehicles are among the most serious and difficult to control sources of air pollution. In fact, because vehicles are so ubiquitous, transportation is the leading contributor to air pollution in Vermont. Emissions testing and standards have reduced pollution produced by individual vehicles, but because the number of vehicles on the road, and the total miles traveled, have increased,



Older outdoor wood-fired boilers can cause serious local air pollution and health effects. A program to promote replacement with cleaner burning is overseen by the Agency of Natural Resources.

total air pollution from automobiles continues to rise. The most effective action that can be taken to reduce air pollution resulting from the combustion of transportation fuels is to reduce the amount of gasoline and diesel fuel used. Reducing the number of miles traveled, improving the efficiency of internal combustion engines, and using alternative transportation systems all can help in this regard. Compact mixed use development and transportation infrastructure that encourages walking and biking, efficient public transportation, greater utilization of electric vehicles, and improved access and expanded use of freight and passenger rail provide the means for achieving those objectives. Given the relatively low cost of transportation fuels and the convenience afforded by personal automobiles and frequent truck deliveries, it has been difficult to make consequential progress in these areas. While significant increases in fuel prices eventually will provide the necessary incentives for change, the United States could follow the lead of many nations that have enacted higher transportation fuel taxes to both pay for alternative transportation systems and to motivate behavioral changes.

Air pollution from motor vehicles is just one of many types of air pollution that can have significant impacts on our region and state even if the emissions occur in another region, state, or even in another part of the world. A long-standing concern has been the deposition of acidic precipitation on the mountain slopes and in the watercourses of the region. Most of the nitrogen and sulfur oxides that contribute to this “acid rain” originate from vehicles and fossil fuel burning power plants far to the west of the Bennington region. Similarly, “greenhouse gases” such as carbon dioxide and methane that are released during the production and burning of fossil fuels contribute to the warming of the earth’s climate regardless of their source. While cooperation at a national and international scale will be necessary to address such global pollutants, it is important for communities in the Bennington region to participate in efforts to reduce pollution levels. The region also should participate, through the BCRC, in any regulatory proceedings involving industrial point sources that may affect air quality in the region.



Clean and clear air is essential for public health and economic prosperity.

8.4 Agricultural Lands

Agriculture is a vital part of the Bennington region's rural heritage and economic future. The working agricultural landscape maintains the region's rural character, contributes an essential element to its scenic quality, and is an important component of the regional economy. The characteristic mix of open fields and woodlands also provides habitat necessary to sustain a large and diverse wildlife population.

Productive agricultural soils are found throughout the region in lowland valleys (Map 8-3). Although some level of farming activity occurs in every town in the region, significant concentrations of farms and actively harvested cropland are found in Pownal, Bennington, Shaftsbury, and in the Mettawee Valley in Rupert. Some interesting trends have been observed over the past ten years (Table 8-2). The number of farms increased and was accompanied by a small increase in the total amount of farm land. At the same time, the average farm size declined as did the total amount of cropland. These trends can be explained by the fact that many people now farm part-time and are involved in more diverse and specialized products. For example, the number of dairy cattle in the region declined by 25 percent between 2002 and 2012 while there was a 25 percent increase in the amount of land devoted to production of fruits, vegetables, and berries. The past ten years also saw significant increases in raising poultry (for eggs and meat), cattle, and hogs. The total value of agricultural products sold in the region nearly doubled and the average sales per farm increased by almost 50 percent.

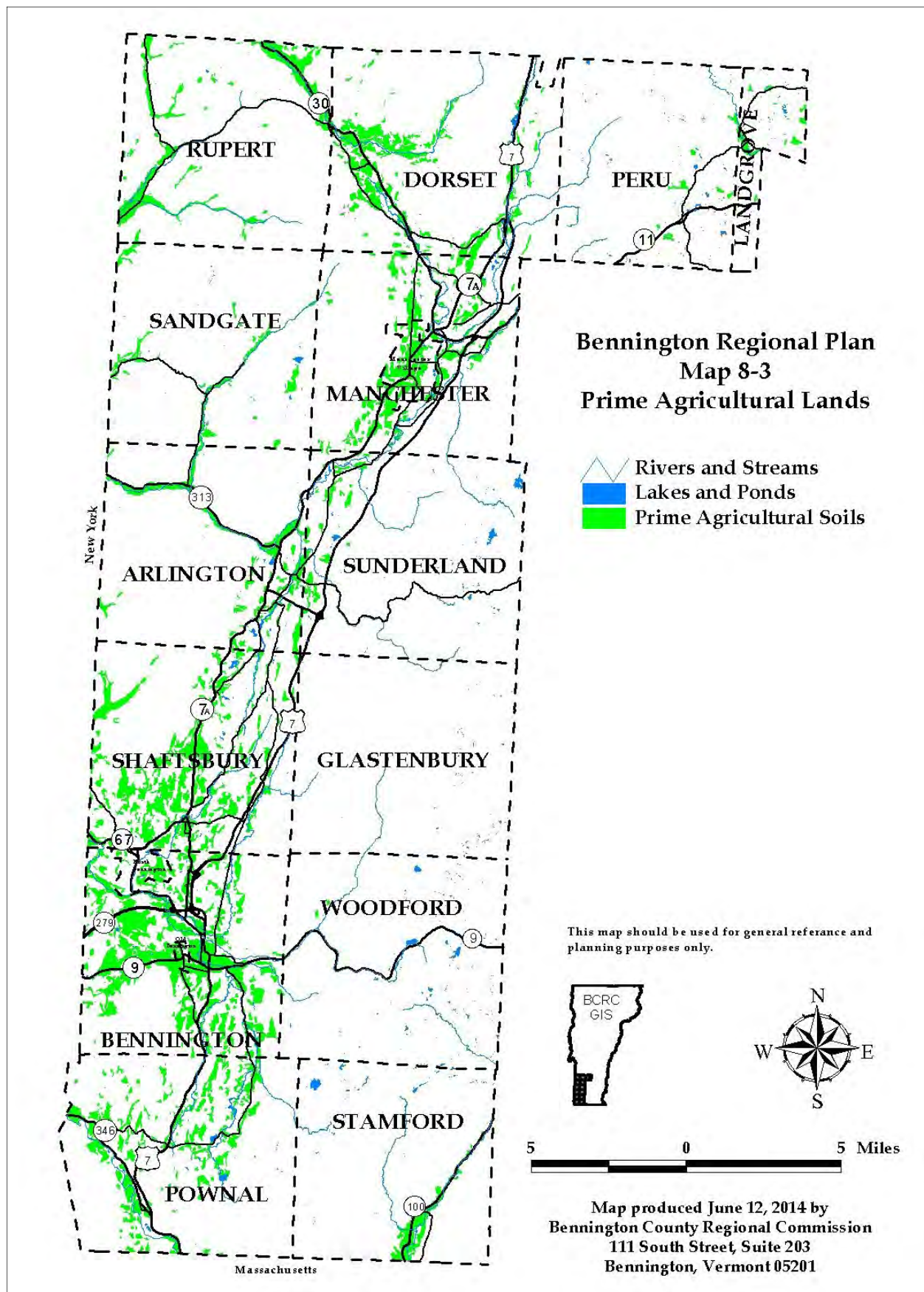
The importance of maintaining the potential for the region's best agricultural soils to be used



The Mettawee Valley in Rupert contains some of the region's most productive farmland.

Table 8-2. Agricultural land use and production in Bennington County, 2002 through 2012. Source: US Census of Agriculture

	<u>2002</u>	<u>2012</u>
Total Number of Farms	228	305
Total Farm Acreage	41,126	41,387
Average Farm Size (acres)	180	136
Total Cropland Acreage	13,379	11,165
Total Value of Ag Products Sold	\$7.8 million	\$15.1 million
Average Value of Ag Sales per Farm	\$34,292	\$49,421



for growing and raising agricultural products is highlighted in the Bennington Farm to Plate Council's [Food System Action Plan](#). Many people prefer to obtain food from local sources and, in fact, more robust local food systems will become increasingly necessary as food from distant sources becomes more expensive and difficult to obtain due to rising costs, climate-induced production declines, and other environmental concerns. Moreover, the [Vermont Farm to Plate Strategic Plan](#) points out that approximately two billion dollars are spent on food in the state every year (close to \$100 million dollars in the Bennington region) so local production of food has the potential for lending strong support to the regional economy.

Preserving agricultural land and expanding local production also contributes to environmental quality in a number of ways. Utilization of prime agricultural soils for food production ensures that those lands remain open and part of the working landscape. Properly managed farmlands—as outlined in the state's [Accepted Agricultural Practices](#)—maximize use, reuse, and recycling of local natural resources, thus limiting waste and pollution. Those same practices reduce the need to use petrochemical fertilizers, while increased local production reduces fossil fuel use related to transportation and processing.

Many approaches can help preserve important agricultural lands. Encouraging development in and around existing village and urban centers relieves the pressure to develop in outlying agricultural areas. Public investments and regulatory incentives should encourage growth in villages and urban centers. Conversely, land use policies and regulations in rural areas containing productive soils should permit only those uses, density levels, and development patterns that will not detract from rural character or substantially reduce the viability of current and future agricultural use. Public investments in roads and other infrastructure in the rural countryside should focus on public safety rather than facilitation of new development. Local zoning and subdivision regulations should provide for innovative practices such as transferable development rights and planned unit developments that require or encourage preservation of important agricultural soils. In addition, [state law](#) provides specific protection for agricultural land uses.

Non-regulatory strategies also can be effective in preserving agricultural lands in the region. The Vermont Use Value Appraisal program allows owners of farmland to be taxed based on their property's use for agriculture rather than on its development potential. Acquisition of development rights to agricultural lands, through gift or purchase, by a qualified land trust or other conservation organization is another proven way to preserve agricultural land. The [Vermont Land Trust](#) has conserved a large amount of agricultural and forest land in the region. The Vermont Housing and Conservation Board's [Farmland Preservation Program](#) is a significant source of funding for these preservation efforts.

Supporting the economic viability of farming in the region will make it easier and more desirable for owners of good agricultural land to maintain those resources as part of the working landscape. The Walloomsac (Bennington), Manchester, and Dorset Farmer's Markets, community-supported agriculture (CSA) farms, and programs to ensure that locally produced foods are available in local stores and offered in area restaurants are essential to ensuring that strong markets exist for foods that derive from the region's agricultural lands. Improved food storage, processing, and distribution systems also will support local farmers and help to maintain the agricultural component of the region's working landscape.

8.5 Forest Lands

The forests that cover much of the region's landscape represent an important part of the area's history, contribute to the unique character of our communities, and represent a significant economic asset. The [Landscape-Based Forest Stewardship Plan](#) (BCRC, July 2012) for Bennington County includes a comprehensive description of regional forest resources, issues, and conservation strategies. That plan, and any amendments to it that are adopted by the BCRC, are incorporated into and considered an integrated part of this Bennington County Regional Plan.

Extensive unbroken forests cover much of the high elevation and remote areas in the Green and Taconic Mountain ranges, while woodlots, wooded riparian corridors, and other forested landscapes are found throughout the region's valleys and lower elevation hills. Many people interact most directly with the smaller isolated wooded areas that exist in and adjacent to town and village centers. All of these forest landscapes are important, and the conservation and wise use of the resources they contain present challenges that differ according to physical and political geographies. The overriding objective of planning for forest landscape stewardship in the region, however, is to identify key resources, understand and address threats and constraints to the use of those resources, and to provide effective strategies to ensure that those areas provide maximum benefits to our communities.

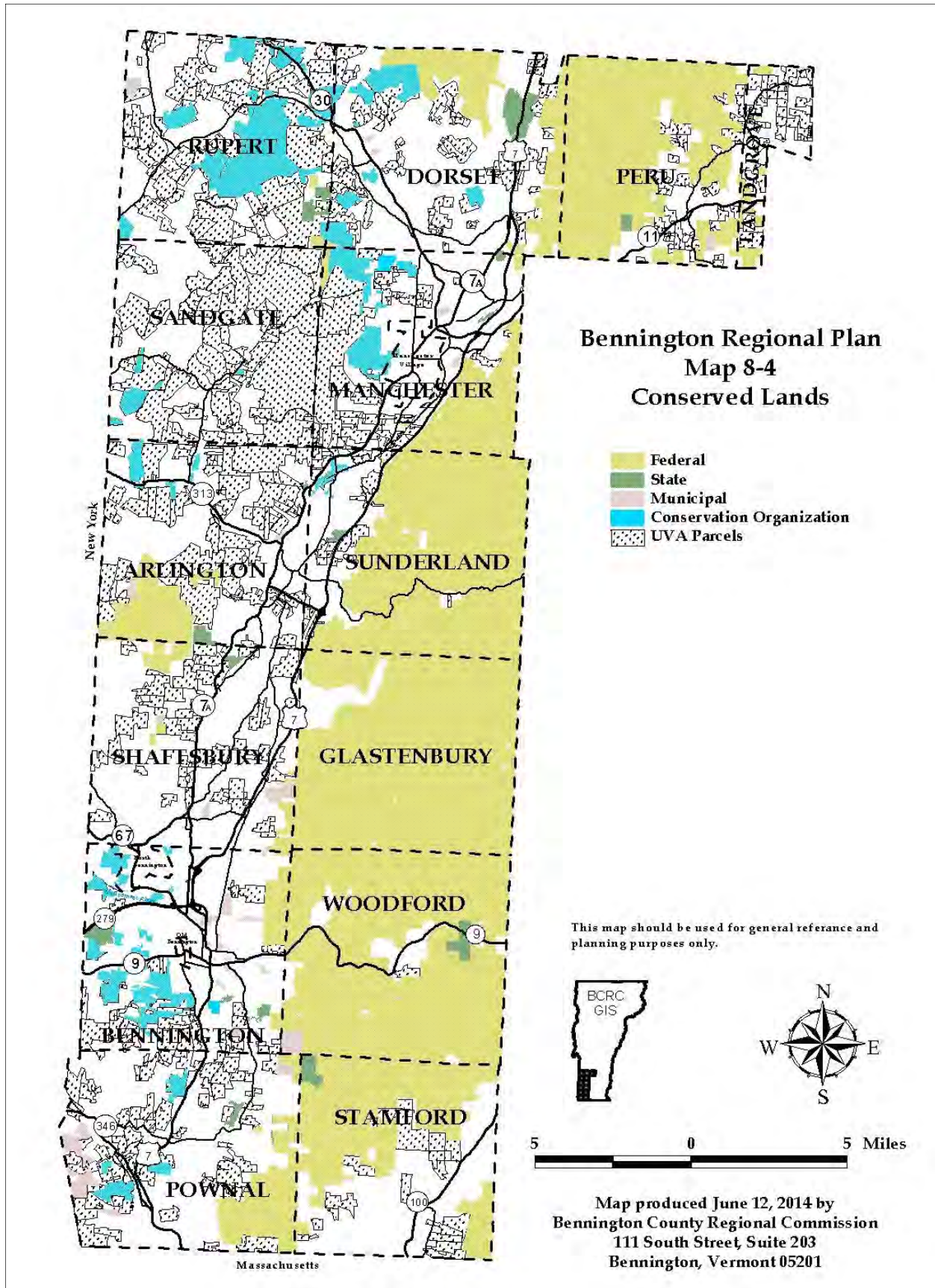
The values provided by the region's forests include; wood and biomass production, fish and wildlife habitat, surface and ground water resources, recreational opportunities, and scenic values. The BCRC [Forest Stewardship Plan](#) includes maps and information giving an overview of each of the resource values. The Vermont Department of Forests, Parks, and Recreation has produced a map of overall "forest stewardship potential" that aggregates many of those values for forests located on private lands (Map 8-5). It is interesting to observe that while the "high potential" stewardship lands are found in all landscape types, many are found in rural valleys and near population centers where competing uses may pose challenges for conservation and forest management. Additional threats derive from variety of sources including airborne pollutants, climate change, invasive species and pests, fragmentation of blocks of forest land, and economic conditions that make productive management of forests difficult.

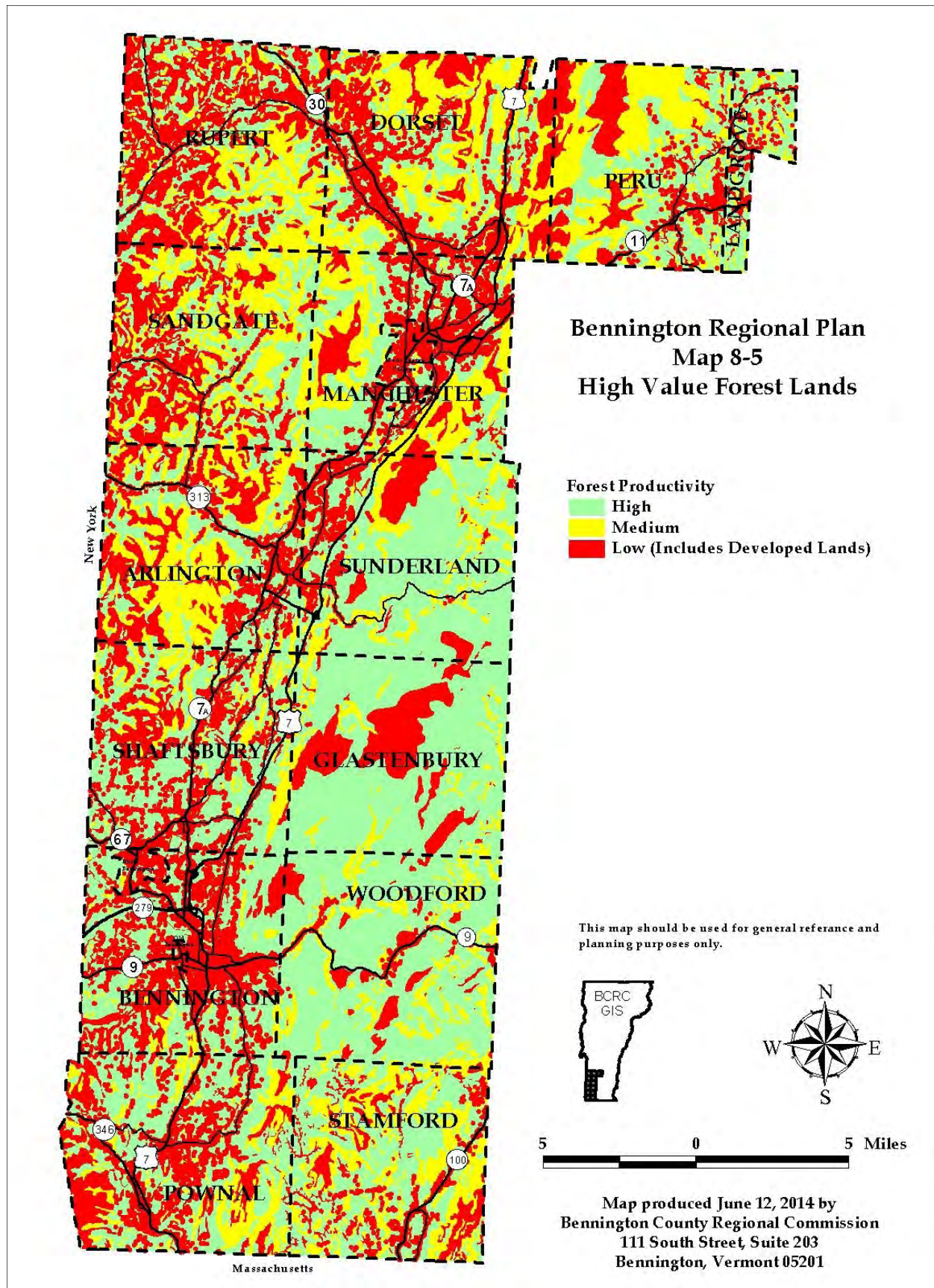
A number of strategies can be employed to help retain forest cover and to maintain and enhance their values. Ownership of land by a public or non-profit entity is an effective strategy that has been widely used in the Bennington Region; a large percentage of the region's forests has been conserved through acquisition. Other public investments, ranging from conservation easements to taxation programs such as the Use Value Appraisal program, also have benefited large areas of forest

Conserved Lands in the Bennington Region

A significant percentage of important agricultural and forest lands in the Bennington Region have been conserved through a variety of techniques (Map 8-4). Public land ownership, principally the US Forest Service (although local governments and the state also own several important parcels), allows for multiple use management of key resource lands. Other lands are protected by private organizations such as the Equinox Preservation Trust, Mount Anthony Preservation Society, the Merck Forest and Farmland Center, and the Fund for North Bennington, and the Nature Conservancy.

Many farm and forest properties, especially in the Taconic Mountains and in agricultural valleys, are enrolled in the state's Use Value Appraisal (or "Current Use") program.





land in the region. Municipal local land use regulations, coordinated through effective regional planning, has played a major role in limiting the potential for scattered development, particularly in upland forest areas. Historical markets for forest products and emerging markets for use of forest lands have provided economic benefits that help landowners maintain their forests. Recreational use and management of forests for lumber, pulp, and biomass for energy provide both economic and social reasons for conserving important forest lands. The potential for meeting a significant percentage of the region's space heating energy needs with the use of locally sourced woody biomass fuels is particularly compelling.



Because most of the Bennington Region is forested, planning for the wise use of forest resources must always be considered in local and regional planning.

A variety of new strategies also can support forest stewardship objectives. Regulatory tools such as transferable development rights, planned unit developments, and clearly defining forest resource based land uses as permitted uses in local plans and bylaws all can be very effective. Education at various levels also has a key role to play. Forest landowners should be educated about existing programs designed to assist with forest management, students need to be exposed to forest science and forestry in their curriculum and appropriate training programs set up and supported, and the general public needs to be better informed about the benefits of forest land conservation and resource management. Another strategy is the use of landowner cooperatives to reduce costs and open up new opportunities for marketing products.

The Vermont Natural Resources Council (VNRC) has compiled a toolbox of strategies, including all of the items described above, that municipalities, landowners, businesses, and other interest groups can use to advance forest stewardship objectives. The report, [Community Strategies for Vermont's Forests and Wildlife: A Guide for Local Action](#), provides descriptions, examples, and links to useful resources and information.

8.6 Earth Resources

Extraction and use of various earth resources in the region have been important at different times in the past. Mining and processing of marble was once an important economic activity in the



Reconstructed marble sidewalk in Manchester village.

area. The abandoned marble quarries of Dorset, many marble sidewalks in area towns, and the bed of the former Manchester-Dorset-Granville railroad are reminders of those days. The mining and processing of slate was important in parts of Rupert and several businesses still operate nearby along the Stone Valley Byway (Route 30 north of Manchester), named to recognize the historic importance of these industries.

The Valley of Vermont, lying between the Green and Taconic Mountain Ranges, was once covered by a large lake and the streams that flowed into it left thick deposits of sand and gravel at their mouths (Map 8-6). These deposits have proven to be important earth resources and considerable extraction and processing continues at this time. The largest and most heavily utilized sand and gravel deposits are located in Shaftsbury and Manchester, although many deposits and active sites are found in towns throughout the region. These extraction operations provide direct employ-

ment and also support the area's construction industry. It is important to protect these resources and plan for their use to ensure that they remain available in the future. Identifying important deposits and limiting land uses that would conflict with extraction of the sand and gravel or render those resources inaccessible will help maintain their viability.

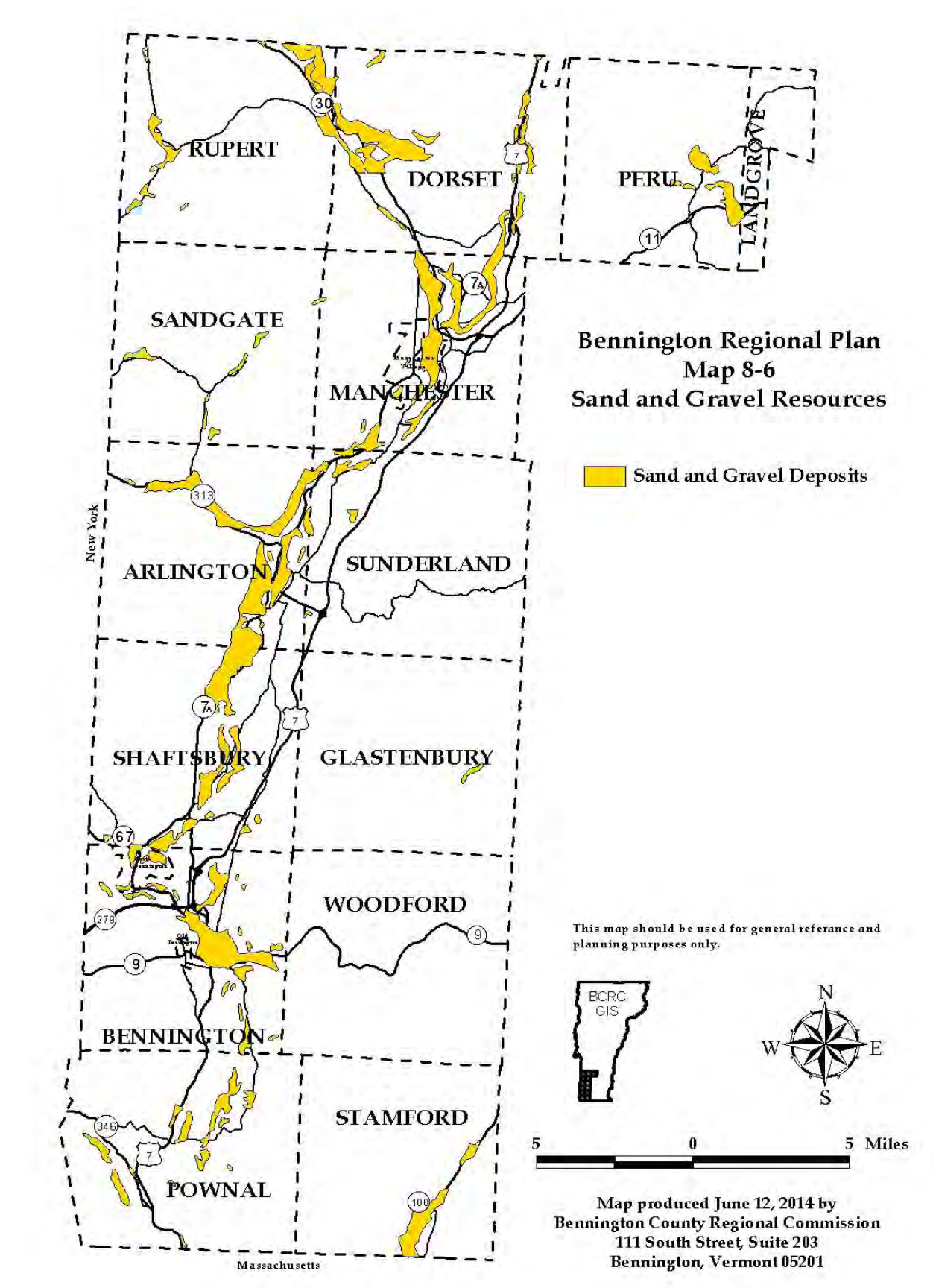
The extraction, processing, and transportation of these earth resources can be damaging to the environment and to public infrastructure if carried out improperly. Potential negative impacts of these operations include:

- Excessive dust and noise that affects nearby residential areas;
- Improper site management leading to soil erosion;
- Failure to follow proper extraction procedures and inadequate site restoration that leaves visual blights on the landscape; and
- Deterioration of town and state highways resulting from frequent trips by heavy trucks.

Most municipal zoning regulations contain special regulations designed to minimize the environmental impacts of earth products removal and to require restoration of the site once work is completed. Several large sand and gravel pits pre-date local and state regulations that require rehabilitation. Landowners can work with local governments and the



An inactive sand and gravel pit in Shaftsbury.



Natural Resource Conservation Service to develop rehabilitation plans that will stabilize the sites and allow for appropriate new land uses.

Some gravel has been extracted from streambeds, but an extremely high level of scrutiny must be exercised over any such operation because of the potential for downstream pollution and damage to the stream ecosystem.

8.7 Fish and Wildlife Resources

Wildlife

The diverse natural environments in the region provide habitat for a wide range of wildlife species. Mature softwood and hardwood forests, young second growth woods, open fields, streams, lakes, wetlands, and special areas such as transitional habitat edges, and rock outcroppings and cliffs support populations of large and small mammals, amphibians, reptiles, songbirds, raptors, upland game birds, and waterfowl.

Many large native species such as the white tail deer and black bear have thrived in the region as the landscape has become characterized by more forestland and old farm fields. Moose have become relatively plentiful as populations have moved south through the Green Mountains. Other native species such as the wild turkey, pine marten, and fisher, have been reintroduced. The turkey population in particular is doing very well in the region.

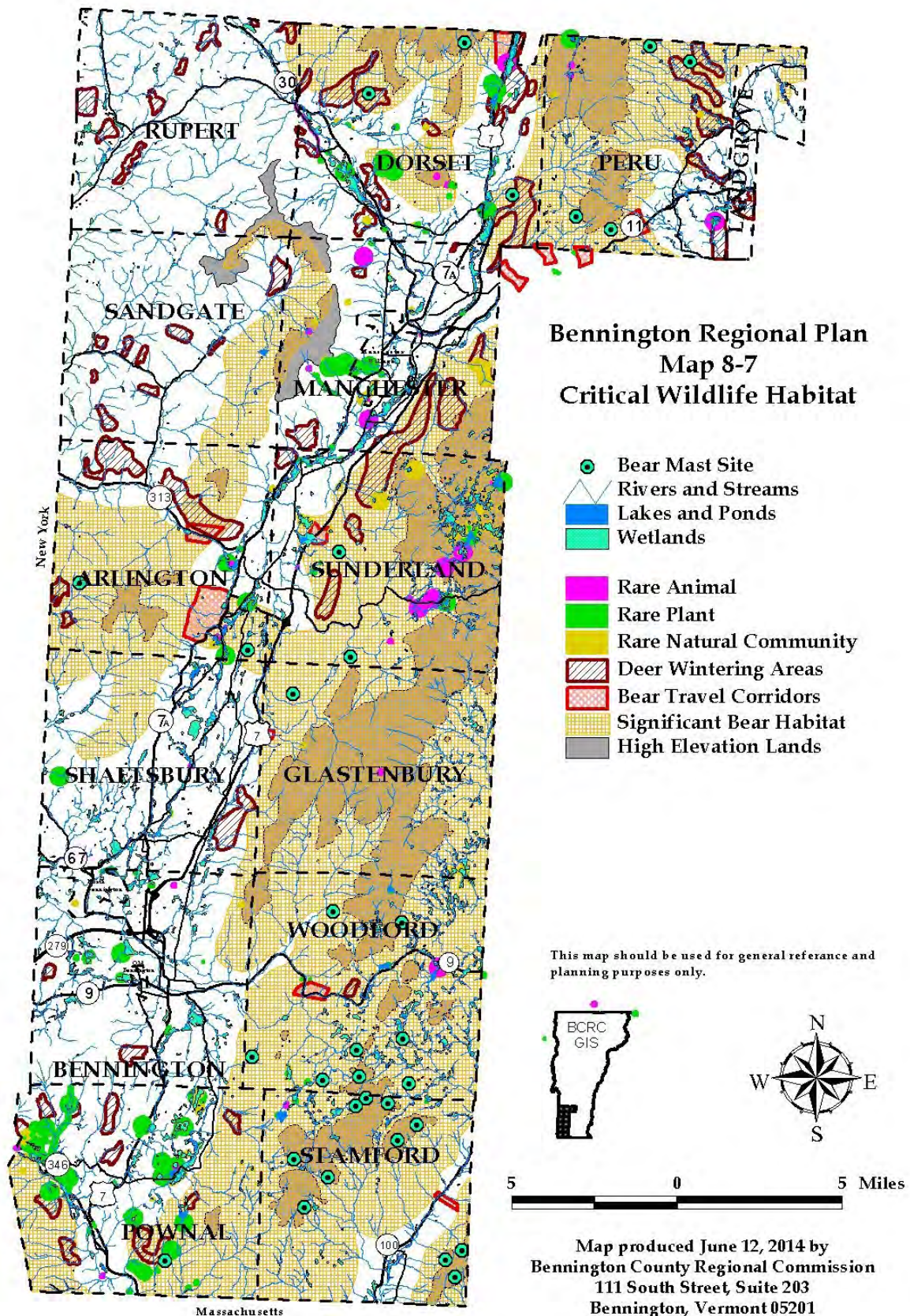
Wildlife species are valued for many reasons. Some people enjoy hunting, and rely on game for food or income, while others appreciate the aesthetic value of wildlife and the important role they play in maintaining the quality of physical and biotic ecosystems.

The quantity and quality of specific habitats are the most important factors in maintaining healthy and diverse populations of wildlife. The [Vermont Department of Fish and Wildlife](#) has identified critical habitat areas (Map 8-7) and developed strategies for their protection. Critical habitats are necessary for the survival of a particular species at any stage of its life and include areas that support the food, shelter, or breeding needs of those species. Special attention is given to critical habitats of species that are identified as rare, threatened, or endangered in Vermont, white-tail deer wintering areas, and key elements of black bear habitat and travel corridors.

Loss of critical habitat can result from environmental factors such as climate change, infestations of destructive insect pests, or rapid colonization by non-native invasive species. Land clearing and development also can impact habitat and cause the displacement of wildlife species. Towns can limit the loss of important wildlife habitat by identifying such areas, working with conservation organizations to preserve the most critical areas, and requiring new development to:

- Maintain or create buffer zones between developed areas and wildlife habitat;
- Maintain vegetated corridors along streams, shorelines, wetlands, and to connect otherwise separated blocks for similar habitat types; and
- Utilize construction practices that minimize environmental disturbances.

The Bennington Region contains many plant species, animal species, and natural communities that warrant special recognition and protection. The [Vermont Natural Heritage Inventory](#) program has



identified those areas and has set up a system for people to identify new species and ecological sites to add to the inventory. The plants and animals in these areas are rare because they have very particular habitat requirements, they are at the edge of their range, or because they are especially vulnerable to disturbance. Protecting these species and natural communities helps to maintain ecological diversity and the health of the natural systems that surround us. Identification of the approximate location of these plants and animals in plans and special environmental studies can help target conservation efforts and avoid accidental destruction during development activities.



White-tail deer and wild turkeys are just two of many important wildlife species common in the region.

Lands lying more than 2,500 feet above sea level in the Bennington Region are important natural environments that support wildlife diversity (Map 8-7). Those areas are characterized by thin soils, vegetation that is sensitive to environmental perturbations, low average annual temperatures, and above average precipitation and wind. With limited exceptions for carefully planned public utility infrastructure development, outdoor recreation, and forestry activities, these areas should be preserved in their natural state.

Deer wintering areas, or “deer yards,” provide protection from the deep snow, cold temperatures, and wind chill of harsh winters. These critical habitats are often associated with a softwood forest cover, face toward the south or west, are at moderate elevation, and have little human disturbance. Deer travel great distances to use the wintering areas and if the habitat conditions are maintained the deer will return to the same sites every year. Conservation efforts can target these areas and municipalities can limit development and require mitigation and habitat restoration.

Black bears rely heavily on remote forested habitat areas, large tracts of which are essential for their survival and reproduction. Fragmentation of expansive areas of unbroken forest would lead to a significant decline in the region’s bear population. Critical black bear habitat elements within these forested areas include stands of beech trees, oak trees, and wetlands. In addition undeveloped forest corridors that link two or more otherwise isolated bear habitat areas are crucial to maintaining the population’s range and genetic diversity. Recognizing and maintaining these habitat elements is crucial to the health of the region’s black bears.

Fisheries

The region's rivers and streams provide cold water habitat for brook, brown, and rainbow trout, smallmouth bass, and several other species of fish, while many of the lakes and ponds provide habitat for largemouth bass, perch, pickerel, and other warm water fish species. In general, all of these water bodies must provide adequate oxygen and support the plant, animal, and insect life that are needed by native fish species.

A number of factors can degrade water quality and fish habitat. Development activities and road maintenance and construction can produce runoff that results in sedimentation and turbidity, affecting the substrate that is critical for supporting invertebrate life and fish breeding habitat, and the quality of the water itself. Unfiltered discharges of stormwater from impervious surfaces and nutrient rich runoff from agricultural operations and other fertilized lawns and fields can introduce damaging chemicals and lead to algae blooms that result in significant drops in dissolved oxygen content. Of course, direct discharges from toxic spills or industrial sites also can threaten fisheries. The Vermont Agency of Natural Resources oversees water pollution control regulations, including an aggressive program to minimize and mitigate [stormwater discharges](#).

Certain activities of streamside property owners can have a significant affect on water quality as well. Clearing native vegetation, including trees that overhang and shade the streams, can increase water temperature, destabilize stream banks and cause erosion, and reduce the amount of organic matter that enters the base of the aquatic food chain. Similarly, construction of ponds along or adjacent to streams tends to raise water temperature and reduce dissolved oxygen content and may lead to the introduction of disruptive non-native species. Impacts from these activities can be minimized by following best practice [pond construction guidelines](#) and by maintaining buffer zones of native vegetation within fifty (50) feet of stream banks. Public access to rivers and streams should be carefully managed as well, with defined areas of access that are designed to avoid erosive damage.



Streams are an important natural and scenic resources that support a significant cold water fishery, including brown and brook trout.

Stream crossing structures—bridges and culverts—can have a significant impact on the health of fisheries by affecting the stream’s substrate and by creating barriers to fish passage, thus restricting access to spawning and refuge areas. Bridges and bottomless plate arches are preferred because they minimize habitat disturbance and are not a barrier to fish passage. When other structures are used, it may be appropriate to minimize impacts to fish habitat by over-sizing the culverts, installing baffles, or burying the culvert below streambed level.



These culverts are large enough to handle flood flows; the depth and speed of water within the culverts provides suitable conditions for movement of stream-dwelling organisms.

Invasive species also can affect water quality and fish habitat. The Agency of Natural Resource’s [Aquatic Invasive Species Program](#) has information regarding aquatic invasive species, nonnative species whose introduction can cause environmental or economic harm or harm to human health, and nuisance species (native species that reach proportions of abundance that may cause economic harm or harm to human health). Priority species of concern at this time include Eurasian water milfoil (a significant problem in Lake Paran), purple loosestrife, didymo, water chestnut, alewife, and several other species.

8.8 Unique Natural Features

The waterfalls, caves, glens, rock outcroppings, mountain summits, and other unique geological, botanical, and hydrological features of the landscape contribute to its special character and should be protected from incompatible development. An inventory that includes many of those features has been compiled by the BCRC (Map 8-8), and more information on those resources is available at the BCRC and through the Vermont Agency of Natural Resources.

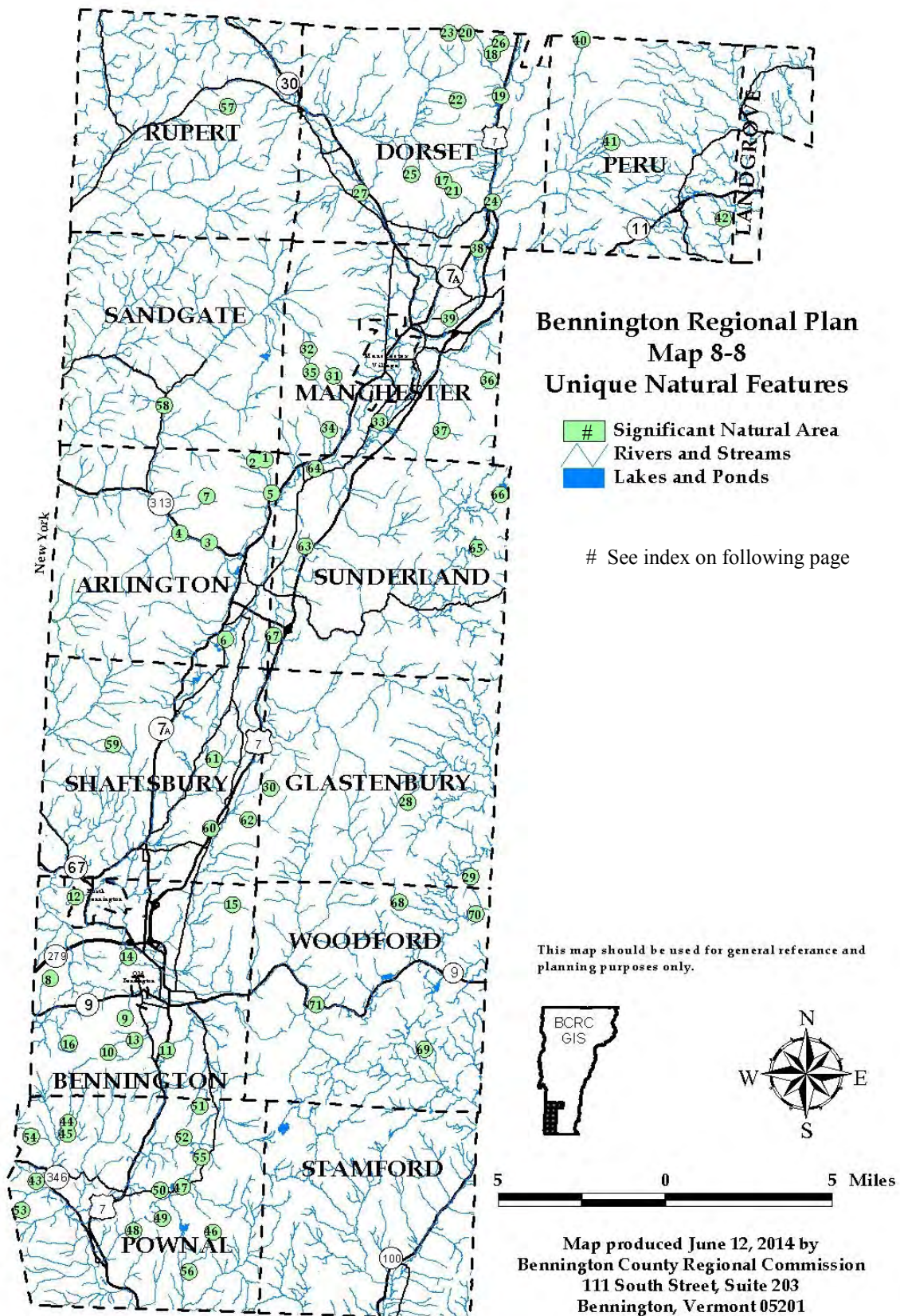
8.9 Scenic and Recreational Resources

Scenic Resources

The scenic quality of the landscape is one of Bennington County’s most important assets. The visual appearance of the towns’ natural and built environment, and the quality of life that it represents, is important to residents, tourists, businesses, and to future economic development.



The “Tubs,” a series of cascades and pools in Pownal is one of many unique natural features that are important to residents of the region.



Unique Natural Features in the Bennington Region (Map 8-8)

<u>Town</u>	<u># Map 8-8</u>	<u>Natural Feature</u>	<u>Town</u>	<u># Map 8-8</u>	<u>Natural Feature</u>
Arlington	1	Kents Cave	Pownal	51	Maple Grove Swamp
	2	Falls on Red Mountain Stream		52	Middle Pownal Rd Swamp
	3	Arlington Folds		53	Pownal Mt. Laurel
	4	Batten Kill		54	Peckham Hill
	5	Canfield Pines		55	South Stream Waterfowl Area
	6	Warm Brook Pond		56	Pownal Red Pines
	7	Hidden Falls	Rupert	57	Merck Forest
Bennington	8	Whipstock Hill		58	Green River Valley
	9	Everett Cave		59	West Mountain
	10	Mount Anthony		60	Shaftsbury Cobbles
	11	Jewett Brook Marsh		61	Trumbull Mountain
	12	McCullough (Mile-Around) Woods		62	Basin Brook Falls
	13	Bennington Tulip Trees	Sunderland	63	Beaver Meadows
	14	Silk Road Alluvial Forest		64	Batten Kill
Dorset	15	Stratton Brook Falls		65	Branch Pond
	16	Pit of Misery		66	Bourn Pond
	17	Green Peak (Mount Aeolus)		67	Beaver Valley
	18	Emerald Lake Natural Bridge	Woodford	68	Little Pond
	19	Emerald Lake Beach		69	Stamford-Woodford Plateau
	20	Dorset Peak Caves		70	Mill Pond Meadows
	21	Dorset Bat Caves		71	Bennington Road Cut
	22	Ketchum Meadows			
	23	Dorset Mountain			
	24	Dorset Dikes			
	25	Owl's Head Mountain			
	26	Falls Cliff and Tallow Caves			
	27	Dorset Marsh			
	28	Glastenbury Mountain			
	29	Castle Meadows			
Glastenbury	30	East Mountain Red Spruce			
	31	Cook Hollow			
Manchester	32	Equinox Mountain			
	33	Batten Kill			
	34	Dyer Quarry			
	35	Skinner Hollow Cave			
	36	Downer Glen			
	37	Lye Brook Falls			
	38	Bullhead Pond			
Peru	39	Barnumville Punch Bowl			
	40	Griffith Lake			
	41	Mad Tom Notch			
	42	Mud Pond			
Pownal	43	Kreiger Rocks			
	44	The Tubs on Bathtub Brook			
	45	Hemlock Gorge			
	46	The Dome			
	47	Barber School Meadows			
	48	Chalk Pond			
	49	Swamp of Oracles			
	50	Cranberry Bog			

The region is characterized by its expansive valleys that have been able to support a rich variety of rural and urban development. That development has occurred in close proximity to distinctive upland features which have themselves limited and channeled the direction of such growth. The varied nature of the valley landforms and built environment juxtaposed with natural green mountainsides gives the Bennington Region its unique sense of place.

Many individual factors come together to create these special visual landscapes. Particular “scenic elements” reflect both characteristics that are unique to the region and/or individual communities as well as certain features that are widely recognized as adding visual interest to a landscape. Bennington, Manchester Village, and Peru have completed scenic resource inventories and assessments that discuss each of these elements in detail: open fields, mountains, water, distant views, gateways, scenic roads and public places, historical sites and districts, and other unique local features. The scenic resource studies also discuss how those features are organized in the landscape to create pleasing views. The “visual qualities” of landscape contrast, order and harmony, focal points, spatial quality, and intactness that make a particular view special and unique to the community must be protected to retain the integrity of the resource.



The scenic quality of the region’s landscape is determined by the interplay of the natural and built environment and by contrasting near and distant visual elements.

The scenic quality of a landscape can be affected, positively or negatively, by change. A number of landscape features are particularly sensitive to change, among them: views across open fields, prominent ridgelines or hillsides, historical buildings and districts and gateways to those districts, and scenes that include important contrasting elements such as water.

Municipal land use plans and regulations can reinforce the scenic quality of the landscape by focusing development in historical village centers and by preserving the rural character of the outlying countryside. Several local communities have adopted special regulations that preserve scenic

resources by requiring aesthetically sensitive design of subdivisions and commercial buildings. In addition, zoning regulations can establish very specific standards and review procedures for new and altered buildings in designated historic design review districts.

Nonregulatory tools also can be used to protect identified scenic resources. Towns and villages should work with conservation organizations such as the Vermont Land Trust to acquire properties, or conservation or scenic easements to properties, that have particular scenic significance to the community. Local and state designated scenic roads, including the region's three state designated byways, can help provide support for preserving and promoting scenic roadway corridors.

Special attention should be given to visual gateways: points of transition along a public highway where it is evident that the traveler is arriving at a unique place. Gateways are located at entry points to historical downtowns and village centers and at places along rural highways where significant visual elements of the landscape first appear. These features can be improved through effective planning of adjacent land uses and integration of site features such as landscaping and careful placement of historic district signs.

Recent interest in development of renewable energy resources raises a number of important issues. Commercial-scale wind turbines will be highly visible and should be located only in locations approved by local communities. Commercial-scale solar energy facilities occupy large open areas and should not be sited at important gateway locations or in the foreground of viewsheds that have been identified by communities as being of particular value. Biomass (wood) heating and electric generation involve significant tree harvesting and may include plants with smokestacks and visible plumes of steam; the environmental and scenic impacts of those operations must be considered. Finally, small-scale hydroelectric generation can impact stream water quality, fish habitat, and aesthetics; restricting development to existing dam sites will greatly minimize any such concerns.

Outdoor Recreational Resources

The region's natural environment provides a wide variety of outdoor recreation experiences; camping, hiking, running, hunting, fishing, road and mountain biking, snowmobiling, snowshoeing, downhill and cross country skiing, and swimming and boating are enjoyed by both residents and tourists. Many of these outdoor recreational pursuits rely on the willingness of landowners to allow access to private lands. While public recreational use of private lands is important, vandalism, littering, and a general disregard for private property can lead to more and more land being restricted. Landowners must feel confident that their land will be respected by the public if these areas are to continue to be used for recreational activities.

The Bennington Region also contains extensive public land and land owned by nonprofit organizations that are widely used for recreation. Portions of the Appalachian Trail, Long Trail, Catamount Trail, Taconic Crest Trail, and the D&H Rail Trail all traverse the region. The Green Mountain National Forest occupies much of the upland forests in the region, and three state parks, several wildlife management and fishing access areas, and a number of town-owned parks and forests mean that recreational opportunities on public land are never far away. These public and conserved lands are economic assets and contribute to the quality of life of the region's residents. Acquisition of additional land well suited for outdoor recreation by local, state, or federal agencies, and by private



Public trail systems, as well as trails that traverse private property—with landowner permission—are one of the region’s most important outdoor recreational assets.

conservation organizations, can be beneficial to the region. In general, publicly owned lands should include areas that are managed for multiple uses to accommodate a variety of recreational activities.

Local trail networks, sidewalks, bikepaths, and bike lanes also are important outdoor recreational resources. Towns and villages should seek opportunities to develop new bicycle and pedestrian facilities and connect them to form networks and to provide access to existing trail networks and outdoor recreational sites. New developments can be planned to include facilities that encourage walking and should be designed to allow for continued use of existing trails in the area.

The region’s rivers and lakes offer opportunities for swimming, fishing and boating, all of which require public access for parking or boat launching. Emerald Lake, Lake Shaftsbury, and Woodford State Parks, the Hapgood Pond Recreation Area in the Green Mountain National Forest, and the recreation center at Lake Paran all offer facilities for recreation on small lakes, and their geographic distribution ensures that no resident of the region is far from one of the parks. Public fishing access areas are available on the

Mettawee River, Batten Kill, Walloomsac River, and Hoosic Rivers, and public access for boating and swimming have been developed in certain areas as well. Recreational use of these resources, and access to them, must be managed to ensure that excessive or inappropriate use does not damage the environment or result in conflicts among different user groups.

It is important that public parks and conserved natural areas remain accessible to the public throughout the year. While maintained park facilities generally are open only for a few months in the summer, these outstanding resource areas offer outstanding opportunities that should be available to residents throughout the year. Local officials should work with state and federal resource managers to ensure that residents have year-round access to these lands and waters. Municipal plans, such as the [Woodford Town Plan](#), can include specific references to off-season use at parks located within their borders.

8.10 Policies and Recommendations

1. The natural characteristics and values of the region’s surface water resources must be preserved. Techniques such as maintenance of an undisturbed buffer, generally at least 50 feet in width, between developed areas and rivers, streams, lakes, ponds, or wetlands are advisable to ensure the protection of water quality and natural ecosystems. Greater buffer distances often are needed based on topographic conditions and the affected waterway. Agricultural and forestry activities should follow prescribed best management practices to

minimize degradation of water quality. The density and type of new development in shoreland areas should be controlled to prevent environmental damage and protect resource values.

2. Recreational uses such as fishing, boating, and swimming are appropriate in natural settings in and along rivers, streams, lakes, ponds, and wetlands. Development planning should include provisions for public access to these resources. The intensity of use and access points should be limited in particularly fragile ecological areas.
3. Construction of in-stream ponds and other activities that disturb aquatic ecosystems or degrade water quality are strongly discouraged. Existing dams that no longer serve a useful purpose, and which do not have significant potential for energy generation, should be removed.
4. River corridor plans should be developed by towns and villages, with assistance from the BCRC, and implemented to allow the natural hydrological functions of waterways to occur without damaging natural ecosystems, public infrastructure, or private property.
5. Water quality should be maintained through comprehensive watershed management activities, including enforcement of appropriate standards for stormwater discharges, and direct and indirect discharges from highway maintenance and land development.
6. Aquifers and groundwater recharge areas, including all source protection areas, must be protected from activities or development that would adversely affect the quantity or quality of these waters. Municipal subdivision and health ordinances, and state regulations, must be strictly enforced to protect individual water supplies.
7. Land development and other activities that would significantly degrade local or regional air quality, or that would impede economic development in the region, should be prohibited. Compact development patterns and alternative transportation systems that reduce the use of motor vehicles should be supported. Efforts to limit damage to the region's air quality that may result from pollution sources beyond the region also should be supported.
8. To discourage the loss or fragmentation of important agricultural and forest lands, public sector planning and investments should promote growth in planned compact centers and should discourage scattered development in outlying areas.
9. Land development occurring on or near important agricultural or forest soils should be planned to preserve the viability, or potential viability, of the site for farming and forest resource based activities. Land suitable for community gardens in or near villages and urban centers should be identified.
10. Support agricultural and forestry based business in the region and the development of local and regional markets for primary and value-added products.

11. Developments should be planned and permitted in a manner that will not preclude the future utilization of important earth resources.
12. The extraction and processing of earth resources and the disposal of wastes must not have an unduly harmful impact on the environment or surrounding land uses and development. Upon completion of extraction and processing, the site should be restored and left in a condition suited for an approved alternative use.
13. An activity or development in the vicinity of important natural areas, fish habitat, or wildlife habitat must be carefully planned to avoid adverse impacts to the resources. The objectives of maintaining protective riparian and shoreland buffers, wildlife corridors, and avoiding habitat fragmentation should guide natural area planning in the region.
14. New building construction on visually prominent shorelines, hillsides, mountains, and ridgelines should include provisions for siting and screening structures to protect important scenic values. Municipalities are encouraged to adopt appropriate ordinances to ensure that locally significant scenic resources are protected. Wind generation and telecommunication facilities on mountains and ridgelines may be appropriate to meet identified public needs, but should be avoided when construction would destroy critical natural resources or degrade a viewshed identified as essential to maintaining the unique character of a community or the region.
15. Maintaining and improving public access to important outdoor recreational areas and sites in rural areas is a priority for the region. Redevelopment of waterfront properties in developed areas for residential, commercial, or recreational use is appropriate and must consider incorporating flood safety measures as appropriate.
16. Owners of valuable agricultural and forest lands should consider participation in the Vermont Use Value Appraisal program.
17. The BCRC should continue to participate in cooperative planning for regional natural resources. Such planning may consider issues related to environmental quality, public health, recreational use and public access, fish and wildlife habitat, agriculture and forest productivity, and scenic values, and should involve representatives of local governments, special interest groups, and other interested parties.
18. Acquisition of important forest lands by the U. S. Forest Service, following consultation with affected local governments, is a valuable way to maintain and enhance resource values and opportunities. Acquisition of valuable resource lands by local and state government, land trusts, or private conservation organizations, also can be an appropriate and effective conservation strategy.

IX. FLOOD RESILIENCE

9.1 Overview

The importance of preparing for, responding to, and recovering from serious flooding events was brought into sharp focus in the Bennington Region, and throughout Vermont, when Tropical Storm Irene hit the area in August of 2011. Several inches of rain fell in a short period of time over the central Green Mountains and the torrents of water that poured down through streams, rivers, and other drainage ways caused catastrophic levels of damage in many communities. In Bennington region towns, several homes and camps were washed away and many others suffered costly damage, personal property—including automobiles—was destroyed, and businesses in flood-impacted areas were forced to shut down for several days or weeks.

Most significant, and costly to taxpayers, was the extensive damage done to municipal and state transportation infrastructure and public utilities. The BCRC received over 200 reports of damage to local roads that included damaged and destroyed bridges and culverts, washed out sections of roadway, and seriously damaged public water supply systems. The VT Route 9 bridge in Woodford was destroyed, closing the only highway connecting Bennington to points east and the Kelly Stand Road in Sunderland was completely destroyed; the multimillion dollar project to rebuild that road was completed, and the road reopened, in October 2014.

As serious as the damage was in the Bennington region, other parts of the state suffered even more severe losses, with entire downtown districts suffering major damage



Inspecting the section of the Route 9 bridge east of Bennington that was destroyed during Tropical Storm Irene.

and business loss, several communities were completely cut-off from outside road access for weeks, and entire riverside neighborhoods were destroyed, unfortunately with some loss of life. If the center of Tropical Storm Irene had followed a line just a few miles further west, the damage in Bennington County communities could have been much more severe.

Changing climate conditions mean that extreme weather events and flooding are likely to occur with much greater frequency. It is imperative, therefore, that communities properly prepare to minimize future flood damage and to develop the capacity for post-flood resilience. The State of Vermont maintains a [Flood Ready Website](#) that provides comprehensive information for municipalities. Effective flood resilience request several steps, including:

1. Assessment of hazards and risk;
2. Avoidance of increased risk;
3. Reducing current risk;
4. Preparing for emergency; and
5. Insuring residual risk.

Once damage from a flood has occurred, it is important that communities have the capacity to effectively rebuild and recover. Following through on risk reduction strategies is critical at this stage, as is the ability to effectively access financial and other support from federal and state government agencies. The BCRC played an important role during the post-Irene recovery and it is important that its responsibilities are clearly identified and implemented.

9.2 Assess Hazards and Risk

The region's rivers and streams have been accurately mapped as have areas that are at risk from various types of flooding (Map 9-1). A floodway is defined as the channel of a river or other watercourse and the land immediately adjacent to it. Surrounding the floodway are the defined areas that are at risk from high water events.

Flood hazard areas (often described as the "100-year flood zone") include areas that have been determined to have a one percent or greater chance of inundation from flooding in any given year. These are the areas referenced in the Federal Emergency Management Agency's (FEMA's) flood insurance program and shown on FEMA's flood insurance rate maps. Most municipalities in the Bennington Region have identified these areas in their comprehensive plans and have zoning regulations that control the type of development that occurs there. In several communities, however, a large number of existing structures are located in these areas (Table 9-1). Bennington, for example, is located on a level plain where several streams merge from various directions and has several hundred structures located in the flood hazard area. Pownal includes several dense housing developments, primarily mobile home parks, that are located in the flood hazard area, and a several important commercial areas in Manchester's downtown, where the east and west branches of the Batten Kill meet, also lie in areas threatened by floodwater inundation. [FEMA's Hazard Mitigation Program](#) may provide funding to support relocation or elevation of some of these structures. Additional information on resiliency planning for mobile homes and parks can be found in a [report](#) prepared by the Vermont Department of Housing and Community Development.

[River corridors and Fluvial Erosion Hazard \(FEH\) zones](#) require special attention because of the potential for flood-related damage to buildings and critical infrastructure resulting from the erosive force of floodwaters. River corridors include the areas adjacent to rivers that are required to accommodate meanders and changes in course that are needed to maintain dynamic equilibrium over time. [River corridor maps](#) have been developed based on scientific, location-specific assessment of the geomorphic (or physical) condition of a river developed by the [Vermont Rivers Program](#). Most of the major river corridors in the Bennington Region have been delineated by the BCRC in cooperation with the Bennington County Conservation District and the state. The maps show corridors within which the rivers are likely to meander over time to find their most stable path down a valley, while efficiently moving and storing sediment loads. The shape and width of the meander belt varies with valley shape, surficial geology, and the natural channel length, slope, and width. The lower the slope and the broader the valley, the more sinuous a river will likely be in a natural setting.

As noted above, most flood-related damage in Vermont results from the erosive power of water causing damage to buildings and critical public infrastructure such as roads, bridges, and culverts (i.e., structures within FEH zones). Public water and sewer systems, parks, and important historic sites

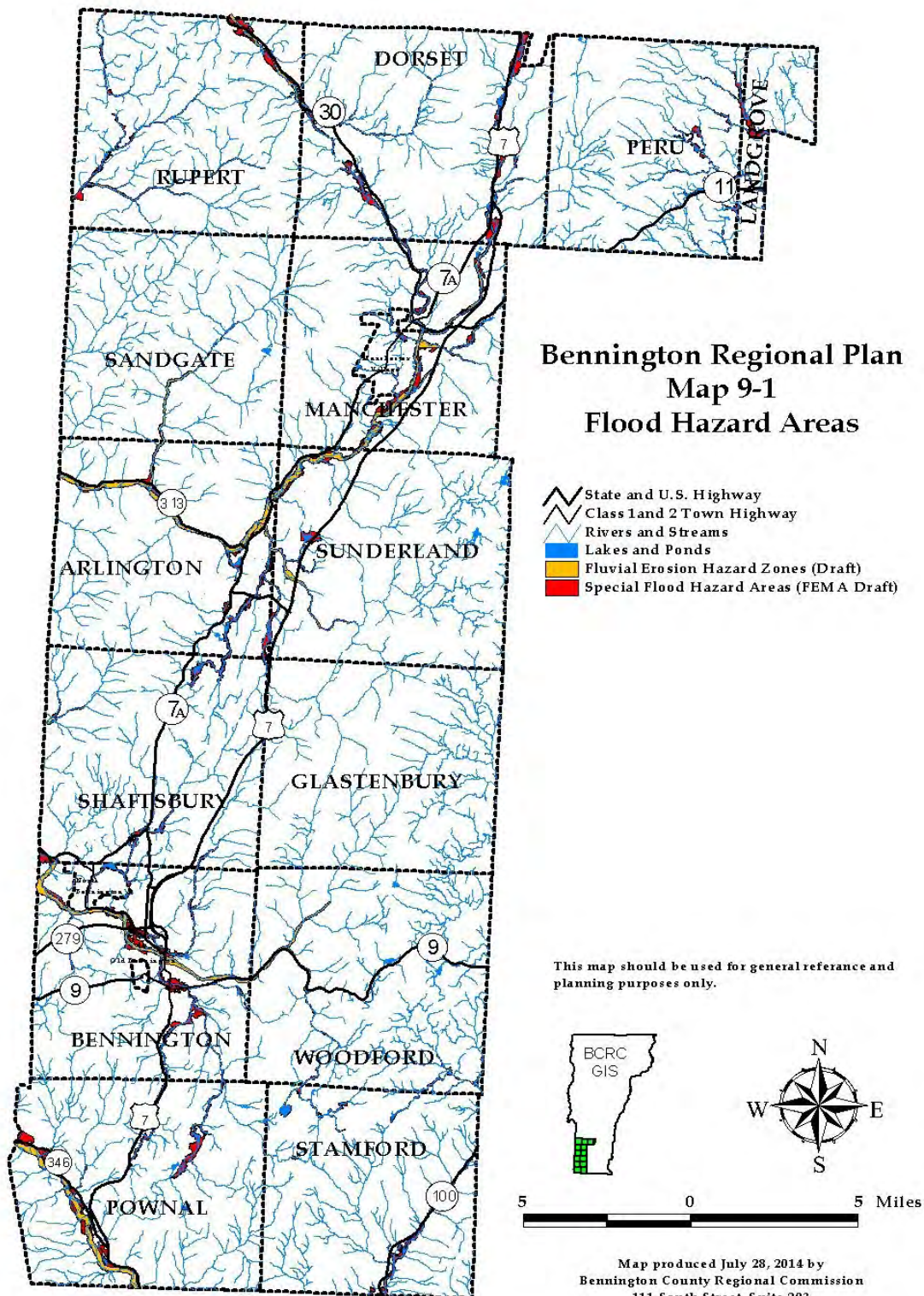


Table 9-1. Structures located in mapped flood hazard areas and fluvial erosion hazard areas.

Town	Structures in Flood Hazard Area and Fluvial Erosion Hazard Areas	Structures in Fluvial Erosion Hazard Areas
Arlington	164	91
Bennington	515	65
North Bennington Village	15	6
Old Bennington Village	0	0
Dorset	38	10
Glastenbury	0	0
Landgrove	0	0
Manchester	169	97
Manchester Village	12	3
Peru	0	0
Pownal	212	41
Rupert	18	7
Sandgate	14	12
Shaftsbury	9	0
Stamford	16	0
Sunderland	6	2
Woodford	59	59

also have been damaged by flooding-related erosion. Where stream meanders are confined by human activity, the waterways lose their equilibrium and become steepened, straighter and more powerful, significantly increasing the risk for damage.

Elements of the natural environment play an important role in minimizing the extent of the risk from flooding. Upland forests help to retain water during storms and minimize the erosive forces that would add sediment and debris to river channels. Wetlands, particularly those in floodplain areas, retain stormwater and protect water quality during and after heavy rains. The Natural Resources chapter of this plan documents the region's extensive forest cover as well as the location of wetland areas. Incorporating strategies for preservation of these natural features into local and regional planning is vital to developing long-term flood resilience in the region. Continued mapping of flood and fluvial erosion hazard areas, resource conservation, and outreach to municipalities and property owners will ensure that risks are located and understood.

9.3 Avoid Increasing Risk

All of the region's communities except the unorganized town of Glastenbury have flood hazard area regulations, generally included as part of their zoning bylaws. These regulations allow

communities to participate in the [National Flood Insurance Program](#) and, through that program, for property owners to have access to flood insurance. The regulations required by the insurance program set development standards that minimize adverse impacts on specific structures that would be caused by high water. Many municipalities around the state are now adopting regulatory standards that protect river corridors and floodplain functions from new encroachments such that high water and erosive power can be tempered and not cause ever-mounting damage to municipal investments and existing structures.

Several towns in the region have adopted regulations to protect river corridors or mapped FEH zones. Existing structures along a stream or river that is far out of an equilibrium condition are at risk, however the most important reason to protect river corridors is to allow the river to adjust to the changing levels of water, sediment, and energy, and thereby dissipate its destructive potential through flooding prior to impacting concentrations of residential or commercial properties or critical public infrastructure. It is equally important that new local or state infrastructure be located outside hazard areas, or when that is impossible (as with the case of some highway, bridge, and water treatment facilities) that it be properly designed and constructed—as discussed in the following section. Towns and Villages can learn more at the [municipal planning section](#) of the Flood Ready Vermont website.

9.4 Reduce Current Risk

Roads and stream crossing structures (culverts and bridges) are particularly vulnerable to damage from flooding. Many existing culverts are too small to carry flood waters and too narrow to accommodate the stream channel, causing a back-up of sediments and creating plunge pools that damage roads and imperil nearby properties. It is important for communities to conduct an [assessment of the physical and geomorphic condition of its culverts and bridges](#), to maintain a record of the status of this infrastructure, and to develop a plan for needed upgrades. Towns and villages should adopt the most current “[VTrans Orange Book](#)” standards to correctly size replacement structures.

New [Emergency Relief and Assistance Fund](#) (ERAF) Standards took effect in 2014. This program provides state funds to communities after a declared disaster to cover a portion of the cost of repair and restoration work not covered by federal funds. Communities receive a greater amount of state funding if they have taken specific steps to reduce the current risk (an additional five percent for steps 1-4, below, and another five percent for also implementing step 5, below:

1. Participate in or have applied to the National Flood Insurance Program;
2. Annually certify that Road and Bridge Standards meet or exceed the standards in the current *VTrans Orange Book: Handbook for Local Officials*;
3. Annually update and adopt a Local Emergency Operations Plan.
4. Adopt a FEMA-approved local hazard mitigation plan (or, a draft plan has been submitted to FEMA Region 1 for review).
5. Protect River Corridors from new encroachment; or, protect flood hazard areas from new encroachment and participate in the FEMA Community Rating System.

[Local hazard mitigation plans](#) involve identification of local hazard issues, prioritize the steps needed to mitigate risk, and provide access to a funding source through the [FEMA Flood Mitigation Assistance Program](#). To be effective the local hazard mitigation plan must clearly identify and prioritize specific projects. The BCRC has worked with several towns to develop these plans and is available to offer continuing assistance with new and updated plans. Funding to implement these mitigation projects may be available through the [Hazard Mitigation Grant Program \(HMGP\) in Vermont](#) or through other FEMA Flood Hazard Mitigation Assistance programs.

9.5 Prepare for an Emergency

Once a flood or other emergency situation occurs, it is imperative that municipalities have a consistent and reliable system for coordinating response. A [Local Emergency Operations Plan \(LEOP\)](#) is an effective way to coordinate local response and facilitate contact with other towns and agencies. The LEOP provides a list of local names, numbers and assigned roles, resources available in nearby communities and contact information, and provides a framework for coordination with support services available at the state and federal level. The LEOP should be updated annually after Town Meeting and a copy submitted to the Vermont Department of Emergency Management and Homeland Security. The BCRC is available to assist with preparation of these documents.

During large events multiple towns may collaborate, sharing staff, equipment, and other resources to achieve the most rapid and cost-effective response. Bennington County's [Local Emergency Planning Committee](#) (LEPC #7) provides an ongoing forum for intermunicipal communication and preparedness planning. Municipalities also can execute formal intermunicipal mutual aid agreements that specify how support services are requested, cost sharing, and other issues. Having formal agreements in place will not only assist in the response phase of an emergency, but also can help recover reimbursable costs through FEMA in the event of a federal declaration.

The BCRC works with the Vermont Department of Emergency Management and Homeland Security, the Vermont Agency of Transportation, the Vermont Agency of Natural Resources, and the Vermont Agency of Commerce and Community Development during the response to an emergency by serving as a liaison between local governments and state and federal agencies, providing immediate damage reporting and mapping, and helping to staff the State Emergency Operation Center when required.

9.6 Insure Residual Risk

Most homeowner's insurance policies do not cover damage from flooding. The [National Flood Insurance Program](#) (NFIP), however, offers flood insurance covering properties anywhere in communities that participate in the program - including the high risk Special Flood Hazard Area. Under federal law, lenders must assure that mortgages for structures in the Special Flood Hazard Area are insured for flood risk. However, many structures in Special Flood Hazard Areas do not carry flood insurance and many structures are not fully insured to receive "replacement value" after a disaster.

Flood insurance information is available for consumers at www.FloodSmart.gov. That site will help identify properties in areas of defined flood risk, explain the FEMA map products, and outline in-

insurance options. Recent federal legislation that requires the NFIP to pay accumulated debt and build a reserve fund to handle the costs of large disasters resulted in increased cost of flood insurance, but insurance for affected properties remains available through the NFIP.

If a structure is not insured the owner assumes the entire risk of property loss. In the event of a flood disaster the owner may be eligible for Individual and Households Program Assistance through FEMA but this funding will not cover any losses that could have been insured. At the time of Tropical Storm Irene, the maximum Individual Assistance grant was \$30,200 and the average grant in Vermont was \$6,752, while the average NFIP claim was \$43,078.

Several communities in Vermont, including Bennington, participate in the [FEMA Community Rating System](#). Because these communities have taken extra steps to reduce flood damage, flood insurance policies are discounted from 5% to 40%. Additional information about CRS and other flood hazard initiatives is available from the [Watershed Management Division](#) of the Agency of Natural Resources.

A community's historic structures present another flood insurance related concern for municipalities. [Historic structures](#) must pay actuarial flood insurance rates like any other structure. Many community regulations provide an exemption for historic structures from the requirement to elevate when substantially improved (such as during restoration). However, a building with a basement or a low floor below base flood elevation may have a very high flood insurance rate.



9.7 Recovery After a Flood

Following the immediate response to a flood, communities often are faced with significant costs. Indeed, municipalities are generally the entities that suffer the most costly damage during a flood. After a federally-declared disaster qualified losses may be reimbursed through the federal [Public Assistance program and Vermont ERAF](#). Other programs may apply in certain situations, such as the [Emergency Relief for Federally Owned Roads](#) (ERFO) program, which provided financial support to the Town of Sunderland covering the multi-million dollar reconstruction of the Kelly Stand Road following Tropical Storm Irene.

Effective long-term recovery from a flood requires that each of the steps outlined in this chapter are followed. Working to minimize risk and future damage, maintaining a current emergency operations plan, and insuring residual risk to the extent possible are the best ways to support recovery and ensure that a community is as resilient as possible.

9.8 Policies and Recommendations

1. Municipalities, the BCRC, and the Vermont Agency of Natural Resources should work cooperatively to complete and maintain flood and fluvial erosion hazard maps and to identify specific areas of concern that should be targeted for mitigation actions.
2. Municipalities, state and regional agencies, and conservation and watershed organizations should work together to maintain and enhance the ecological integrity of rivers, streams, wetlands, and upland forests.
3. An undisturbed buffer of natural vegetation should be established and maintained between rivers, streams, and other waterbodies to maintain water quality and to attenuate overland flow. This buffer should be at least 50 feet wide for streams with minimal potential for lateral or or vertical adjustment or 100 feet for streams with significant potential for such adjustment.
4. Municipalities should maintain up-to-date regulations to limit and control development in flood and fluvial erosion hazard areas. These regulations are designed to protect property and the health and safety of the population against the hazards of flood inundation and erosive damage that may be incurred when unsuitable development occurs in areas prone to flooding and/or erosion.
5. New development in special flood hazard areas and fluvial erosion hazard zones should be avoided whenever possible. Any new development that does occur must be designed and sited so as to avoid any increase in flooding or erosion.
6. Support acquisition by public entities or conservation organizations of critical buffers and land within erosion hazard zones, especially those identified in hazard mitigation and river corridor plans.
7. Municipalities should adopt the most recent Town Road and Bridge Standards and any updates as they are developed. Bridge and culvert repairs and replacements should be designed based on hydraulic studies to avoid constrictions that would accelerate flow and cause damage to public infrastructure and private property.
8. Existing local and state bridges and culverts that would impede flow during flooding events should be reconstructed or replaced as part of regular scheduled maintenance or through special hazard mitigation initiatives.
9. Support efforts to provide education and outreach to property owners within flood zones to encourage flood-proofing or buy-outs of structures subject to repeated flooding and

eligible for funding under the FEMA hazard mitigation grant program.

10. Municipalities should participate in the Community Rating System program by implementing projects that would ultimately lead to rate reductions in flood insurance premiums for residents and businesses.
11. Owners of property in flood hazard zones should be encouraged to secure propane tanks, fire wood, boats and other items that could float away in a flood, thereby creating hazards for people, property, and infrastructure downstream.
12. Municipalities should maintain and adopt Local Emergency Operations Plans for emergency response and flood preparedness.
13. Municipalities should maintain current hazard mitigation plans that fulfill FEMA requirements.

Infrastructure of the Shires

X TRANSPORTATION

10.1 Overview

Safe, convenient, and economical transportation is essential to the people and economy of Bennington County. A variety of transportation modes exist in the region (Figure 10-1). A network of town and state roads and bridges serves through traffic, provides access to residential properties, and supports the area's commercial and industrial businesses. The Vermont Railway traverses the region from North Bennington to Dorset and a busy freight corridor runs along the Hoosic River in Pownal. The W.H. Morse State Airport in Bennington provides facilities for a variety of light aircraft uses. The Green Mountain Community Network operates local fixed-route and commuter bus service and an intercity bus service connects stops in the region with points north and west. Pedestrians and bicyclists make use of roadways as well as the sidewalks and pathways found in and near downtowns, village centers, and residential neighborhoods. Each element of the region's transportation infrastructure will be discussed in this chapter, with an emphasis on support for regional development goals. This plan also will identify current transportation improvements. Greater detail on transportation issues in the region is provided in the [Bennington County Regional Transportation Plan](#) which is adopted as part of this comprehensive plan and included herein by reference.

An understanding of how transportation is related to regional land use, public health, energy, environmental quality, and economic development objectives is fundamental to this plan. While it is critical that transportation infrastructure provides safe and convenient access for residents and businesses, it is equally important to ensure that the underlying land use pattern supports and encourages efficiency and the use of alternative modes of transportation. Mobility and access benefit from growth that is concentrated in compact urban and village centers that are connected to each other, and to areas outside the region, by roadways through rural areas and via rail, air, and public transportation.

10.2 Highway System

The purpose of the region's network of roads and bridges is to provide for the safe and efficient movement of people and goods, supporting healthy communities, and structuring future growth and development. There are over 650 miles of state and local roads in the region (Table 10-1). The principal north-south travel route through the region is provided by Routes 7 And 7A. A number of state highways branch off from this central corridor and provide access to rural areas and village centers to the east and west. Town maintained road networks serve urban and village centers as well as lower-density and rural areas in the valleys. With the exception of a few minor roads (often extending into unmaintained public rights-of-way and legal trails) that follow streams up into mountain hollows and some US Forest Service roads, there are no public roadways in the region's mountainous upland areas. Privately owned and maintained roads in the lowland areas exist primarily to serve individual residential developments. Private logging roads provide access into some upland forest areas for forest resource and some utility and recreational activities, while a private toll road to the summit of Mount Equinox is a seasonal tourist attraction.

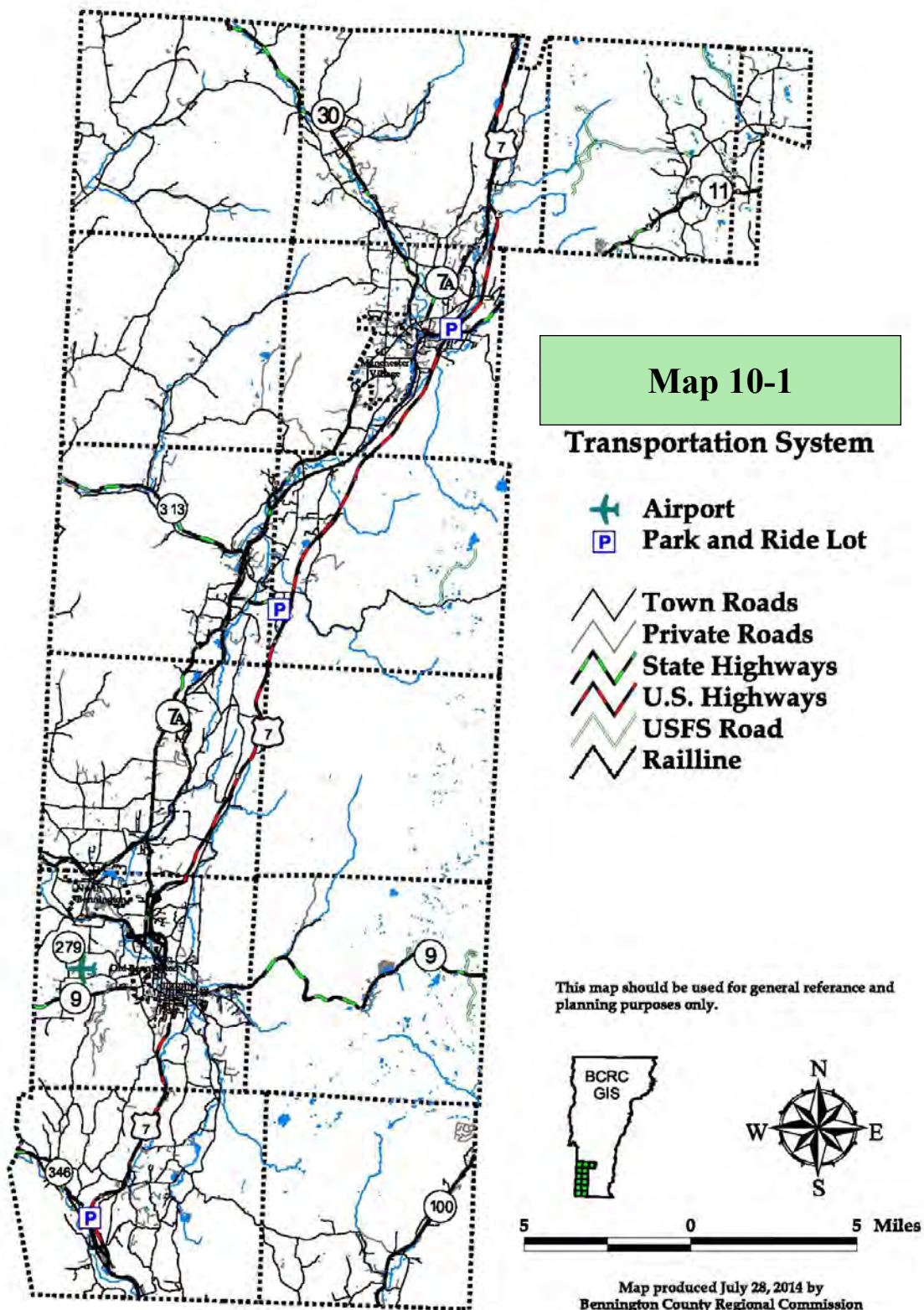


Table 10-1. Bennington Region Municipal and State Highway Mileage Source: Vermont Agency of Transportation (2013)						
	Municipal Highways					
	Class 1	Class 2	Class 3	Class 4 and Legal Trails	State Highways	Total *
Arlington	0	7.91	26.80	7.27	14.05	48.76
Bennington	3.62	11.49	84.26	5.20	27.93	127.30
North Bennington Village	1.67	0.08	7.28	0	0.40	9.43
Old Bennington Village	0.58	1.24	1.23	0.29	0	3.04
Dorset	0	13.85	24.86	8.59	13.67	52.38
Glastenbury	0	0	1.61	1.50	1.78	3.39
Landgrove	0	4.82	9.55	1.50	0.82	15.19
Manchester	4.58	15.65	23.55	6.68	16.62	60.40
Manchester Village	2.01	3.39	3.69	0	0	9.09
Peru	0	6.18	16.11	5.86	4.63	26.92
Pownal	0	11.85	51.98	8.17	12.62	76.45
Rupert	0	13.18	28.15	5.91	3.83	45.16
Sandgate	0	7.58	21.99	4.05	0	29.57
Shaftsbury	0	19.99	50.44	2.23	15.85	86.28
Stamford	0	3.50	14.23	10.93	5.75	23.48
Sunderland	0	15.17	14.11	1.22	11.37	40.65
Woodford	0	0	2.50	7.70	9.58	12.08
Total	12.46	135.88	382.34	77.10	138.90	669.57
* Total of highways open to automobile travel (excludes Class 4 municipal highways and legal trails)						

The region's road system should be planned and managed to achieve a number of important objectives. Investments should focus primarily on existing roads, with an emphasis on safety improvements, minimization of long-term maintenance costs, and support for development in villages, urban centers, and planned growth areas. Any new road construction should be planned to meet these same goals. A critical objective applying to all road construction and maintenance projects is the provision of spaces that promote public health through adherence to "[Complete Streets](#)" principles. The complete streets approach acknowledges that roadways exist for a variety of user groups: walkers, bicyclists, and public transit riders, as well as for cars and trucks. Ensuring that roads are safe and accessible for all of these groups will promote physical activity and health, reduce reliance on fossil fuels, and facilitate the

development of the compact mixed use centers that form the basis for the regional land use plan.

Roadway construction and maintenance projects also should be planned to avoid environmental damage, minimize pollution from stormwater runoff, and to withstand severe flooding events. Moreover, roads need to be appreciated as important public spaces, being places where, as motorists or pedestrians, we observe much of our landscape and interact with each other. It is important, therefore, that roadways be as attractive as possible, preserving scenic views, mature street trees, and in village and downtown centers especially, providing amenities such as wide sidewalks, benches, landscaping, and pedestrian-scale lighting.

Highway Classification

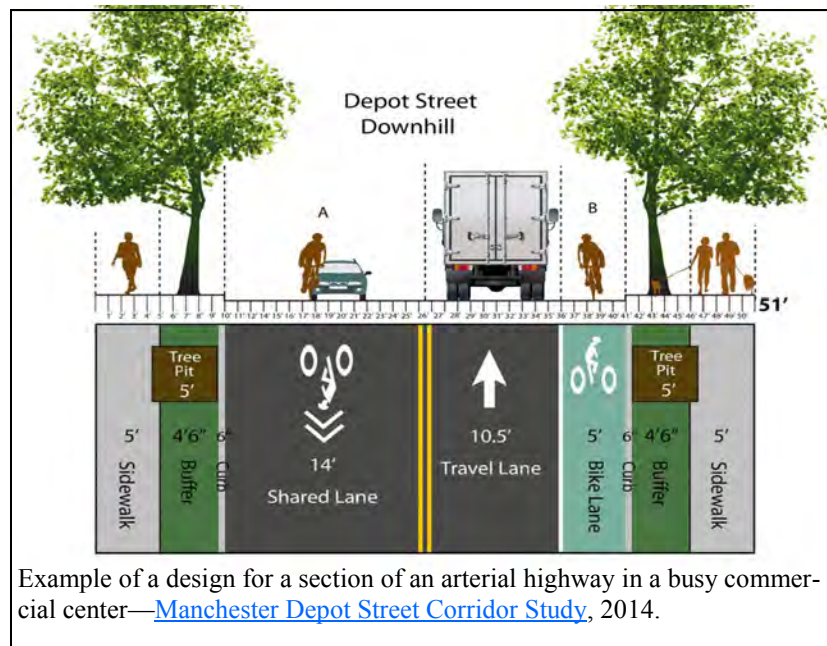
Roadways traditionally are organized into four categories, each serving a different primary function. **Expressways**, or limited access highways, are designed to carry through traffic between destinations with sufficient capacity that traffic along the roadway never stops moving. These roadways can be accessed only at interchanges and direct access between the highway and adjacent land is not permitted. US Route 7 between the center of Bennington and East Dorset and Vermont Route 279, connecting VT Route 9 east and west of Bennington, are the region's two expressways. A total of seven interchanges are located along these highways in Bennington, Sunderland, Manchester, and East Dorset. These roadways have served to provide a convenient and scenic route for through travelers and remove some disruptive truck traffic from downtowns, village centers, and residential neighborhoods. A state welcome center has been constructed at the intersection of US 7 and Vermont 279 to provide information about the area to travelers.

Development is naturally limited along expressways because of access restrictions, but it is important for municipalities to give special attention to access and related land use issues near interchanges. Any development in these areas should be carefully planned to discourage unsafe speeds and turning movements, as well as the kind of sprawling development that could be detrimental to the vitality of established downtowns and commercial centers. It also is vitally important to make sure that safe travelways and crossings for walkers and bicyclists are available in these areas. In many cases, the expressways were constructed without consideration of these other users of the transportation system, and retrofits to improve accessibility and safety are required. For example, plans currently are being advanced to construct a pathway and crosswalk along Kocher Drive in Bennington to provide a safe crossing at the US 7 interchange.



Pedestrians attempting to cross six lanes of traffic at the US 7 interchange at Kocher Drive in Bennington. US 7 currently forms a 2.3 mile long barrier to bicyclists and walkers in the center of Bennington. The BCRC and Town of Bennington are developing plans to reduce the roadway width, provide a safe crossing location, and install a pathway alongside Kocher Drive.

Arterial highways provide principal travel routes between and across villages and urban centers. Arterials usually are state highways where direct access to adjacent properties is possible, subject to control over the location and design of entrance and exit drives (the [BCRC Access Management Study](#) for the VT 67A corridor provides a good overview of these issues). These roadways often connect to interchanges and provide access to secondary state highways and some local roads. VT Routes 9, 11, 30, 67A, and US 7 (north and south of the limited access portion of the highway) are the arterial highways in the region.



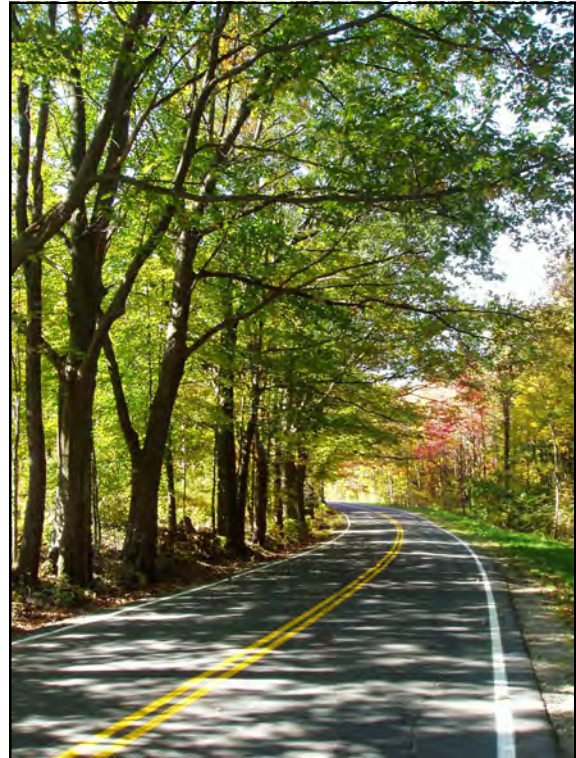
Arterial highways should be constructed and maintained in accordance with the [Vermont State Design Standards](#) and include important elements such as shoulders of sufficient width to accommodate bicycle travel, climbing lanes in areas of steep grades, and [traffic calming](#) (discussed further below) and gateway treatments at the entrance to villages centers, downtowns, and other areas of relatively high density development. It is particularly important to note that these arterials should change in function and character when they pass through downtowns and village centers. In some of these places the highways become Class 1 municipal highways while in other cases they remain under the jurisdiction of the state. Walkers, bicyclists, buses, and parked cars are common in these compact centers, and the arterials often form the center of an historic main street. Narrower roadway width, sidewalks, crosswalks, street trees, and restricted turning radii are acceptable and appropriate along arterials that are located in community centers. Through flow of vehicle traffic should be slowed to promote safety and support a human-scale environment.

In areas outside of community centers, access controls are important to ensure safety and the function of the arterial. Residential developments should be designed to avoid direct access to the highway from individual streets. Any commercial developments along arterials should avoid excessive driveway widths and have a limited number of access points while providing adequate sight distances for drivers and areas for acceleration and deceleration as appropriate. Local subdivision and zoning

regulations can supplement any state review and approval of new access points along these highways.

Collector roads provide connections between arterial highways and local streets and also allow for direct access to adjacent properties. State highways such as Routes 346, 100, 313, 7A, 153, and 67 are all classified as collectors. Construction and rehabilitation projects should attempt to bring these roads into conformance with the Vermont State Design Standards. In addition, many collector highways serve as important bicycle corridors so adequate provision should be made for safe use by bicyclists. As with arterials, when collectors enter downtowns, village centers, and other areas of compact development, traffic calming measures should be employed to reduce vehicle speeds and promote safety, while streetscape design should be consistent with surrounding historic and human-scale development.

Local streets provide direct access to adjacent land uses and link people with roads designed for transportation between centers of development. Access takes precedence over traffic flow on these streets and vehicle speeds tend to be low. In relatively densely developed areas such as downtowns and other commercial centers and residential neighborhoods, sidewalk networks are particularly important. Whenever possible, local streets should form a connected network, providing various routes for traffic through a community. In some instances, movements of through traffic on these roadways may be accompanied by excessive vehicle speeds so traffic calming methods should be employed as necessary.



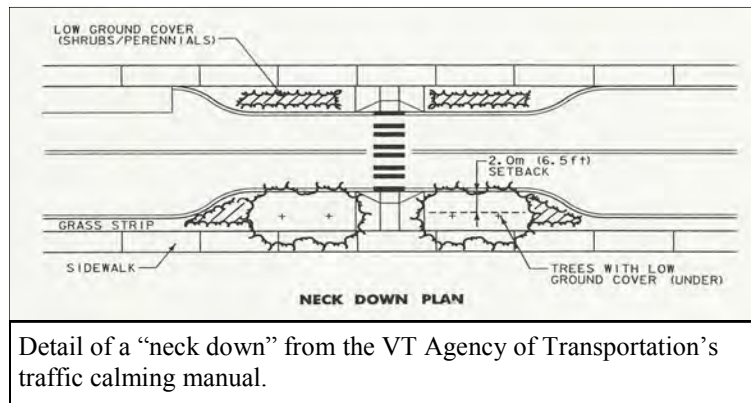
The local street network provides access to adjacent lands—narrower lanes, slow traffic movements, and scenic quality are important features of these roadways.

Traffic Calming

[Traffic calming](#) involves the use of physical changes in the roadway and enforcement to reduce vehicle speeds. In urban and village areas, these techniques can safely balance the needs of motorists, bicyclists, and pedestrians. Traffic calming promotes safety while creating opportunities to enhance the aesthetic and environmental elements of roadway corridors by reducing pavement width and increasing landscaping. A wide range of traffic calming techniques are available. Some of the most common techniques are:

- Installation of roundabouts at intersections, particularly at “gateways” to downtown or village center areas;
- Reduction of the motor vehicle travel lane width in village areas;
- Center islands and pedestrian refuges at crossing locations in roadways and raised and/or textured crosswalks;
- Bulb-outs at crosswalks;

- On-street parking;
- Pavement markings;
- Enforcement, especially a visible enforcement presence.



The Vermont Agency of Transportation has developed a series of standard drawings for traffic calming devices. Towns and villages should consider utilization of one or more of these techniques wherever vehicle speeds might compromise safety and especially at approaches to the town center.

Access Management

[Access management](#) deals with the relationship between the roadway network and adjacent land uses. The highway system needs to provide for safe and efficient through traffic movement as well as access to residences, businesses, and other uses located along the roadways. Those two functions often come into conflict and access management is a set of principles and tools that can be used to minimize those conflicts. Specific benefits of access management planning include:

- Improved traffic flow by decreasing delays and occurrences of vehicle blockages;
- Improved vehicular and pedestrian safety by eliminating conflict points;
- Support for economic development through improved access;
- Support for local land use plans; and
- Improved aesthetics and community character by incorporating landscaping, sidewalks, and lighting into the design of intersections and driveways.

The [Vermont Agency of Transportation](#) has worked with the regional planning commissions to assign access management categories to state highways and has developed techniques appropriate for each type of highway. Application of those techniques is guided by the following principles:

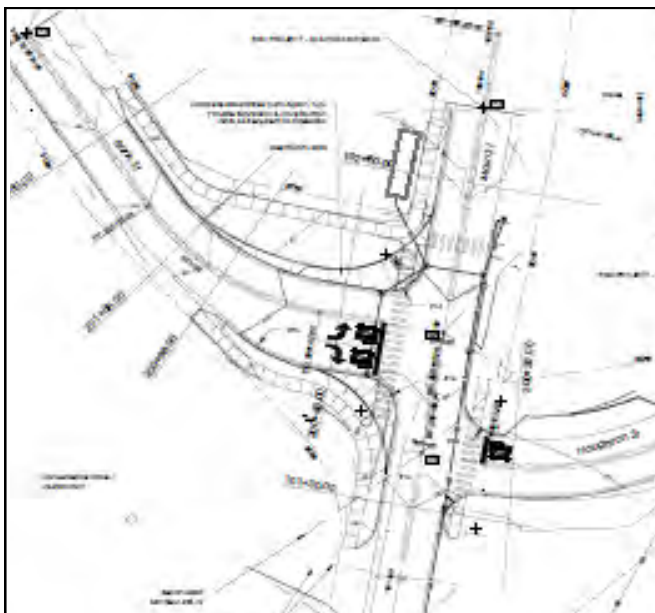
- Provide a specialized roadway system based upon mobility for through traffic and access to adjacent land;
- Provide appropriate intersection design, control, and spacing to provide efficient transitions from one roadway classification to another;
- Limit direct access between land uses and higher speed roads while promoting access between land uses and minor, low speed roads;

- Limit or separate the number of conflict points between traffic entering and exiting driveways and streets;
- Remove turning traffic from through traffic lanes;
- Provide for safe and efficient pedestrian and bicycle movements.

Appropriate access management elements shall be included in any roadway construction or reconstruction project and municipalities should require applicants for land use permits to include access management principles in their development site planning.

A wide range of regulatory options can be used by municipalities to maintain or improve access management conditions. The most basic methods involve zoning controls over the location, type, and intensity of development. Site plans for new developments or redevelopment of existing properties shall include appropriate site-specific access management options, which may include:

- Limiting the number, width, spacing, and alignment of curb cuts (which may involve closing or relocating existing curb cuts);
- Requiring connections between adjacent lots for both vehicles and pedestrians;
- Restricting parking to the side or rear of buildings;
- Constructing sidewalks and other pedestrian amenities between streets and storefronts and between adjacent stores and commercial properties;
- Providing safe access routes for bicycles and racks for bicycle storage;
- Allowing for planned unit developments and requiring submission of master plans to account for future parking and access needs;
- Requiring access drives to intersect existing side roads or new subdivision or service roads rather than on principal through roadways;
- Planning roadway connections to adjacent developments and discouraging dead-end roads;
- Requiring traffic impact studies, paid for by the developer, for large-scale new projects as well as construction of necessary improvements identified in those studies.



A recent intersection improvement project in North Bennington Village involved the application of traffic calming (reduced roadway width and construction of curb extensions) and access management (limiting the size and changing the location of access drives) techniques, as well as construction of new sidewalks and crosswalks, to improve safety and promote walking while also enhancing the historic character of the village center.

Parking

Safe, convenient, and attractive vehicle parking areas are a necessary component of the transportation system. In many areas, adequate parking can be provided through on-site facilities. The location of these parking lots on a site and the layout and design of the lots are important to their proper functioning and to the aesthetic values of a community.

Parking areas should be well-landscaped and placed at the side or rear of lots to ensure that a sea of asphalt and vehicles are not prominently visible from public roads. Parking lots should include sidewalk linkages that provide for safe pedestrian movements to and through these areas. Landscaped islands and borders improve aesthetics, provide shade, and allow for infiltration of stormwater runoff. It is important that parking lots provide adequate space for the number of vehicles that typically use



Parking lots should include attractive landscaping.

the site, but lots with excessive parking spaces are not appropriate.

Because of space limitations and the importance of maintaining a compact development pattern, on-site parking often is not available or appropriate in downtowns or village centers. On-street parking may provide for a significant amount of vehicle storage in these areas while also contributing to traffic calming. Public parking lots and parking garages should be located behind, but convenient to, main business streets. Those public parking facilities should include the same design elements as on-site private lots as well

as clear and attractive sidewalk or pathway connections to commercial and residential destinations. If sufficient public parking is developed in downtowns and village centers, it may be possible to eliminate some on-street parking and expand sidewalks and adjacent areas for additional public spaces that could be available for enhanced landscaping, outdoor dining, art displays, sitting areas, and similar uses. Properly sited and planned public park-and-ride lots help to encourage carpooling; such parking facilities should include features similar to those described above.

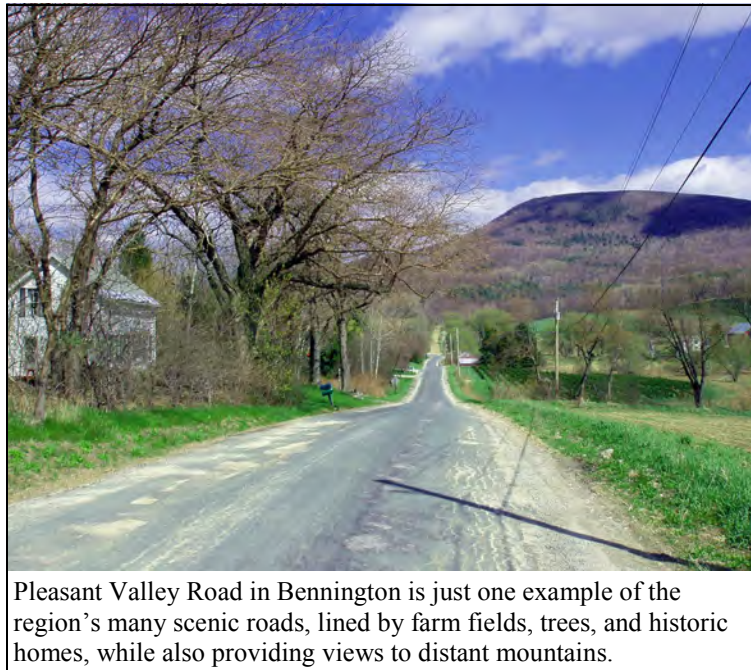
Scenic Roads and Historic Bridges

The region's landscape is most often viewed from its public places, and the most visited public places in a community are its roads. As such, public highways are extremely important to the region's overall scenic character. Key points along principal highway corridors serve as important visual "gateways" to villages and other historic areas. Roadways also provide visual access to near and distant scenic views. Of course, roads can be scenic features in and of themselves: a winding country lane lined by a stone wall and a village street passing under a canopy of mature trees are distinctive scenic resources.

While many, or most, of the roads in the region can be considered scenic, several characteristics clearly contribute to the aesthetic appeal of a roadway. In general, narrow local roads that blend harmoniously with the surrounding countryside are more scenic than wide roads that don't follow nat-

ural or historic elements of the landscape. Landscape features that are adjacent to a roadway become a part of the road corridor: without stone walls, fence lines, trees, and similar elements the overall scenic value of a roadway can be significantly diminished. Some scenic roads also draw the traveler's eye along the centerline of the road to a unique view or distinctive landscape feature in the distance.

These views from roadsides are often just as important as the scenic character of the road itself. Some local roads offer delightful forays into deep forests while others bring motorists, bicyclists, and other travelers to views of fields, farms, mountains, or historic buildings. In these instances, scenic viewpoints are open to the principal view and are not blocked or disrupted by incompatible structures or other objects in the foreground. At the same time, an attractive foreground can greatly enhance roadside views.



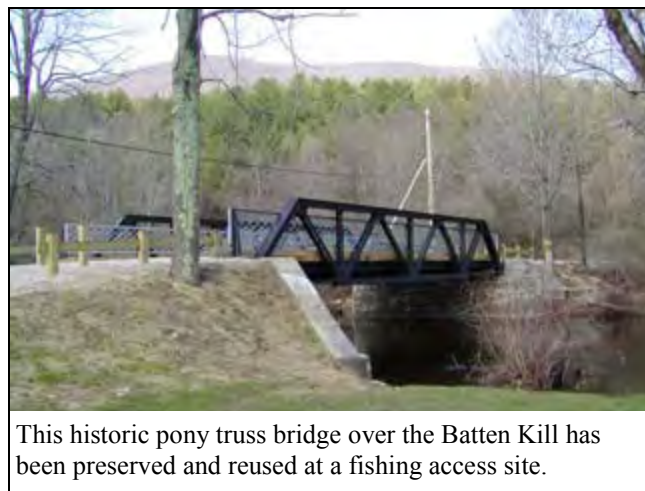
Pleasant Valley Road in Bennington is just one example of the region's many scenic roads, lined by farm fields, trees, and historic homes, while also providing views to distant mountains.

Municipalities can formally designate local scenic roads and adopt ordinances to protect their character by requiring special consideration before the roadway dimensions, surface, or roadside vegetation located within the public right-of-way are changed. New developments in areas served by scenic roads should be planned to minimize heavy use of those roads that would lead to subsequent demands for widening or other changes to the roads.

The region's state-designated scenic byways were discussed in the economic development chapter of this plan. Continued cooperation between the BCRC, local governments, and state agencies will ensure that these scenic state highway corridors will continue to be important regional resources.

A number of historic roadway bridges are particularly important components of the region's transportation system. There are five historic covered bridges in the region. The Silk, Paper Mill, and Henry bridges cross the Walloomsac River in Bennington, the Chiselville bridge in Sunderland sits high above the Roaring Branch, and the West Arlington covered bridge spans the Batten Kill in a particularly scenic setting just off Route 313. In addition, two historic truss bridges cross the Batten Kill, one in

Arlington at Benedict Crossing and another in Sunderland restored as a pedestrian bridge at a state fishing access site as part of the [Vermont Historic Bridge Program](#). The bridge preservation initiative is a cooperative effort among the Vermont Agency of Transportation, the Vermont Agency of Natural Resources, the Federal Highway Administration, the State Historic Preservation Office, and the Advisory Council on Historic Preservation. The program is designed to work in partnership with towns and villages to preserve historic bridges, either for continued highway use or for some other public use. The program maintains an inventory and resource guide for historic covered and truss bridges, including active bridges and bridges in storage, and can provide assistance with education and development of preservation plans and documents.



This historic pony truss bridge over the Batten Kill has been preserved and reused at a fishing access site.

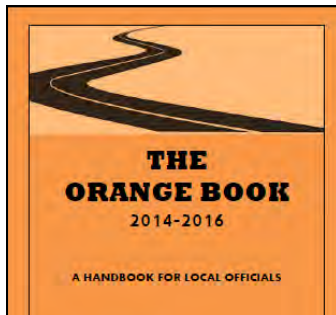
Highway and Bridge Maintenance and Improvement

Effective maintenance of the network of state and local highways and bridges is critical for public health and safety and to the vibrancy of the regional economy. These maintenance activities also represent some of the most substantial expenses faced by state and local governments. The Vermont Agency of Transportation uses several tools to prioritize highway maintenance and improvement needs. All state roads and state and local bridges are assigned a [sufficiency rating](#) that considers structural conditions, safety, and service criteria. The Agency also maintains a list of [high crash locations](#) that, based on crash history, identifies sites where safety improvements probably are needed. Several tools that can help prioritize local road maintenance and improvement needs, such as the [Road Surface Management System](#) (RSMS) are available for use by municipal highway departments.

The Agency of Transportation, in an effort to ensure that the state highway system is maintained at an acceptable level and within fiscal constraints, has developed a “level of improvement” (LOI) policy as part of its project development process. The extent of maintenance work targeted to a particular roadway falls into one of three categories based on the functional class (i.e., expressway, major/minor arterial, major/urban collector), total vehicle traffic, and truck traffic. The most extensive maintenance level is *reconstruction*, projects that will bring the highway or bridge into compliance with the state design standards and may increase capacity. Intermediate maintenance treatments are classified as *rehabilitation* projects and are intended to extend the service life of the facility while limiting work to areas within the existing roadway. *Preservation* projects involve the least extensive maintenance work at the lowest cost, and are designed to preserve the service life of a roadway or bridge.

In general, state maintenance policies are effective in allocating resources to facilities most in need of work. However, the LOI policies lack any consideration of non-motorized users of the

transportation system, such as bicyclists and walkers. Consideration should be given to safety and access for all modes of transportation, and the importance of a roadway or bridge for all users, when identifying maintenance and improvement priorities.



The “[Orange Book](#)” is a valuable transportation reference document for local officials. It contains information on the state project development process, grant programs, local road standards, disaster assistance, contact information and more.

In addition to considering RSMS or other empirical data, municipalities should consider several other key factors when undertaking highway infrastructure maintenance. Each municipality should adopt the most current [Codes and Standards](#) for local highways. These standards are designed to help towns and villages save money by minimizing the need for extensive and costly repairs, especially repairs resulting from damage caused during heavy rain and flooding events. Additional benefits of adopting and adhering to the Codes and Standards include eligibility for assistance under the Federal Emergency Management’s Public Assistance Program, reduced local match and higher state reimbursements, and improved water quality.

Of course, safety is the most important consideration in highway maintenance and improvement projects. The Agency of Transportation’s [Strategic Highway Safety Plan](#) is intended to correct roadway hazards and enhance public safety. As part of the statewide safety enhancement effort, the BCRC works with the Agency of Transportation and with local

officials to identify and implement safety improvement projects through annual Road Safety Audit Reviews and the High Risk Rural Roads Program.

Highway System Improvement Priorities

Highway system improvements include roadway and bridge projects identified on the network of state highways. In addition to projects noted below, priorities identified in the [Bennington County Regional Transportation Plan](#) should be considered and this plan should be periodically amended to reflect priorities included in any updates to the Transportation Plan. Many of the highway projects identified in this section also include significant pedestrian or bicycle improvements and may, therefore, also be mentioned in Section 10.6 of this plan. Specific improvements on local highways are not included in this plan, but municipalities should maintain lists of priority construction and maintenance needs and consider integration of the proposed projects in comprehensive capital budgets and programs. A variety of program areas and funding sources are available for implementation of these projects. The BCRC will work with the Agency of Transportation and local officials to advance the projects using the most financially advantageous and expeditious methods. The list of current state highway system improvement priorities within the Bennington Region includes:

1. Northside Drive Improvements (Bennington): access management, roundabouts, sidewalks, landscaping, and installation of a stormwater system. One roundabout is being constructed as part of the redevelopment of a commercial plaza.
2. VT 67A/Silk Road/Mattison Road/Bennington College Road (Bennington): Remains a high crash location despite some improvements at this five-way intersection. A previously

- planned roundabout would address both safety and bicycle/pedestrian access issues.
3. Monument Avenue Traffic Calming (Bennington and Old Bennington): Implementation of planned traffic calming measures along this corridor which is used by many people as an informal bypass route.
 4. US 7/Kocher Drive Intersection (Bennington): Implementation of plans for pedestrian crossing, sidewalks, and traffic calming. Long-term plan for the area in the vicinity of this intersection involves creation of a more village and human-scale landscape.
 5. VT 313/River Road Intersection at “Rochester’s Corner” (Arlington): Traffic safety improvements at this intersection are needed because of poor sight distance.
 6. VT 7A (Shaftsbury): Access management, traffic calming and pedestrian crossing/safety improvements in South Shaftsbury Village, especially in the area where children cross the highway to get to the local elementary school.
 7. VT 7A (Arlington): Pedestrian route and crossing between the village center and the town recreation park.
 8. VT 7A (South Shaftsbury to Warm Brook Road in Arlington): Improved shoulders for bicycling are needed as this is the only paved road open to bicycles connecting Shaftsbury and Arlington.
 9. Depot Street (VT 11/30) Improvements (Manchester): Implementation of a plan to make this corridor more village-scale, attractive, and safer for pedestrians and bicyclists. Project involves construction of medians, landscaping between the roadway and sidewalks, crosswalks, and bicycle lanes.
 10. VT 30 (Dorset): Traffic calming and pedestrian improvements in the Dorset Village area.
 11. US 7 (Dorset): Traffic calming and a crosswalk in East Dorset Village.
 12. VT 9 (Bennington/Woodford): Develop a truck parking area along Route 9 at the base of the mountain to allow drivers to pull over and install chains on their tires when needed.

10.3 Public Transportation

Operation of public transportation services in a rural area like Bennington County is challenging because of the relatively small and dispersed population. Nonetheless, public transportation is an important service that will grow increasingly critical over time. It provides accessibility to segments of the population that traditionally have less access to cars, including elderly residents, students, and people with disabilities, and also encourages less dependence on private motor vehicles among the general population. Greater utilization of public transportation will reduce vehicle miles traveled, roadway congestion, and air pollution. Moreover, it has been shown that regular transit users are more likely to be physically active and healthy, as such trips generally involve some amount of walking to and from bus stops. Many



The poster displays the Bennington County Bus Routes, effective September 15, 2013. It includes a map of the county with various bus routes color-coded: Blue for Bennington, Green for Shaftsbury, Red for Arlington, and Yellow for Dorset. A legend on the left explains the route colors and symbols. To the right, a 'Bus Schedule' section shows a photo of a bus and provides information about the Shires of Vermont and the Green Mountain Express, including a phone number (802) 447-0477.

The Green Mountain Community Network is the regional public transportation provider, offering a variety of [routes](#) in Bennington and between regional destinations.

buses are equipped with bicycle racks, allowing commuters to cycle to and from the bus stops.

The [Green Mountain Community Network](#) (GMCN) operates the Green Mountain Express transit service, providing a range of fixed-route, deviated fixed route, and demand response services. A fixed route service running between Bennington and Manchester along Route 7A, with stops in Shaftsbury, Arlington, and Manchester Village, provides a valuable commuter link for many workers. Connections can be made in Manchester for continued service to Rutland. GMCN also operates a daily service (Monday thru Friday) to Williamstown, Massachusetts, and a new service (also Monday thru Friday) to Wilmington, where connections can be made to Brattleboro. Additional intercity bus services linking Bennington with Albany and its major bus terminal are provided by two operators, one of which also provides north-south service along US Route 7 in Vermont between Burlington and the Albany International Airport.

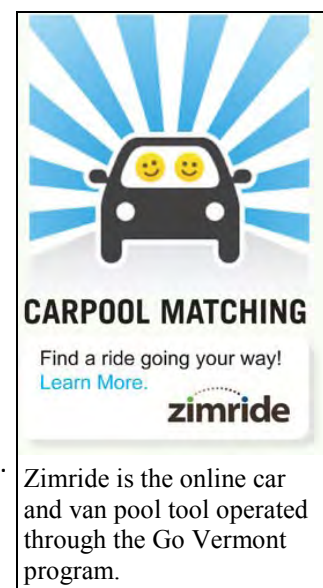
Fixed route services provided by GMCN on Green Mountain Express buses in Bennington operate Monday thru Friday with stops downtown, at residential developments, shopping centers, medical facilities, job sites, schools, colleges, and other important local destinations. An additional fixed route operates on Saturdays, with an emphasis on service between residential areas, shopping, colleges, and entertainment venues. It is important to continually monitor these services to be sure that the destinations and times match local needs. As discussed earlier in this plan, better connections between the area's colleges and Bennington's downtown will prove beneficial to students, businesses, and the community as a whole. Consequently, every effort should be made to ensure that these connections are as convenient and accessible as possible.

The GMCN also works with volunteer drivers to provide door-to-door transportation to and from medical appointments, as well as special trips for elders, nursing home residents, and person with disabilities. Other human service agencies in the region maintain their own vans to provide similar services for their particular clientele. These services are extremely important to the people served and these organizations should work cooperatively to ensure that the transit needs of these populations are adequately addressed.

Not to be overlooked are the valuable public transportation services provided by the region's school districts, most of which operate buses that safely and efficiently transport children to and from school. Use of school buses rather than relying on individual cars encourages more physical activity and, in a finding from the [Bennington Municipal Energy Plan](#), can dramatically reduce gasoline consumption and related regional energy expenditures.

Another form of public transportation involves ride-sharing, or carpooling, either during a work commute or for any other purpose. [Go Vermont](#) is a resource for people who want to reduce the cost and environmental impact of driving; free carpool matching and vanpool services can be accessed through their website along with information on bicycle commuting and other transportation alternatives. The [Way to Go](#) program is another effort to encourage carpooling and use of alternative transportation.

A recently completed project at the GMCN headquarters has greatly improved that organization's ability to safely park and maintain its fleet of



vehicles. The new facility, located at the GMCN headquarters on Pleasant Street in Bennington, also is adjacent to a public parking lot and the stop for intercity bus routes through the region. Several additional public transportation priorities would increase utilization of these services in the region.

Priorities for Public Transportation Improvements

1. Evaluate the potential for increasing frequency and/or extending service hours for the GMCN fixed routes. Monitor use and identify new service needs and opportunities.
2. Consider establishment of a regular fixed bus route, as part of the Amtrak rail network, with direct service between Manchester and Bennington and the passenger rail station in Rensselaer, New York (further discussion in section 10.4 of this plan, below).
3. Shelters at bus stops.
4. Protected bicycle parking at key bus stops.
5. Improved pedestrian connections to bus stops and stations.
6. Improved transportation-related coordination between human service agencies.

10.4 Rail Service

Bennington County is home to two railway corridors (Map 10-1). A state-owned rail line enters the region from New York near North Bennington and continues north through the region, eventually reaching Burlington. A spur line, most of which is inactive, runs from the North Bennington depot (currently housing the North Bennington Village offices) to downtown Bennington. Both of these rail lines are leased by the state to Vermont Railway. Freight shipments along the main Vermont Railway line have increased in recent years in response to track improvements along the corridor. In addition to bulk products such as grain and feed, propane, and lumber that have been shipped to and from local businesses for many years, the line now sees considerable freight business originating from the OMYA calcium carbonate businesses north of Rutland.

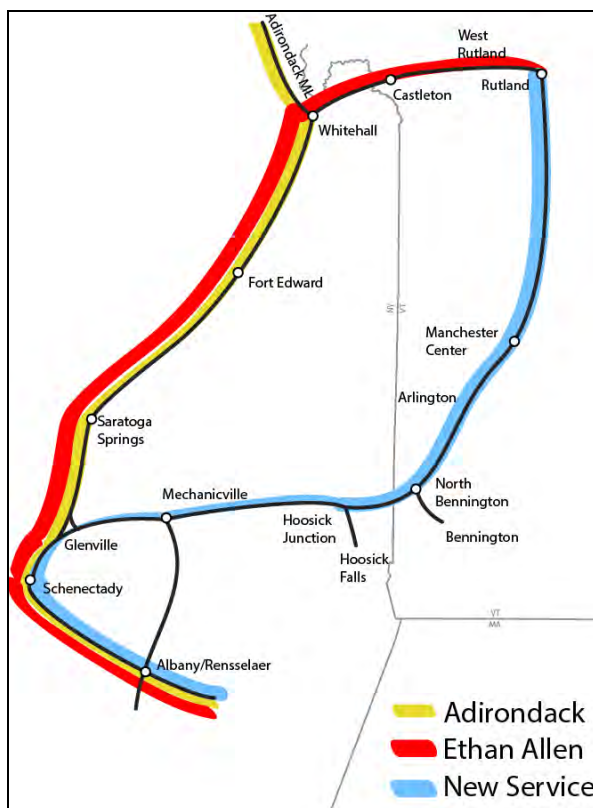


The historic railway station in North Bennington represents the past, as well as the future potential, of rail transportation in the region.

Pan Am Railway owns the rail line that passes through Pownal along the Hoosic River valley. That line connects to major rail hubs in Mechanicville, New York and Lowell, Massachusetts. The line is one of the most heavily used freight corridors in Vermont, although it does not currently provide direct service for any local businesses.

Although not currently a heavily utilized part of the region's transportation infrastructure, these rail lines do serve a valuable purpose for certain businesses, and the potential for expanded freight shipments as well as intercity passenger service is very significant. Increasing costs for truck shipments of freight and the high cost, inconvenience, and inefficiency of travel by car and airlines may, in the not distant future, make rail a competitive option for many freight and passenger routes. Increased reliance of trains for transport of goods and people also would reduce air pollution, traffic congestion, and highway maintenance costs.

Expanded freight service would be more viable with establishment of a transloading facility, where transfers between long haul rail cars and trucks for local and regional delivery could be efficiently accomplished. Fortunately, the region's two rail lines pass by many commercial and industrial sites available for such a facility or for new businesses development that could be served by direct rail shipments.



The NY-VT Bi-State Passenger Rail Study concluded that the best way to address identified transportation, economic development, and environmental goals was to implement a new passenger rail line between the Albany-Rensselaer Amtrak station and Rutland, with stops in North Bennington and Manchester.

The potential for renewed passenger rail service to the region has been studied extensively in recent years. The [New York—Vermont Bi-State Passenger Rail Study](#), sponsored by the two states and overseen by the Vermont Agency of Transportation and a steering committee consisting of representatives from the BCRC and other regional organizations, completed all of the planning, environmental assessments, and preliminary engineering needed to advance a passenger rail project that would serve Bennington County. Although federal funding for the project is not available at this time, the BCRC should work with local partners to urge the state, through the Rail Council, to make this project a top priority for implementation. Initial construction cost is projected to exceed \$110 million with annual operating subsidies of several million dollars.

Bennington County is ideally located to benefit from greater access to intercity passenger rail service. It is the closest part of Vermont to major rail-oriented urban markets, including New York City. The busy Albany-Rensselaer Amtrak station is less than 50 miles from Bennington, and, more so than any other location in Vermont, travel times and costs are competitive with other transportation modes.

Greater access to intercity passenger rail service would not only benefit local residents, it would be a tremendous economic development benefit for the entire region. Several million people in the mid-Atlantic metropolitan corridor rely on trains as their primary means of transportation, and having stops in North Bennington and Manchester would immediately strengthen the regional tourism market. In addition, many people who conduct business in those metropolitan areas would be more likely to live in Bennington County, working from local offices and traveling into New York or other cities as needed for business.

The benefits of greater access to intercity passenger rail service is so compelling, in fact, that it makes sense to pursue innovative ways to forge that connection. One idea is to initiate a direct bus service between Manchester, North Bennington, and the Albany-Rensselaer Amtrak station. The bus would be outfitted to easily transport passengers and baggage, and by limiting the number of stops to Manchester and North Bennington (and perhaps one stop in Rensselaer County, New York, the entire route could be accomplished in just over one hour. Ideally, the bus schedule would be integrated into the [Amtrak timetables](#), with Bennington and Manchester as connecting stops and ticket purchasing available online or at kiosks at rail-bus stations in each community. Direct connections with arriving or departing trains in Rensselaer would then be possible without any delay or inconvenience. A significant benefit to this intermodal connection is that the bus could operate several times each day, giving travelers far more options than a train that would only have one local arrival and departure each day. Of course, the initial capital cost would be far less than what is required for a new train-based connection and the operating subsidy would be much lower. Amtrak currently coordinates with these “[Thruway](#)” bus services in a number of locations. The BCRC should complete a study of the feasibility of establishing such a service between Rensselaer and Bennington County and work to implement such a program with local businesses and the state.



Rail Improvement Priorities

1. Improve connectivity with intercity passenger rail service with a long-term goal of new Amtrak train service to the region and an interim, and possibly supplemental, direct bus connection to the Albany-Rensselaer Amtrak station. The BCRC should complete a feasibility study of the bus-rail option.
2. Identify potential commercial and industrial sites that have access to rail to serve new business and/or a transloading facility.

3. Prior to initiation of more frequent and higher speed rail service to the region, upgrade all road crossings to ensure recommended safety standards are met.

10.5 Air Travel

Access to air transportation is important to area residents and businesses. The William H. Morse State Airport is the only active airfield in the region. It is located north of Route 9, off Walloomsac Road, on the west side of Bennington. One asphalt runway of 3,704 feet serves all of the aircraft operations. The market area for the airport extends from Pownal in the south to the Bromley and Stratton Mountain resort areas in the north and into nearby towns in New York State. Although there is no commercial passenger or freight operator based at the airport, it is an important general aviation center and is used frequently for business travel. A number of [capital projects](#) designed to improve safety and operational efficiency have been proposed. Completion of those projects is important to maintain the airport's important role in the region's economy.

The nearest access to commercial air passenger service is available at Albany, New York; Hartford, Connecticut; Lebanon and Manchester, New Hampshire; and Rutland, Vermont. The short drive to Rutland from the northern part of the region makes use of that facility particularly convenient, especially for trips to Boston or destinations with direct connections from Boston (commercial flights connect Rutland with Logan International Airport). The Albany International Airport is within an hour's drive of most of the region's population, and one intercity bus line that serves Bennington County provides service to that airport as well. It is important to ensure that ground transportation connections to the regional airports are well-maintained and that public transit connections, at least to the Albany International Airport and the Rutland State Airport, are available and timed to be convenient for air travelers.



The W. H. Morse State Airport is an important general aviation airport serving Bennington County and surrounding communities.

Air Travel Priorities

1. Implementation of planned capital projects at the William H. Morse State airport.
2. Improved ground transportation connections to Albany International Airport and the Rutland State Airport.

10.6 Walking and Bicycling

Walking and bicycling are important transportation modes that are not only efficient in many circumstances, but also promote public health and support sustainable communities. It is important to provide and maintain the facilities needed to support safe and convenient walking and bicycling around our communities and throughout the region. Existing facilities, including roadways, road

shoulders, sidewalks, and pathways and trails will need to be improved and supplemented with additional facilities to meet specific needs.

Walking and bicycling are closely connected with each other and with other transportation modes. Everyone who parks a car in a lot or along a street, for example, immediately transitions from a motorist to a pedestrian. Similarly, bicyclists need to be able to secure their vehicles and transition to walking or some form of public transportation. The relationship between a pedestrian and bicycle friendly community and its land use plan is another critical consideration. The type of compact mixed use centers described in this plan's land use discussion create the environment that makes walking and bicycling convenient and enjoyable for people.

The Vermont Agency of Transportation has developed programs and guidelines to support walking and bicycling. The [Pedestrian and Bicycle Policy Plan](#) establishes policy and identifies actions that can help meet goals for improvements that support walking and bicycling. The Agency also maintains specific [design standards](#) for pedestrian and bicycle facilities. Two grant programs, one overseen by the [Bicycle and Pedestrian Program](#) and the other available through the [Transportation Alternatives Program](#) offer significant funding opportunities for local bicycle and pedestrian improvements. The BCRC has prepared an [Active Transportation Project Guide](#) that includes information on particularly important walking and bicycling improvement projects around the region;. That Guide, as regularly updated, is adopted by reference as part of this comprehensive Regional Plan and should be consulted when establishing priorities for project development.

Walking

Virtually everyone is a pedestrian several times a day, even if those movements are confined to traveling to and from a car, bus, or other vehicle. Walking should be considered as both a primary means of transportation and as an accessory to vehicle-based transportation. In addition to being simple and convenient, walking is very energy-efficient, results in no emissions, and is an enjoyable and healthy activity. The types of pedestrian facilities that are most appropriate vary depending on location. In all situations, however, safety, convenience, and the presence of certain amenities will support additional pedestrian activity.



Several projects in South Shaftsbury have created a network of sidewalks connecting residential areas with key destinations throughout the village.

The Southshire's urban center in Bennington and Manchester in the Northshire are ideally suited to walking, with residential neighborhoods, schools, workplaces, and stores all clustered in close proximity. Efforts to focus new development and redevelopment in these areas will enable more people to make a significant number of local trips on foot. Many of the region's larger villages, such as North Bennington, Arlington, South Shaftsbury, and Dorset also have concentrations of mixed use development that are especially conducive to walking. The most common pedestrian facilities in urban and village centers are sidewalks which lie along roadways, either imme-

diately adjacent to a curb or separated from the curb and/or roadway edge by some type of landscaped strip. Because they follow roadways, these sidewalks provide direct access to a variety of destinations and, being located within roadway rights-of-way, are relatively inexpensive to construct and maintain.

In general, sidewalks in downtown areas should be wide, occupying most of the space between the curb line and storefronts, with pockets of green space, street trees, and benches located at regular intervals. Crosswalks provide critical connections in these high traffic areas and must be carefully sited where needed by pedestrians, clearly marked, and supported by traffic signals as necessary.

In residential neighborhoods, and in commercial and mixed use areas outside downtowns, sidewalks can be narrower and should be separated from the roadway by a landscaped strip; this separation is especially important along roadways where there is no on-street parking and/or high vehicle speeds prevail. Sidewalks must provide connections to schools, employment centers, and shopping areas. Crosswalks are also needed in these areas and should be sited at intersections with traffic signals or stop signs. It is just as important to provide safe walkway connections from street sidewalks through parking lots and to storefronts and other destinations; those walkway connections should provide a safe route for pedestrians moving from their parked cars to the storefront destination.

People living in small rural hamlets and in homes scattered throughout the region's outlying rural areas also can enjoy the benefits of walking. Walking in these areas also provides access to healthy recreation, a neighbor's house, a country store, or the local school. In many cases, the low-traffic and low-speed local roads in these areas serve as acceptable and safe routes for walking. When important pedestrian routes lie along state highways or more heavily traveled local roads, additional facilities, such as a widened shoulder or a separated pathway may be appropriate. Hamlets containing a school, church, store, a number of houses, or similar compact rural development may require a more formal sidewalk to safely accommodate pedestrian travel, especially when there are children who are frequent walkers in the area.

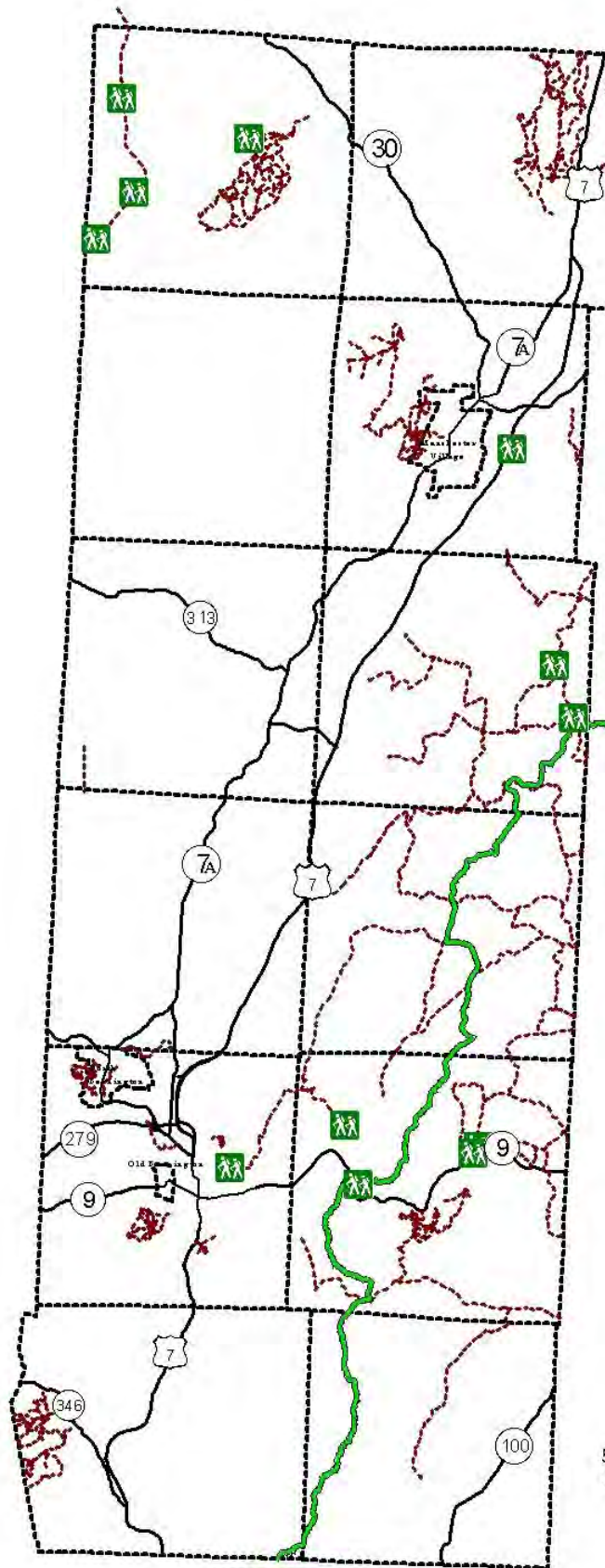
The region is home to a large number of formal and informal trails (Map 10-2). Many of these trails connect to sidewalks, parking areas, or other places that facilitate transportation between various destinations. Public access trails provide outstanding opportunities for recreation. Trailheads should be clearly marked, well-maintained, and provide safe parking areas for vehicles.

Multi-use Paths

Multi-use paths are off-road routes specifically designed and developed for use by a variety of users, including walkers and bicyclists. They are either paved or gravel-surfaced and meet specific



The D&H Rail Trail in Rupert is the most extensive of several multi-use paths in the region.

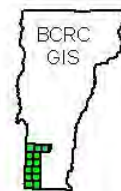


Bennington Regional Plan Trail System

Map 10-2

-  Major Trailheads
-  Appalachian/Long Trail
-  Trails and Footpaths

This map should be used for general reference and planning purposes only.



5 0 5 Miles

Map produced July 28, 2014 by
Bennington County Regional Commission
111 South Street, Suite 203
Bennington, Vermont 05201

standards that make them suitable for use by a variety of users. Existing multi-use paths in the region include the D&H Rail Trail in Rupert, the Bennington Pathway in downtown Bennington (with a planned extension north along the Vermont Railway spur line to Northside Drive), a section of paved path along East Road in Bennington that provides access to the middle school, and a path that connects the Manchester Elementary-Middle School with the town's recreation center and Hunter Park (with a planned extension to North Road along the former Manchester-Dorset-Granville rail corridor). Multi-use pathways can provide valuable links between important destinations (e.g., neighborhoods to school, between village centers or downtowns, etc.) and make outstanding recreational facilities. Pathways are limited as a primary means of bicycle-pedestrian travel, however, in that they are linear features that require secondary connections to reach most destinations and they are expensive to build (because of design standards and, often, the need to purchase rights-of-way).

Construction of these facilities should be considered when alternative sidewalk, trail, or roadway routes between important destinations are limited or unsafe, when existing rights-of-way are available (such as along publicly owned rail corridors), or as part of a planned bicycle-pedestrian network. These paths must be well-built to safely accommodate bicycle use. They should be paved or surfaced with a firm and consistent material that will support narrow high-pressure bicycle tires. Sharp turns must be avoided as bicyclists often travel in excess of 20 miles per hour. A minimum width of eight feet with two foot graded shoulders is necessary to safely accommodate two-way bicycle traffic (along with other path users) and the paths be laid out to minimize roadway crossings.

Bicycling

Bicycling is an enjoyable and healthy activity that also is an economically and environmentally sound alternative to the automobile for local transportation. With increasing fuel prices and bicycle designs to meet just about every need, increasing numbers of people can be expected to turn to bicycles and other human-powered vehicles for commuting and for fun.

Most bicyclists will preferentially ride on paved secondary roads with light and/or low speed vehicular traffic. Examples of this type of road in our region include West Road in Dorset and River Road/Sunderland Hill Road in Manchester and Sunderland. Such roads are natural bikeways and require little improvement. It is important that pavement be maintained in good condition and that there not be a drop-off from the pavement edge onto a poor or non-existent shoulder. Road hazards



A bicyclist traveling through North Bennington Village.

(see discussion below) should be eliminated from these important bicycle routes. The needs of bicyclists must be considered if traffic volumes on these roads increase. It may be necessary to widen the lanes or provide a paved shoulder when increased traffic compromises safety.

State highways and Class I town highways often provide the most direct, and often the only passable route for bicyclists traveling between town centers and other important destinations. These roads are characterized by high vehicle volumes and speeds. Route 7A is an example of a road that is important to bicyclists, but also hazardous because of inadequate design and conflicts with cars and trucks. Paved shoulders with a minimum width of four feet (refer to state design standards for further guidance) should be provided along these highways wherever possible. The quality of shoulder pavement should be comparable to the pavement on the travel lanes and should be maintained and kept free of debris. Along sections of roads having curbs (generally in urban and village centers), where shoulders cannot be reasonably provided, the outside lanes should be 14 or 15 feet in width, thus providing adequate room for an automobile and a bicycle. It is critically important to eliminate hazards on these roads, where any obstruction that can cause bicyclists to lose control or be forced quickly into the travel lane poses a very serious safety problem.

Objects and conditions that motorists never notice can be a severe safety hazard for bicyclists. Some of the dangerous hazards include:

- Improperly designed or installed drainage grates;
- Poor pavement condition;
- Utility covers that are not flush with the road surface;
- Railroad crossings, especially when the tracks are not perpendicular to the direction of bicycle travel and there is limited room to maneuver a safe crossing;
- Narrow bridges;
- Signs and utility poles located too close to the edge of the road or shoulder;
- Intersections with unpaved side roads or driveways—and the resulting debris that can accumulate along the edge of the road.

Maintenance or construction projects should note any such hazards and take measures to correct them.

A final consideration is the need for bicycle parking facilities at destinations throughout the region. Bicycles need to be securely stored while not being used and municipalities and businesses can provide a variety of bicycle racks and similar facilities to meet this need. The BCRC completed a [Bicycle Parking Report](#) that assesses bicycle parking needs and opportunities in the region.

An organized group in Manchester is actively working to promote bicycling and supporting roadway improvements. Similar efforts can be undertaken in other communities in the region.

Priority Walking and Bicycling Improvement Projects

Specific transportation improvements related to walking and bicycling are identified and described in the [Active Transportation Project Guide](#), which is regularly updated to reflect current conditions and needs. That document should be referred to in conjunction with this plan when determining priority needs and pursuing funding opportunities. Additional needs and potential

projects identified by towns and villages should be reported to the BCRC to ensure effective coordination with the Vermont Agency of Transportation and other funding and regulatory agencies.



Safer facilities for walking and bicycling are badly needed along Benmont Avenue in Bennington.

Priority pedestrian and bicycle improvements in the region include:

1. Applegate to Willow Brook Path: Connecting path between two large housing developments, enabling safe access to schools and other destinations for residents of Applegate.
2. Ninja Trail: On and off road connection between Bennington's downtown, the Northside Drive area, Bennington College, and North Bennington.
3. Bennington Pathway: Rail-trail from Bennington Station/existing pathway north to Northside Drive.
4. Western New England Greenway: Planned bicycle route, primarily on-road, that may require signs and minor roadway improvements.
5. Bennington Bicycle Lane Network: Establish a system of bicycle lanes in Bennington's growth center.
6. Bicycle Parking: Provide bicycle parking facilities at destinations throughout the region.
7. Bennington Downtown Signal Retiming: Modify signalization at main downtown intersection to facilitate pedestrian safety and convenience.
8. US 7—Kocher Drive pedestrian crossing and sidewalks: Establish a safe crossing at this intersection with sidewalk connections along Kocher Drive.
9. Benmont Avenue Active Transportation Corridor: Provision of safe facilities for bicycling and walking and streetscape enhancement.
10. Village Center Improvements in East Dorset: Traffic calming, access management, and crosswalks to enhance village character and provide a safe highway crossing.
11. Village Center Improvements (Shaftsbury): Access management and pedestrian crossings to improve access and safety for walking at Route 7A in South Shaftsbury Village.
12. Depot Street Improvements (Manchester): Redesign of the downtown portion of Routes 11/30 to improve access and safety for walkers and bicyclists, and to enhance the streetscape and establish a village character.
13. Village Center Improvements (East Arlington): Reduction in paved areas and related pedestrian improvements.

14. Recreation Park Connecting Path (Arlington): Develop a safe route for walking between Arlington's village center and the town's recreation park.
15. Route 8/100 Sidewalk (Stamford): Complete a section of sidewalk in the village area.
16. Manchester Pathway: Complete a multi-use pathway along the former Manchester-Dorset -Granville rail corridor between Hunter Park and North Road with a link to the Dorset School.
17. Pownal School: Improved pedestrian facilities and safe crossings between Pownal Center and the Pownal Elementary School.
18. Sunderland Commercial Area: Sidewalks and crosswalks in the area along Route 7A at the base of Equinox Skyline Drive.
19. Recreational walking route across Bennington County, through Rupert, Dorset, Peru, and Landgrove, primarily on existing trails, to connect to the West River Trail in Londonderry.
20. Route 7A Safety and Bicycle Improvements: wider paved shoulders between Warm Brook Road in Arlington and South Shaftsbury Village.
21. Sunderland Hill Road: delineation of a safe walking and bicycling lane between Hill Farm Road and the elementary school.

10.7 Alternative Fuels and Vehicles

Petroleum-based fuels have powered our transportation systems for over 100 years and will remain important for some time. Those fossil fuels, however, represent a finite resource and increasing international demand coupled with constantly diminishing supply will lead to inevitable price escalations and will eventually affect availability. Furthermore, combustion of gasoline and diesel fuels is a major contributor to air pollution and climate change.

A variety of alternative-fueled vehicles have been developed, including gas-electric hybrid and plug-in hybrid vehicles, electric drive vehicles, fuel cell vehicles (using hydrogen in some form to produce electricity), natural gas vehicles, various bio-fuel (biodiesel and ethanol) vehicles, and even highly efficient human-powered vehicles. The BCRC should continue to monitor trends and work with local and state officials to take advantage of opportunities to develop local alternative fuel sources and install supporting infrastructure.



Electric drive cars are becoming increasingly popular. It will be important to ensure that adequate generating capacity and charging infrastructure are available locally.

10.8 Policies and Recommendations

1. Continue to work with local and state officials to implement projects identified as priorities in this plan and in other regional and local documents. Update the project lists and assign priorities on a regular basis.
2. New and reconstructed roads, bridges, and stormwater systems should be designed, built, and maintained in accordance with current highway codes and standards and other local and state requirements. Flood resilience and water quality should be leading considerations in all highway projects.
3. Transportation investments should focus on maintaining existing infrastructure and correcting deficiencies and safety hazards. Major investments should occur primarily in areas planned for growth with little investment in new roads in remote and mountainous areas. Municipalities should include large transportation expenses in capital budgets.
4. Transportation system improvements must limit adverse impacts on important natural and cultural resources and minimize disturbances to residential areas.
5. All development should provide an amount of parking appropriate for the use and location, and should employ access management techniques to enhance safety and limit congestion.
6. Commercial truck routes should avoid excessive conflicts with local traffic and impacts on residential neighborhoods.
7. Road construction and maintenance activities should be consistent with scenic values.
8. Support extension and improvements to local and regional public transportation services.
9. Assess the feasibility of establishing a bus link to the Albany-Rensselaer Amtrak station.
10. Support efforts to complete passenger rail service along the entire western corridor between Albany-Rensselaer, Bennington, Rutland, and Burlington.
11. Ensure that all railroad crossings with local and state highways meet safety standards.
12. Support capital improvements at the William H. Morse State Airport and pursue improved ground connections to regional commercial airports in Albany and Rutland.
13. Encourage and assist with the development and maintenance of safe and convenient pedestrian routes in downtowns, village centers, hamlets, neighborhoods, and all areas of concentrated development. Traffic calming techniques should be used in these areas to reduce vehicle speeds and enhance safety.

XI. UTILITIES, FACILITIES, AND SERVICES

11.1 Overview

A wide variety of utilities, facilities, and services, owned and operated either by public bodies or by private interests that serves the general public, is present in the Bennington region. These resources are essential in that they provide necessary services for the region's residents, support the land use and development goals of local and regional plans, and facilitate effective economic development. Proper management and strategic investments are necessary to ensure that they are utilized as efficiently and effectively as possible.

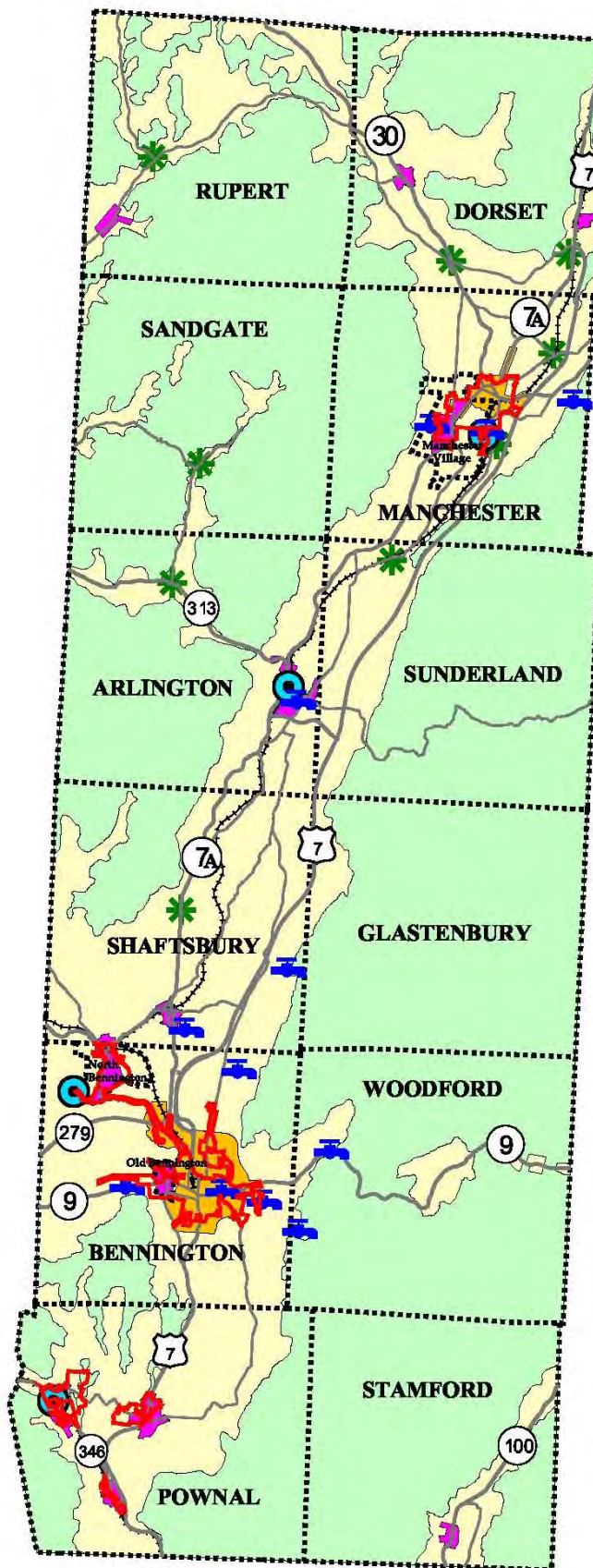
Each town and village in the region is home to one or more of these assets and some span or serve multiple municipalities or the entire region. And while the larger and more developed municipalities have the most extensive collection of these utilities, facilities, and services, each individual component contributes to the functioning of a complex network that serves all of the region's residents, businesses, and visitors.

The range of needs met by these utilities, facilities, and services is impressive. For example, water supply and wastewater disposal systems support environmental quality and public health objectives while being directly related to the ability to develop compact mixed use centers. Proper management of solid waste minimizes pollution while making cost-effective use of resources. Local generation and distribution of electricity is fundamental to many aspects of daily life and commercial activities, and promises to become even more important in the future. Similarly, modern telecommunication systems are needed to provide access to information and to ensure that local businesses can compete in an increasingly global market. Health care services employ more residents than any other economic sector in the region while maintaining the overall health of the population. Finally, town and state buildings house services and offer activities that are relied upon throughout the region. This section of the Regional Plan will provide a brief overview of each of these assets and identify priorities for maintaining and improving services.

11.2 Water Supply and Wastewater Disposal

Village centers, downtowns, and moderate to high density residential neighborhoods all rely on adequate water supply and wastewater disposal systems to support the type and density of development planned for those areas. These systems are crucial for the protection of public health and to meet local and state regulatory requirements related to the density of development. Many of the region's compact centers are served by either a public water or sewer system, or both (Maps 11-1 and 11-1A). Other areas planned for relatively dense development lack these facilities, however, and as a consequence their ability to support growth that makes possible mixed use walkable communities is extremely limited. The BCRC plans to conduct a study to assess the extent to which the lack of infrastructure, or inadequate infrastructure capacity, restricts development in planned compact centers.

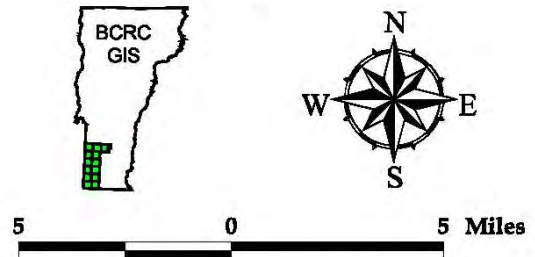
Public water supply systems in the region range from small networks serving a few clustered residences to large municipal systems such as those in Bennington and Manchester. Some of the systems are owned by municipal governments, some by local public water districts (generally known as



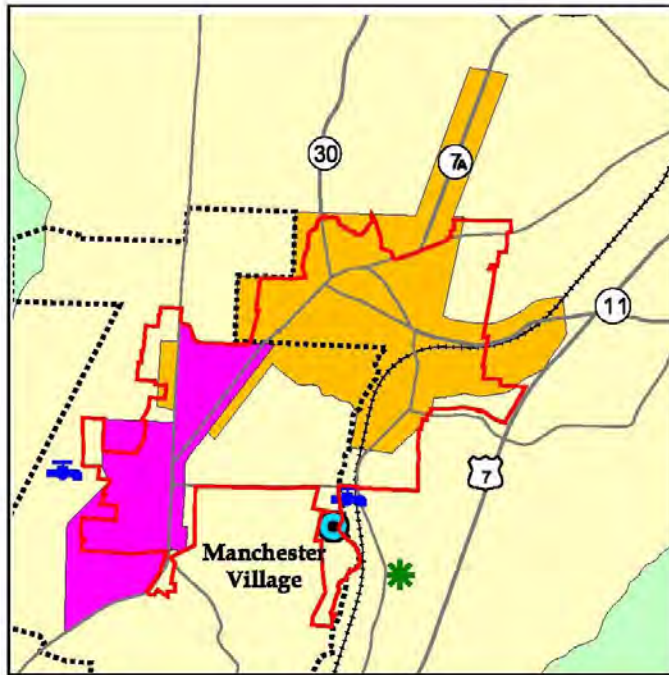
Bennington Regional Plan Map 11-1 Public Water and Sewer Systems

- Sewer Service Area
- + Water Supply Facility
- Water Treatment Facility
- ★ Hamlet
- ★ Village
- ★ Urban Center
- ★ Rural
- ★ Upland Forest

This map should be used for general reference and planning purposes only.



Map produced October 21, 2014 by
Bennington County Regional Commission
111 South Street, Suite 203
Bennington, Vermont 05201

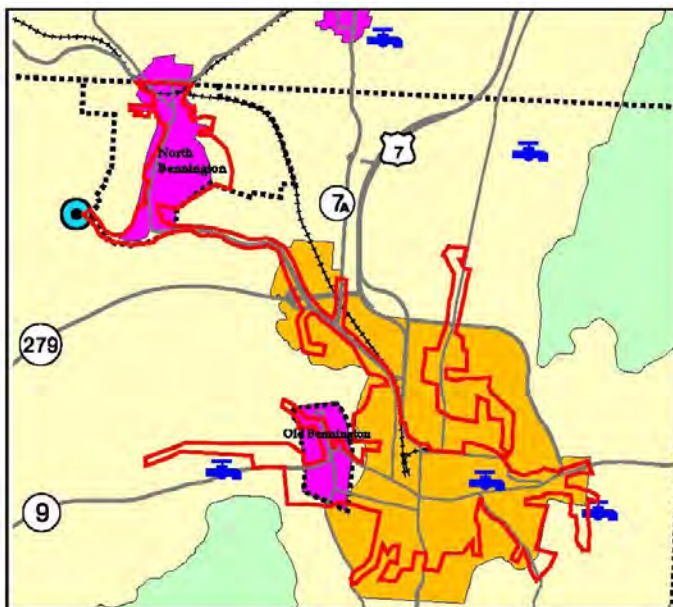


Manchester Urban Center

**Manchester and Bennington
Urban Centers**

**Map 11-1A
Public Water
and
Sewer Systems**

- Sewer Service Area
- 🚚 Water Supply Facility
- Water Treatment Facility
- ★ Hamlet
- Village
- Urban Center
- Rural
- Upland Forest



Bennington Urban Center

fire districts in most towns), and some are owned by private companies. The Town of Arlington has been conferring with the privately held Arlington Water Company following completion of a study of that system, and is considering the costs and benefits of public ownership.

Regardless of ownership status, any system with at least ten service connections, or serving at least 25 people, is considered a public community water supply and is subject to specific regulatory standards. Recent state and federal actions have mandated filtration system upgrades and other improvements to many of the systems. These improvements, while costly, will help ensure continued supplies of clean water for residential and commercial use. In addition to facility improvements, source protection areas for many of the public water supplies have been delineated and uses within those areas need to be monitored and controlled to prevent contamination.

Investments in existing water supply systems should be directed toward meeting public health requirements and expanding capacity to serve the needs of planned downtowns, village centers, and other growth areas. Capacity may be expanded by increasing the amount of water collected, stored, and distributed, or by providing incentives for water conservation. Installation of water meters, allowing billing to be tied to usage, has proven to be a particularly effective way to encourage conservation and thus to increase capacity.

New or expanded public water supplies should not encourage scattered growth in outlying areas, although it may be desirable and efficient to develop small public water systems to serve hamlets and clusters of homes in rural areas. Restricting future service to defined water service areas that are consistent with planned growth areas is one way to ensure that system extensions do not encourage inefficient scattered development.



Bennington maintains a wastewater treatment facility that serves approximately 14,000 people with a total capacity of over five million gallons per day.

One of the factors that allows public water systems to support higher densities of development is that the wastewater from on-site disposal systems does not contaminate the water supply. Of

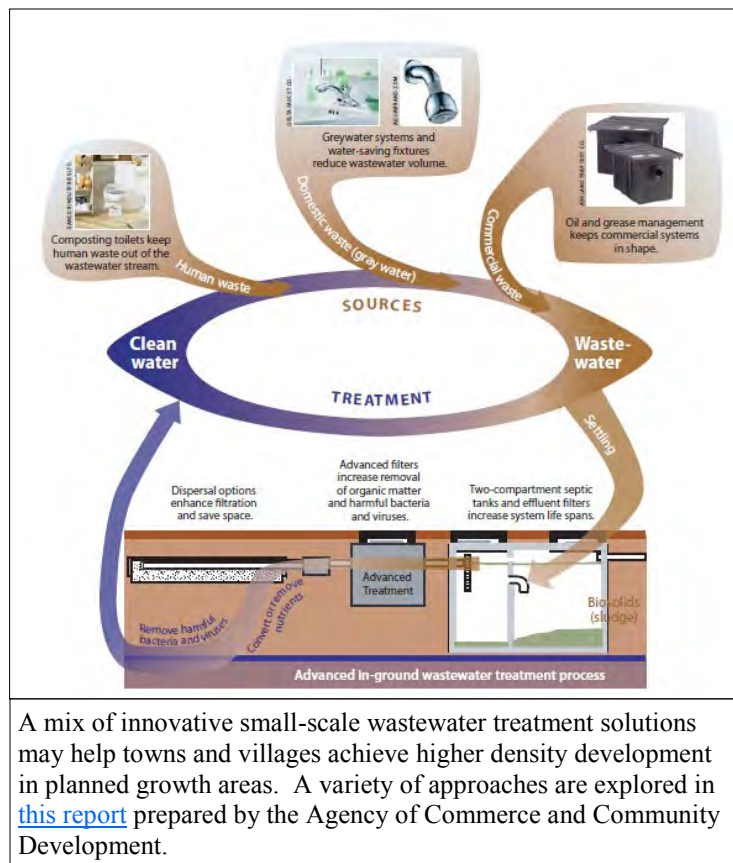
course, removal of the wastewater discharges from the area altogether, through a public wastewater, or sewage, system is even more effective in that regard. These public sewage systems collect and treat wastewater prior to discharge (generally into a watercourse or to a designated spray field area), allowing the greatest flexibility in development planning while also remediating any pollution problems resulting from inadequate or failed on-site disposal systems.

Bennington and Manchester have had municipal wastewater disposal systems for many years. Each system has capacity to handle additional growth, but both note that some changes will be needed to ensure that capacity exists to continue to support desired development in those two regional urban centers. Stormwater overflows and infiltration of water into the collection systems significantly degrade capacity. Additional stormwater separation and pipe replacement projects have the potential for significantly increasing capacity for these systems. A complete discussion of the Manchester and Bennington water and wastewater systems can be found in their respective town plans at the [BCRC website](#).

Pownal recently completed installation of a new municipal wastewater disposal system that serves the Pownal, Pownal Center, and North Pownal village centers. That project was designed to address severe water pollution problems in these areas of relatively dense development, and to enable additional growth in the villages. The project also was designed to discourage any extension of sewage capacity to the rural areas between and outside of the three village centers.

While public wastewater disposal systems may be appropriate in many of the region's compact centers, South Shaftsbury and Arlington have faced particularly severe challenges in meeting development goals while lacking such infrastructure. If additional capacity is made available in the Bennington system, an extension beyond North Bennington to South Shaftsbury may be considered.

Arlington has explored options for wastewater facilities in the past and may revisit the issue again in the future, especially in light of limitations that have been discussed during the study of the water supply system. Arlington and other communities faced with similar challenges may explore the potential for development of a traditional municipal sewage collection, treatment, and disposal system, but based on cost, limited state or federal funding, or other concerns, may also consider use of [innovative community or individual on-site treatment facilities](#). The assessment of wastewater infrastructure needs of local



Universal Recycling Law Implementation Timeline

July 1, 2014

Transfer stations and drop-off facilities must accept residential recycling. Large food scrap generators of 2 tons/week must divert materials to a certified facility within 20 miles.

July 1, 2015

Unit based pricing takes effect. Transfer stations must accept leaf and yard debris. Haulers must offer recycling at no extra charge. Public buildings must provide recycling containers. Food scrap generators of 1 ton/week must divert materials.

July 1, 2016

Leaf, yard and clean wood banned from landfills. Haulers must offer leaf and yard debris collection. Food scrap generators of ½ ton/week must divert materials.

July 1, 2017

Transfer stations must accept food scraps. Haulers must offer food scrap collection. Food scrap generators of 1/3 ton/week must divert materials.

July 1, 2020

Food scraps are banned from landfills.

communities that will be completed by the BCRC should include an identification of options for addressing the specific environmental and development constraints faced by each village center.

Any public wastewater disposal system should be supported by specific municipal policies that identify how the capacity of the system will be allocated to existing and new development as well as a service area map that limits expansion of the system to areas planned for higher density development.

11.3 Solid Waste Management

The region's towns and villages rely on a variety of solid waste and recycling collection and transport facilities and services (Maps 11-2 and 11-2A). Solid waste and recycling transfer stations are located in Stamford, Pownal, Bennington, Shaftsbury, Sunderland, Dorset, and Rupert. A new commercial scale waste composting facility has been developed on land adjacent to the Bennington transfer station and a new comprehensive materials recycling center is in the process of being developed in Pownal. Management and oversight of solid waste efforts is accomplished by individual towns, many of which work with the BCRC to administer agreements with private companies that collect and transfer waste and recyclables to disposal and processing facilities outside the region.

State requirements and incentive programs are placing a much greater emphasis on reducing the volume of waste that is produced and recycling and processing materials locally. Vermont passed the "[Universal Recycling Law](#)" in 2012, which has led to regulations that include a number of specific strategies to: 1) prohibit recyclables, food wastes, and leaf and yard debris from being sent to landfills, 2) provide greater convenience by requiring that these materials be collected along with normal household trash and 3) require user fees based on the amount of material disposed.

As a major first step in implementation of the Universal Recycling Law, the Vermont Agency of Natural Resources adopted a [Materials Management Plan](#) (MMP) in June of 2014. The MMMP sets out broad goals and specific actions that will be taken by the state and by local and regional waste management organizations to address issues in each of the following areas:

Recyclables including metal cans, foil and pie plates, glass, PET and HDPE plastics, corrugated cardboard, and paper products. Many of these materials can be used to create new products.

Organics including food scraps and leaf and yard waste. These materials can be composted for

use in amending the soil and for erosion control or can be used to create biogas, primarily methane, to produce energy.

Construction and Demolition Materials including clean wood. For many products such as asphalt shingles, drywall and others, recycling options exist but markets are limited.

Household Hazardous Waste includes pesticides, automotive fluids, and household chemicals that must be disposed in specialized facilities. Conditional Exempt Generators are small businesses or municipalities that generate less than 220 pounds of such materials. Electronic Waste includes computers and peripherals, televisions and other devices, many of which contain toxic materials as well as precious metals. Universal Waste includes batteries, fluorescent lamps and ballast and certain mercury containing devices, which must be handled in specialized facilities.

Landfill bans are in place on rechargeable batteries, lead acid batteries, button batteries, certain electronic devices, fluorescent bulbs, motor oil, paints, regulated medical waste, propane and other gas cylinders, explosives, mercury-added products, and other dangerous materials. Banned electronic devices include computers, peripherals, monitors, cathode ray tubes, televisions, printers, personal electronic devices, electronic game consoles, fax machines, telephones, answering machines, VCR and DVD players, digital converter boxes, and audio equipment. There also are landfill bans on non-hazardous materials, such as tires and household appliances. It will be important for any regional waste management plan to establish safe and convenient methods for disposing of these items.

12-Town Solid Waste Implementation Plan (SWIP)

Vermont's MMP also requires that solid waste management districts,, alliances, and independent towns develop new solid waste implementation plans that conform to the state plan. In our region, the towns of Arlington, Dorset, Manchester, Glastenbury, Pownal, Rupert, Sandgate, Shaftsbury and Sunderland jointly implement a SWIP that was adopted in 2008. The towns of Bennington and Woodford have a joint SWIP and Stamford has its own SWIP. These twelve towns are now working together to complete a single SWIP to be submitted to and approved by The Agency of Natural Resources. North Bennington and Old Bennington will be covered through their arrangements with the Town of Bennington while Manchester Village will be covered through Manchester. Elsewhere in Bennington County, the towns of Landgrove and Peru belong to the Londonderry Group, a solid waste alliance with nearby towns.

The regional SWIP that is being developed by the twelve towns, with support from the BCRC, will specify actions the member towns will need to take to encourage schools, businesses, and residents to reduce the amount of waste generated, reuse materials where possible, recycle those materials that can be turned into new products, and properly dispose of waste and hazardous materials. Actions will include outreach programs to schools and businesses, identifying sites for collecting textiles, providing technical assistance at public and private events on materials management, requiring haulers to implement unit-based pricing, providing a site for the collection of construction and demolition debris, and offering household hazardous waste collection events or a permanent facility. The SWIP also may identify and encourage a variety of new and innovative approaches to material manage-

ment and provide support for initiatives such as use of food waste for production of compost to support agriculture and methane for energy applications.

An important part of the SWIP will be identification of the most appropriate long-term solid waste management structure. Greater intermunicipal cooperation and coordination will result in more efficient and cost-effective delivery of services to residents and businesses. A solid waste district, a formal alliance of towns, or some other form of intermunicipal agreement all are options that will be evaluated.

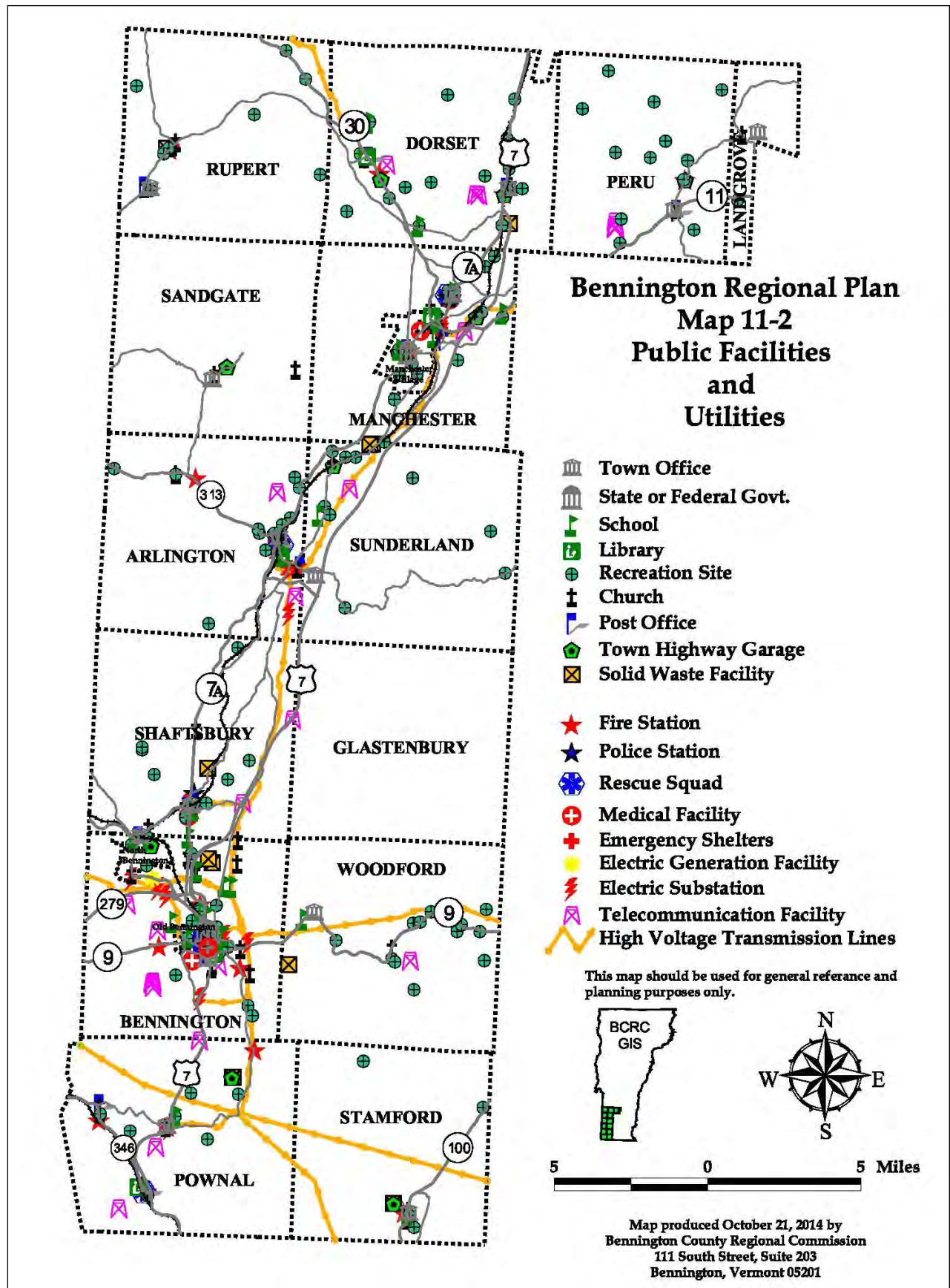
Information on existing solid waste facilities and services, as well as the new regional SWIP, is made available through regular newsletters and updates on the [solid waste section](#) of the BCRC website. Once adopted the SWIP should be considered as a component of this comprehensive Regional Plan and the BCRC will work cooperatively with participating towns to implement its organizational and solid waste management recommendations.

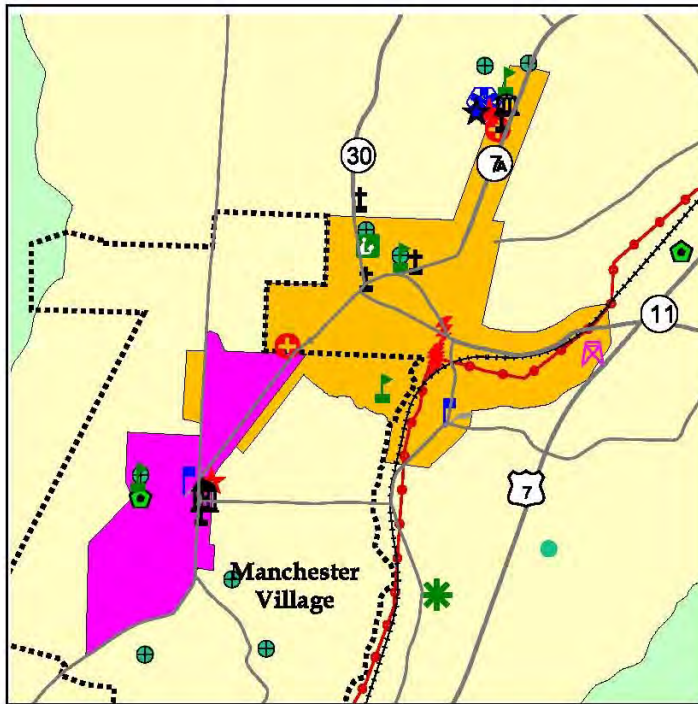


11.4 Electricity

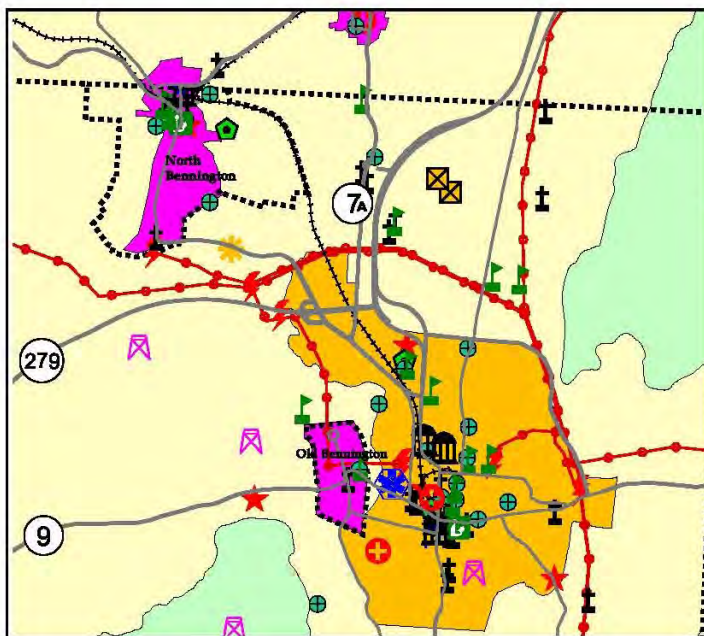
With inevitable increases in the cost and decrease in the availability of the liquid fossil fuels (oil, natural and lp gas, and motor gasoline and diesel) that have fueled our lifestyles and economy over the past 100-plus years, it is expected that attention will increasingly be turned to electricity to supply energy needs. Electricity can be used to power motors in vehicles, machinery, and appliances, and to heat and cool buildings and water.

The most significant concern with electricity use in general, and with scenarios that forecast growing electricity use in the region in the future, is that electricity is only a means of delivering energy; it is not a source of energy. In recent decades, most of the region's electricity has been imported from large regional generators powered by nuclear fuel, natural gas, coal, and recently, from various renewable energy sources, primarily hydroelectric power from Canada. In the future, however, it is likely that greater reliance will be placed on local generators, most of which will be powered by renewable energy sources. Consequently, while Vermont should continue to seek long-term contracts for stable sources of imported electricity, a concerted effort to develop local generation should be a priority. As will be discussed in Chapter XII, hydroelectric and solar energy projects are under development in the region and the potential for commercial-scale wind energy development is being evaluated.





Manchester Urban Center



Bennington Urban Center

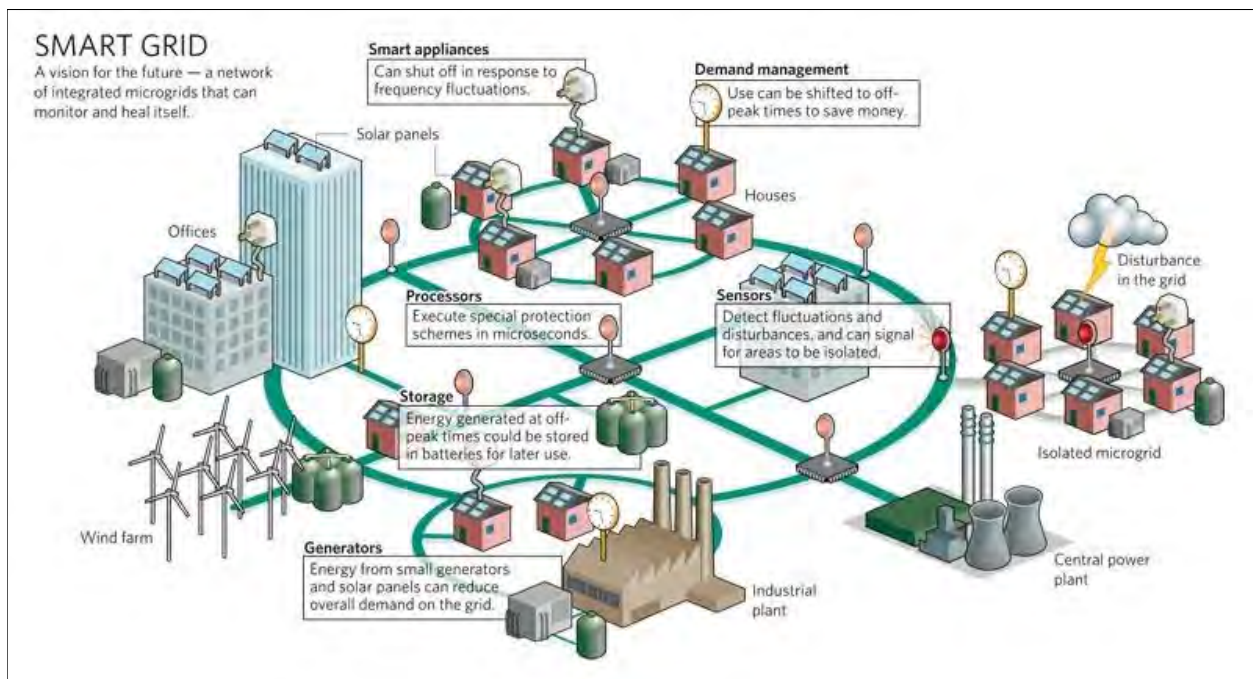
**Manchester and Bennington
Urban Centers**

**Map 11-2A
Public Facilities
and
Utilities**

- Town Office
- State or Federal Govt.
- School
- Library
- Recreation Site
- Church
- Post Office
- Town Highway Garage
- Solid Waste Facility
- Fire Station
- Police Station
- Rescue Squad
- Medical Facility
- Emergency Shelters
- Electric Generation Facility
- Electric Substation
- Telecommunication Facility
- High Voltage Transmission Lines
- Hamlet
- Village
- Urban Center
- Rural
- Upland Forest

Small renewable generators – such as photovoltaic and wind energy systems scaled for individual homes and businesses – can support regional generation needs as well. Recent state rebate and federal tax credit programs have been helpful and will be even more beneficial as electricity prices increase over time. Another distributed energy strategy with a role to play in the future is “combined heat and power” (CHP) facilities, where excess heat from a boiler facility that runs year-round (such as at a hospital) is used to generate electricity that can be fed into the regional power grid.

Electricity generation and the adequacy of fuel supplies is one concern, transmission and distribution of that power is another (Map 11-2). Vermont’s “southern loop” transmission system serves Bennington County. The Vermont Electric Company (VELCO), the state’s electricity transmission company has indicated that southern Vermont electrical transmission facilities will need significant improvements over time. The recent installation of a [synchronous condenser](#) has alleviated some problems along the southern loop, although longer-term solutions will be required to support anticipated increased system demand. In addition to ongoing investigations into transmission and distribution line upgrades and continued efforts by Green Mountain Power and Efficiency Vermont to reduce demand through conservation, implementation of “[smart grid](#)” technology ultimately will be necessary to efficiently manage electricity transmission, distribution, and utilization.



A smart grid will be supported by many smaller generating facilities (including renewable energy based and CHP systems), distributed throughout the grid at locations closer to where the electricity is consumed. Advanced technologies will allow a two-way flow of electricity and information and will be capable of monitoring everything from power plants to customer preferences to individual appliances; these technologies will enable delivery of real-time information and enable the near-instantaneous balance of supply and demand. The US Department of Energy has identified five key smart grid technology features:

- Integrated communications, connecting components to open architecture for real-time information and control, allowing every part of the grid to both “talk” and “listen.”
- Sensing and measurement technologies to support more accurate and rapid monitoring, time-of-use pricing, and demand management.
- Advanced components to provide for superconductivity and storage of electricity.
- Control methods to monitor essential components enabling rapid diagnosis and precise solutions to any anomalous event.
- Improved interfaces and decision support for system operators and managers.

An extremely large investment in research and development will be required to implement smart grids and considerable federal funding has been directed toward this effort recently. It is important to note that this important new way of using electricity will rely on many new small generating facilities, distributed throughout the grid -- and most certainly within Bennington County -- as well as conservation through reduced demand. The technological aspects of demand management will need to be combined with ongoing conservation efforts to achieve a successful solution.

11.5 Information and Telecommunication Services

Bennington County is served by a modern and rapidly developing information infrastructure. Access to broadband internet connectivity and consistent wireless communication services, for voice and data, have become increasingly important to residents, schools, colleges, institutions, local businesses, and visitors to the region. Vermont has committed to ensuring that all parts of the state have access to broadband within the near future, with an ultimate goal of universal coverage at extremely fast fiber optic speeds of 100 mbps download and upload by the year 2024. Information on broadband service and maps showing current service status and planned upgrades can be found at broadbandvt.org. An important recent broadband project in the region involved extension of fiber optic cable to schools, libraries, and other “community anchors.” Extensions from this network will help provide greatly enhanced broadband coverage throughout the region.

Cellular telephone service providers have been steadily expanding their coverage area within the region with the installation of new towers and antennas at strategic locations. The widespread availability and use of tablet computers and handheld wireless phones, including “smart phones,” that offer portable access to the internet has led to an even greater demand for these wireless facilities.

The infrastructure required for wireless communication services include towers, antennas, equipment buildings, access roads, and electrical service. Bennington County is a challenging area for the development of wireless communication infrastructure. The narrowness of the inhabited valleys and highly visible slopes and ridges of the surrounding mountains require careful siting to ensure that adequate coverage is efficiently provided while not having undue adverse impacts on natural or scenic resources. Those concerns can be minimized by careful planning that includes siting antennas on existing buildings or structures, co-location of antennas on towers to limit the number of towers, and careful site design to avoid sensitive areas and avoid disruption of viewsheds identified as particularly important to local communities.

The Vermont Public Service Board has regulatory jurisdiction over the siting of telecommunica-



Narrow profile monopole towers such as this one tend to be less visually intrusive than larger lattice towers and towers with widely spaced arrays of antennas. “Stealth” towers designed to appear as trees or other landscape features can be effective, but only if they appear as natural parts of their surroundings.

tion facilities, weighing the public good of a proposal together with its environmental and social impacts. Municipal and regional plans are given consideration by the Public Service Board, so it is important that those plans include clear policy guidelines regarding sensitive areas, tower height, co-location requirements, and other factors. In some cases it may be preferable to develop one tall (140 feet or more) tower that provides coverage over a relatively wide area in a location where identified local and regional impacts can be avoided. In other cases, two or more smaller and lower towers (90 feet in height and possibly using a “monopole” design) might be needed to provide the same coverage while avoiding impacts to natural and scenic resources or residential neighborhoods.

Of course, print media, broadcast, cable, and satellite television, and local radio stations remain critical components of the region’s information infrastructure. Most of those services also now make use of digital outlets to deliver their content to the public. One daily newspaper, the [Bennington Banner](#), is published in the region. The [Rutland Herald](#)

also provides news coverage of Bennington County communities and is widely read in the area. The [Manchester Journal](#) is a weekly newspaper that provides coverage throughout the Northshire. The [Vermont News Guide](#) includes community announcements, letters, and classified advertisements.

Local broadcast television stations with signals that reach all or part of the region include network stations from the Albany, New York and Burlington, Vermont areas. Because of the distance from those cities and the mountainous topography in Bennington County, most people rely on cable and satellite television. Cable and satellite television companies also provide access to a wide variety of programming and often pair their services with internet and telephone communication as well. Local public access television stations —[GNAT-TV](#) in the Northshire and [CAT-TV](#) in the Southshire— are extremely important to local communities, providing an outlet for locally produced shows and regular coverage of municipal government, school district, and other public meetings.

[Vermont Public Radio](#) transmits high definition news and entertainment coverage from transmitters in Bennington, Manchester, Rupert, and Sunderland. [WBTN](#) is an important local AM station serving the Bennington market, while [WEQX](#) is an FM station broadcasting from Manchester.

11.6 Health Care Facilities and Services

The regional hospital, [Southern Vermont Medical Center](#) (SVMC), is located just southwest of Bennington's downtown (Map 11-2A). It is surrounded by a cluster of medical and dental office buildings offering a wide range of services for residents of Bennington and surrounding communities. SVMC maintains a campus in Manchester (SVMC – Northshire) that provides primary care services to the Northshire. SVMC also is planning to open a new medical office in Pownal to serve residents of that town and nearby communities in Berkshire County, meeting a need that was exacerbated by the closing of the hospital in North Adams.



The Southwestern Vermont Medical Center forms the core of a comprehensive network of health care facilities located in the center of Bennington.

The Battenkill Valley Health Center, located in Arlington, provides convenient access to primary care for residents of Arlington, Sunderland, and Sandgate. The Battenkill Valley Health Center is planning to construct a new facility on land it recently acquired near its current location in the center of Arlington. Employing over 270 people, community based mental health and social services are provided by the federally qualified United Counseling Service (UCS) with multiple offices in Bennington, and an office in Manchester serving the Northshire. Many private practice physicians, dentists, chiropractors, and alternative therapy professionals are located in the region, with concentrations in the Bennington and Manchester regional centers.

The health care sector is transitioning to a new service delivery model, with an emphasis on prevention, linking policy and environmental strategies to health outcomes. The BCRC has worked in collaboration with SVMC, the Alliance for Community Transformations, and the Vermont Department of Health on a number of healthy community design and tobacco/substance abuse prevention initiatives in support of these efforts.

The [Blueprint for Health](#) is Vermont's state-led chronic care initiative that is intended to lead to

sustainable reform in the way that health care is delivered. Originally codified in Vermont statute in 2006 and subsequently modified, most recently through an amendment to 18 V.S.A. Chapter 13, the Blueprint for Health is defined as a “program for integrating a system of health care for patients, improving the health of the overall population, and improving control over health care costs by promoting health maintenance, prevention, and care coordination and management.

Prevention can reduce the serious economic burden of disease while also improving the quality of people’s lives. The Blueprint is designed to help all residents access the best available health services through:

- Advanced primary care practices that are recognized as patient-centered medical homes (PCMH) by the National Committee for Quality Assurance.
- Multi-disciplinary core Community Health Teams supporting PCMHs and providing the general and targeted subpopulations with access to multidisciplinary health services.
- Evidence-based self-management programs and decision making support to help citizens adopt healthier lifestyles and engage in preventive health services.
- Implementation of health information technology to support health information exchange, population management, and comparative evaluation.
- Multi-insurer payment reforms that fund PCMH transformation and Community Health Teams.

Implementation of the Blueprint for Health is led at the local level. This approach to decentralized administration and independent accountability is designed to inspire engagement, creativity, shared decision making, and a sense of ownership. There currently are ten primary care practices (seven independent single site, two hospital owned, one independent multi-site) in the Bennington Health Service Area recognized as PCMHs, with the addition of three new practices in survey preparation. Community health team staff (currently 6.3 FTE positions) provide administrative services, care coordination, social work, mental health services, nutrition expertise, and other specialized services. Over the past two years, 21,646 patients were served by Blueprint practices in the Bennington Health Service Area.

11.7 Public Buildings

Town halls, schools, post offices, churches, libraries and other public buildings always have been important to the quality of life in local communities. These buildings provide an important focus for residents that contributes to each community’s unique sense of place. As the location for important public functions and meetings, they serve an essential role in the life of towns and villages. Many of these



A new addition to the Landgrove Town Hall has made that building more comfortable and efficient.

buildings are located in historic village centers and downtowns (Map 11-2), and many are themselves important historic buildings. It is particularly important to ensure that these buildings remain in historic centers to support distinct and cohesive communities.

With the construction of a new town hall in Sunderland in 2014, all of the municipalities in the region, with the exception of Old Bennington and the unorganized town of Glastenbury, have public buildings to house local government operations. Rupert recently acquired the former West Rupert School and municipal offices now are located in that building. Landgrove and Peru both recently completed major renovations to their town halls. The Pownal town hall has become overcrowded and the building is in need of significant upgrades; the local Select Board has started to explore options for construction of a new town hall on nearby municipally owned property.



The region's libraries are important public buildings that provide open access to information.

The region is fortunate to be served by several outstanding public libraries (Map 11-2). The largest are the [Bennington Free Library](#), the newly completed [Manchester Community Library](#), the [Dorset Public Library](#), the [Martha Canfield Library](#) in Arlington, the [John McCullough Free Library](#) in North Bennington, and the [Solomon Wright Library](#) in Pownal. These buildings offer free and open access to information, computing facilities, and educational, cultural, and recreational resources. Libraries maintain collections of books and periodicals, afford access to the internet and online

research tools, and host lectures, concerts, and special exhibits. The libraries generally include a small professional staff supported by many volunteers and rely on a combination of municipal funds, grants, and private donations to operate. Libraries always should be counted as a key asset when evaluating local resources and should be provided with stable sources of public funds.

In addition to the many other municipally owned buildings in the region (Map 11-2), there are two county courthouses, one in the Northshire and one in the Southshire. Other judicial functions as well as local offices for many state agencies are found in the new state office building, located on Route 7 north of downtown Bennington. Because many residents need to access services in this building on a regular basis, developing safe and convenient access to the building for pedestrians and bicycles should be a priority transportation improvement project. The other newly constructed state building in the region is the Bennington Welcome Center, located at the US 7—VT 279 highway interchange where visitors can obtain information about the region and its many attractions while enjoying a spectacular view of the surrounding landscape and the Bennington Battle Monument.

11.8 Recreational Facilities

Bennington County's many recreational facilities are important economically and for the contribution they make to the quality of life for area residents. Municipalities, the State of Vermont, the United States Forest Service, non-profit organizations, and private concerns all operate recreational facilities of one kind or another in the region (Maps 11-2 and 11-2A). In addition, the playgrounds, playing fields, and gymnasiums at public schools are used by students as well as the general public. Continued public support and mutual cooperation will ensure that the quality and variety of recreational experiences available in the region will remain one of its most distinguishing characteristics.

The public parks and other facilities operated by the Vermont Department of Forests, Parks, and Recreation, and those maintained by the United States Forest Service, are among the most popular and visible recreational amenities in the region. The state parks and Forest Service camping and recreation areas offer a variety of activities and are well distributed throughout the region. And as discussed in Chapter 8, public lands and trails ensure that the natural resources of the region are available for public recreational use.

Municipal recreation parks are extremely important to local communities. Willow Park and the Municipal Recreation Center in Bennington, Howard Park in Shaftsbury, the Dana Thompson Recreation Center in Manchester, the Arlington Recreation Park, and the Mettowee Valley Recreation Park in Rupert are examples of these valuable community facilities. These parks and smaller neighborhood parks provide places for children to engage in informal healthy play, while also hosting summer day camps, picnics, and community festivals. Many also have facilities that are needed for various team and individual sports.

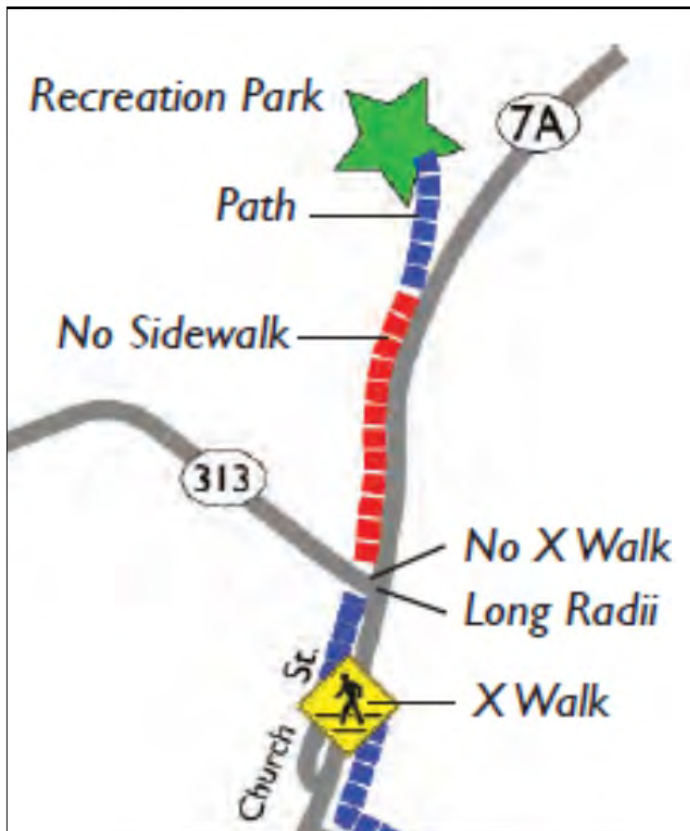
Bennington recently completed a [study of its open space and recreational resources](#). Other towns can use a similar process to inventory their recreation assets and identify needed improvements. Bennington determined that development of a pathway network and additional indoor recreational facilities are priorities for the community. In response to that planning process, several projects currently are underway to develop connected pathways and to construct an addition to the Recreation



Howard Park in Shaftsbury includes playing fields and trails; it is one of many valued local public parks in the region.

Center or to make better use of existing buildings in town.

Pownal is the only one of the larger towns in the region that lacks a conveniently located community park. Opportunities for developing an appropriate facility in the community are being explored. The town recently acquired property formerly owned by the Pownal Tannery and is considering ways to use that land for multiple outdoor recreational uses.



Providing safe and convenient access to recreational facilities should be a priority for municipalities. A project under development in Arlington (above) will connect the recreation park with the center of the village.

Development of additional small parks in locations convenient to concentrations of residential development in towns throughout the region would encourage additional physical activity and be a significant amenity for residents. New residential developments located in areas relatively distant from park and recreation facilities should include land that is dedicated to recreational use. All developments should include internal sidewalks and pathways as well as safe and convenient access for pedestrians and bicyclists to nearby recreation areas, schools, and shopping and employment centers.

The BCRC has compiled an [inventory of all public parks and recreation facilities in the region](#) and identified any barriers to access to those facilities. Local communities should refer to that report and consider improvements to roads, sidewalks, and parking areas that will make it easier for residents, including children, to exercise on a regular basis. The [Complete Streets](#) principles described in more detail in Chapter X should be considered in all local and state roadway improvement projects, and opportunities for integrating public spaces for informal meeting and activities should be considered for inclusion in public and private developments in downtowns and village centers.

11.9 Public Safety and Emergency Management

Policing, fire protection, and emergency rescue services are important for all of the towns and villages in the region. Bennington and Manchester maintain the only paid municipal police departments in the region while many more towns (and the Village of North Bennington) are served by local volunteer fire departments. In addition to emergency response services provided by the local fire departments, private nonprofit rescue squads providing emergency medical care and related transportation services are located in Pownal, Bennington, Arlington, and Manchester. A rescue squad in

Londonderry provides emergency medical services in Peru and Landgrove and the Granville, NY rescue squad provides coverage into Rupert.

Most of the rural towns in the region rely on contracts with the Bennington County Sheriff and support from the Vermont State Police to provide police protection. Those arrangements are examples of regional provision of public safety services, something that also is seen in the case of most of the rescue squads that cover multi-town areas. The towns of Manchester and Dorset recently initiated a study to assess how to most cost-effectively provide high quality police, fire, and emergency medical services to residents of both towns. The study is investigating various models of intermunicipal cooperation that could cover police, fire, and emergency services in any combination and under different jurisdictional models. Towns and villages should ensure that all of these service providers are adequately funded and should consider alternative/cooperative approaches to maintain efficient service delivery.

Much of the region's emergency management infrastructure was described in Chapter IX. The BCRC works with the Local Emergency Planning Committee to coordinate emergency response planning and actions regionally. Equally important is the network of local emergency management directors in each community, the [local emergency operations plans](#) that provide critical information needed for emergency responders and local officials, and the [hazard mitigation plans](#) that each municipality should develop and maintain to set out the actions needed to minimize impacts and aid recovery from any disaster.



Rescue squads are one important component of the region's public safety system, providing emergency medical services and transport.

11.10 Policies and Recommendations

1. Public investments in utilities, facilities, and services should support and reinforce historical development patterns by encouraging development in downtowns, village centers, and other areas planned for growth and not in outlying rural areas.
2. Careful and coordinated financial planning at the municipal level is critical to ensure that local investments are effective and affordable. The BCRC should offer assistance to towns and villages in the development of capital budgets and programs.

3. Large new developments that require improvements to or expansion of existing public utilities, facilities, or services should be responsible for paying a fair share for the provision of that new or expanded infrastructure or service delivery systems.
4. Emphasis should be placed on the maintenance of existing public water supply and wastewater disposal systems to serve areas of concentrated development or to correct serious health hazards. The BCRC should work with local governments to assess water and sewer infrastructure needs required to support planned development in these areas.
5. The BCRC will work with towns in the region to develop a comprehensive solid waste plan that will implement the goals of the Vermont Materials Management Plan in a manner that is deemed most appropriate for local communities. Long-term facilities and management structures that promote responsible and cost-effective resource use must be identified and implemented.
6. The BCRC should support establishment of environmentally and economically sound renewable energy generation facilities and implementation of smart grid technology.
7. The BCRC should facilitate local and state cooperative efforts to aggressively expand broadband internet and cellular voice and data communication services to all parts of the region. Siting of new telecommunication towers should give primary consideration to concerns identified in municipal and regional plans. Service providers should consider the aesthetic character in tower siting and design. As a first priority, antennas should be located in, or attached to, existing structures where they are not prominently visible. "Stealth" tower designs may be used when they blend naturally into the surrounding landscape. New towers should be no taller than necessary to provide coverage, and developers should consider whether multiple small towers or antenna locations would be preferable to a large tower.
8. The BCRC supports access to primary and specialized health care for all residents. Cooperation with the Vermont Department of Health, SVMC, and other health care providers in implementing the Vermont Blueprint for Health and support innovative service delivery and financing systems will advance this goal. Ensure that transportation infrastructure is planned to promote and facilitate active healthy lifestyles.
9. Towns and villages should identify recreational needs and opportunities, develop new facilities as appropriate, and work to minimize barriers to access to those facilities.
10. Important public buildings should be maintained and lands and require that any new or expanded municipal, state, or federal buildings are located in downtowns or village centers.
11. The BCRC should continue to assist with the preparation of local emergency operation plans and hazard mitigation plans, play an active role on the Local Emergency Planning Committee, and serve as a liaison between municipalities and state agencies - providing information and damage reports during emergencies.
12. Municipalities should identify vacant lots, fields, and properties that could be used for community gardens, farmers markets, or recreational activities for local residents.

XII. ENERGY

12.1 Overview

The [Bennington Regional Energy Plan](#), developed by the BCRC, contains extensive information on energy sources and uses, conservation strategies, renewable energy development, electricity, and how everything, from personal lifestyle choices to economic systems, depends on energy. In fact, energy is fundamental to the topics covered in every section of this plan, from housing and land use to transportation and economic development. This chapter will briefly cover the main issues addressed in the Bennington Regional Energy Plan, which—as currently written and subsequently updated and approved by the BCRC—is considered to be a part of this comprehensive Bennington County Regional Plan.

We rely on the energy we obtain from our food, the energy that is in the fuel that heats our homes and moves our vehicles, and the energy that generates the electricity that runs our appliances, machinery, computers, and telecommunication systems. Most of the (non-food) energy that we use, and have come to rely upon, is derived from “nonrenewable” fossil fuels and, to a lesser extent, nuclear fuels. This energy has been abundant and cheap, but supplies are becoming scarcer and oil, natural gas, coal, and uranium ever more expensive to extract. Energy prices have been rising and will continue to rise at an increasing rate; eventually, procuring an adequate supply of these fuels to meet demand at any price will not be feasible.

Alternative energy in the form of “renewable” sources such as solar, wind, hydroelectric, and biomass-based fuels can provide significant amounts of clean energy well into the future. Developing those resources is extremely important, but the total amount of energy that can be extracted from such resources is markedly less than what we currently obtain from fossil fuels. To maintain a good quality of life, vibrant communities, and prospering economies, we will have to develop conservation strategies that will let us use remaining nonrenewable fuels wisely to transition to a society that uses less total energy while using energy obtained from clean renewable sources as efficiently as possible.

Twenty years from now the people and businesses of Bennington County will be using less energy than we use now. It is imperative that we recognize this reality and begin to prepare for the inevitable transition as soon as possible. This plan is intended to support that process by raising awareness of energy issues and advancing several basic goals and objectives:

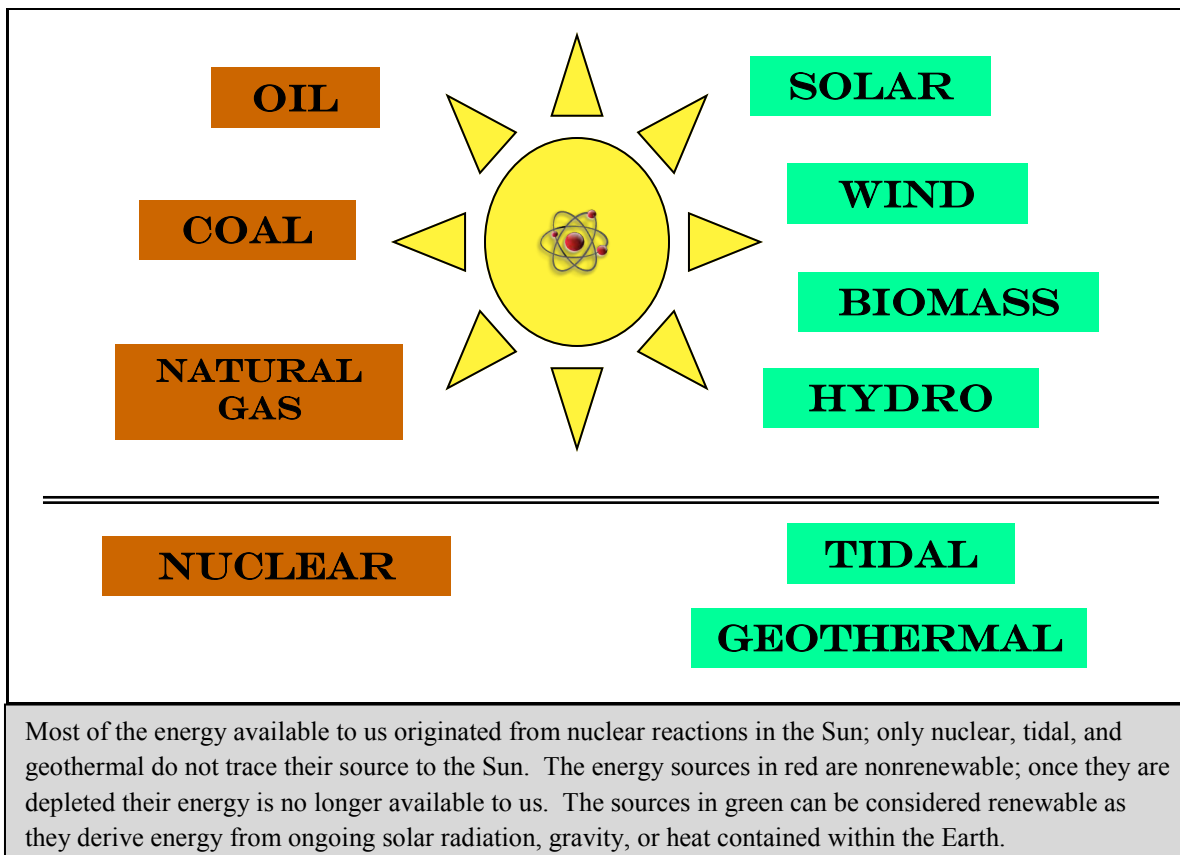
- ◆ Reduce total energy consumption while maintaining a high quality of life and a vibrant local economy.
- ◆ Encourage energy conservation in residential, commercial, industrial, public/institutional, natural resource, and transportation sectors.
- ◆ Increase opportunities to make energy choices at the local level.
- ◆ Assure diversity in the mix of energy sources to minimize the impacts of a supply restriction in any particular fuel.
- ◆ Decrease our reliance on non-local energy sources through conservation and development and use of local renewable energy sources.
- ◆ Make energy choices that minimize adverse impacts to the environment.

- ♦ Maximize energy efficiency by matching fuel type to end use.
- ♦ Assure both an adequate supply of electricity and a secure distribution network to meet the region's needs.
- ♦ Promote a sustainable local economy and personal lifestyles that are consistent with future energy realities.

12.2 Energy Sources and Utilization

The vast majority of energy present on the Earth derives from the Sun, energy which is actually nuclear in origin, having been released from forces within the Sun as atoms of hydrogen are fused into helium. Energy produced by the Sun is available to us in many forms: as direct solar energy that can heat buildings and generate electricity, in the form of wind and falling water (hydroelectric), and from the combustion of plant materials (biomass). Most of the energy used in Bennington County and around the world, is solar energy stored in the form of oil, coal, and natural gas. These "fossil fuels" have made possible the dramatic growth in the world's population and economies over the past two centuries. Energy that took millions of years to be stored, however, has been consumed in a tiny fraction of that time. Human activity uses over 3.6 billion gallons of oil every day. Because of the rate of depletion of these nonrenewable fuels, the availability and affordability of oil will be a serious issue within 20 years and within 50 years the same will be true for all other fossil fuels.

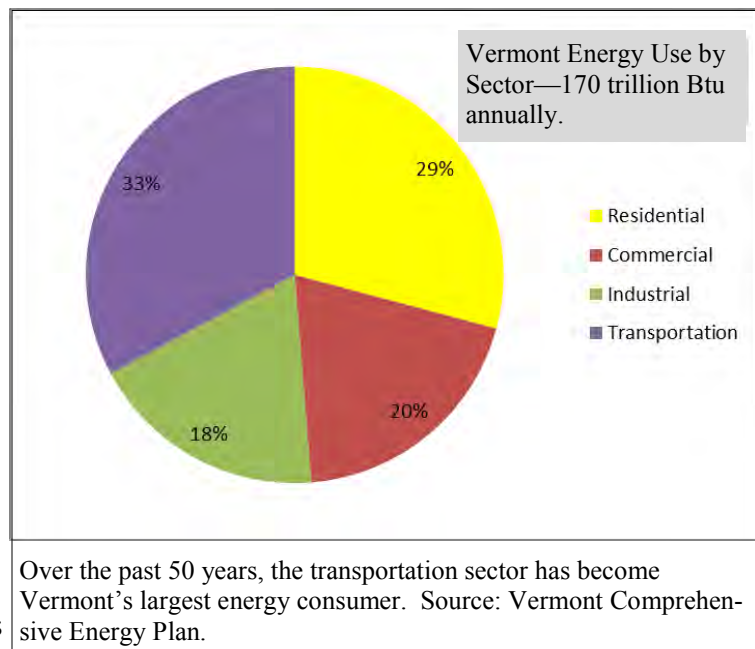
Sources of energy that do not ultimately trace their existence to the Sun are limited to nuclear (from nuclear fuel on Earth), geothermal, and tidal processes. Nuclear energy used to generate



electricity results from fission (splitting atoms), primarily of isotopes of uranium. As the demand for electricity grows and the availability of fossil fuels declines, use of nuclear fuels is likely to accelerate (despite the closure of Vermont's one nuclear plant), but that increased utilization will begin to exhaust economically extractable uranium supplies. Geothermal energy originates from nuclear decay and gravitational forces working deep within the Earth. This energy can be used for space heating, and where it is sufficiently concentrated, to generate electricity. Tides are powered by gravitational forces and energy can be extracted from these regular movements of water to generate electricity.

Total energy use in Vermont has doubled over the past 50 years, to approximately 170 trillion Btu (British thermal units), with a third of that energy now used for transportation. Nearly all of the transportation energy is consumed in the form of petroleum products.

Residential, commercial, and industrial energy use also has grown, but at a slower rate than transportation energy use. A majority of the energy used in the non-transportation sectors is consumed in the form of electricity (that includes both end use and system losses). Nearly as much energy is used for space heating (heating buildings), with most of that energy—especially in Bennington County—from the combustion of fuel oil. As oil prices have increased, and availability of new biomass based fuels (especially wood pellets) has increased, there has been some conver-



sion to wood as a space heating source, especially in the residential sector and in institutions such as schools and colleges. Electricity is obtained from a variety of energy sources, most of which are outside of the region and outside of Vermont. Hydro Quebec is a major supplier of electricity to Vermont, with other electricity purchases from a mix of large regional nuclear, coal, and natural gas based generations and a growing number of small local renewable fuel based generators.

12.3 Conservation

As petroleum products become less prominent as an energy source for heating, transportation, and industrial processes in the future, there will be a greater reliance on electricity, probably generated by nuclear, natural gas, and coal plants as well as by a mix of renewable sources (principally hydro, wind, biomass, and solar). It is likely that technological adaptations will allow electricity to displace many, but not all, of the functions currently served by oil and gas. In any event, greater utilization of remaining nonrenewable fuels will accelerate their rates of depletion as well as their cost, and the energy available from renewable sources is much less than what is available from energy dense fossil

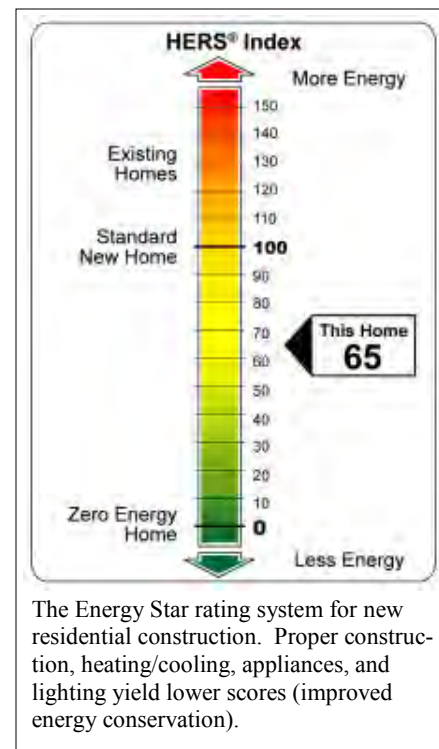
fuels. These physical and economic factors are likely to ensure that Bennington County will use less energy 20 years from now than it uses presently, whether or not a conscious effort to conserve is made. Developing and implementing conservation strategies at all levels of our society and economy will ease the inevitable transition to this lower total energy future.

Space and Water Heating Conservation Strategies

Space and water heating account for well over half of the energy costs in a typical Bennington County home and heating costs also are high in many commercial, industrial, and institutional buildings. More information on the ideas presented in this section can be found in the [Bennington Regional Energy Plan](#), at the [U.S. Department of Energy's efficiency website](#), and through [Efficiency Vermont](#).

Significant energy savings can be realized during the planning for any new building construction or renovation project. Development sites should be designed to allow buildings to take maximum advantage of solar energy for heating, and buildings should adhere to the following principles:

- ◇ Conformance with Vermont's [Residential](#) and [Commercial](#) Building Energy Standards, and building to an even higher level of efficiency by meeting the highest levels of the [Energy Star](#) and [LEED](#) rating systems. Local governments should be certain that anyone undertaking a building or major renovation project is aware of these standards and programs.
- ◇ Maximize access to solar energy for passive space heating and for water heating.
- ◇ Ensure that buildings are well-insulated and free of inefficient sources of air infiltration.
- ◇ Utilize multiple heating zones within buildings.
- ◇ Make buildings as small as practical and seek opportunities to accommodate new housing demand in efficient multi-family housing in village and town centers.



The most significant building energy conservation gains can be made by improving the performance of existing structures. Virtually every existing building can benefit from an [energy audit](#) that will help determine the type, cost, and financial payback of various improvements, including building weatherization projects. Efficiency Vermont provides direct assistance to businesses, local governments, and institutions, and a growing number of [home energy auditors](#) are available in the region. The Bennington Rutland Opportunity Council (BROC) oversees a [home weatherization program](#) for income-eligible residents and the NeighborWorks of Western Vermont [Heat Squad program](#) provides technical assistance and financing for homeowners seeking to conserve energy and reduce heating costs.

Significant reductions in the use of nonrenewable fossil fuels can be realized by converting to local renewable energy sources for heating buildings and water. As noted above, passive solar heating

of buildings (as well as active solar heating) can be extremely effective, and existing buildings can be modified to make greater use of this free energy source. Similarly, solar water heating systems (panels or evacuated tubes) can significantly reduce consumption of fossil fuels. The Regional Energy plan notes, for example, that a typical household in Bennington County uses the energy equivalent of 175 gallons of propane per year to heat water. If 50 percent of those homes converted to solar heating systems, propane/oil consumption would be reduced by 800,000 gallons annually (collectively saving over three million dollars for consumers).

Bennington County has abundant biomass (primarily wood) renewable energy resources as well. Recent assessments have found that forests located just within Bennington County could provide over 150,000 cords of wood per year for fuel (in addition to timber harvested for other purposes). This wood can be used as cordwood in wood burning furnaces and stoves, or can be processed into wood pellets (there are several nearby manufacturers that use mostly locally sourced wood) for use in efficient and clean burning pellet stoves and furnaces, or chipped for use in institutional or community direct burn or wood gasification facilities. Steady conversion to biomass based fuels can be expected to occur as oil and propane prices rise, and efforts to effect safe conversions to this alternative fuel, and to establish needed supply and distribution networks, should be supported by the BCRC, state, and local governments.



Forests cover most of Bennington County; the wood available from Bennington County and surrounding areas can provide energy for facilities such as this 400 horsepower wood boiler system at Bennington College, which has reduced oil consumption on the campus by more than 300,000 gallons per year.

Conservation of Electricity

Electricity is an extremely efficient and versatile way to deliver energy once it has been generated. Because it will be a major challenge to generate enough electricity to meet this future demand, all possible efforts to conserve by reducing unnecessary electricity consumption should be pursued. One way to reduce electrical energy loss is to move generation closer to energy consumers, since as much as two-thirds of electrical energy currently is lost during transmission to the region. In addition, implementation of “smart grid” technology (discussed in Chapter X) will support conservation through creation of a much more efficient distribution and information system.



Lighting (10% of total energy use) and appliances and home electronics (17%) constitute major residential uses of electricity, and electricity use in commercial and industrial businesses often constitutes a major operating expense. Municipalities and large institutions such as schools, colleges, and hospitals also use large amounts of electrical energy for equipment, air conditioning, and indoor and outdoor lighting. Simple behavioral changes can greatly reduce electricity consumption: turning off lights and electronic equipment when not in use, air drying dishes and clothes, and for businesses, making sure that HVAC systems are well maintained. Replacing lights with new efficient compact-fluorescent or LED bulbs, upgrading appliances and electronic equipment in homes and businesses, and using natural lighting to the extent possible will generate significant savings in electrical use.

[Efficiency Vermont](#) offers a variety of incentive programs and rebates to help homeowners and businesses offset the cost of these important improvements.

Commercial and Industrial Energy Conservation and Alternative Fuels

The region’s economy depends on the vitality of local commercial and industrial enterprises, and those businesses rely on energy to operate. While total commercial and industrial energy use in Vermont are comparable, commercial demand has increased dramatically over the past twenty years and industrial demand has been relatively flat. Both of these sectors, however, rely heavily on electricity, and effective conservation strategies will help ensure that electricity generation and transmission capacities remain adequate to meet their needs. Of course, many of these businesses rely on shipments of products and transportation of people to the region, and those energy demands are accounted for in the transportation sector, which has seen a very large increase in consumption of fossil fuels. Commercial and industrial conservation strategies range from building efficiency improvements to changes in operating procedures and objectives. Specific advice and tools that support conservation efforts can be found in the [Bennington Regional Energy Plan](#) and at the [business section of Efficiency Vermont’s website](#).

New extractive technologies have made [natural gas](#) a relatively abundant, and consequently relatively inexpensive, energy source. There currently is no natural gas service to Bennington County

and that fact is seen as putting local businesses, and business development opportunities, at a significant disadvantage. Although natural gas resources are just as finite as other fossil fuels, and costs eventually will rise, access to natural gas would provide at least a near-term cost savings for businesses and would meet this plan's goal of increasing energy choices. Extension of a natural gas transmission pipeline to the region would be an environmentally complex and costly undertaking with payback made uncertain because of the volatility of energy prices in the future. However, creation of a local natural gas distribution network, serving a cluster of high-energy consuming businesses and other institutions, from a terminal that receives trucked shipments of compressed natural gas might prove to be an economically viable alternative. Moreover, establishment of such a local network might lead to extension of a natural gas transmission line to, or nearer to, the region. The BCRC should work with the Bennington County Industrial Corporation, local businesses, and natural gas companies to fully explore these options.

Conserving Energy in the Transportation Sector

The amount of energy used for transportation in Vermont has grown more rapidly than energy use in any other sector since 1980. The main reason for this heavy utilization of transportation fuels, locally and across the country, is that gasoline and diesel prices have been kept low, allowing people to rely heavily on personal vehicles and encouraging a preference for larger and less fuel-efficient models and a land use pattern that requires frequent driving to destinations. Countries with higher fuel costs—largely a result of taxation systems that attempt to capture the full cost of burning these fuels—have seen a greater utilization of more fuel-efficient vehicles, less overall driving, greater reliance on walking, biking, and public transportation, and more compact and efficient land use patterns. While it is unlikely that the federal or state governments will significantly raise transportation fuel taxes in this country, supply and demand factors eventually will drive prices higher and prompt conservation. Those price increases, however, may be felt in conjunction with other economic disruptions, making adaptation more difficult. It is important, therefore, to identify ways to begin conserving energy in the



Another way to get around: vehicles like this one combine pedal and electric power to meet basic transportation needs at low cost and with little environmental impact.

transportation sector and to put in place the infrastructure that will make reliance on personal vehicles less of a necessity.

Greater reliance on alternative vehicles and fuels is one important way to reduce consumption of petroleum fuels. Foremost among those alternatives to the car are various forms of “human-powered” transportation for local trips: walking, bicycling, or use of new pedal-electric hybrid vehicles. It is imperative that the “complete streets” needed to safely accommodate these efficient transportation modes are developed throughout the region.

Many other vehicles that do not rely on petroleum-based fuels are being developed as well. Those receiving the most attention rely on electricity as a means of propulsion. If electricity does become a primary transportation fuel, electric generating capacity and transmission capacity will be strained unless the fuel switch is accompanied by a considerable decrease in the amount of driving and widespread implementation of a smart grid. The most effective way to reduce the total amount of driving is to support development of a land use pattern that puts people close to the places where they work, go to school, and shop. Regional and local land use planning should emphasize development and growth within and in close proximity to downtowns and village centers. Higher density and mixed use development is essential to energy conservation, transportation efficiency, public health, and the long-term prosperity of the region.

Energy Conservation and Climate Change

The rapid increase in the rate of fossil fuel combustion (across all sectors of the local, national, and world economies) has had many environmental impacts. Mountains have been leveled to supply coal, acidified precipitation has damaged lakes and forests, and air quality has been degraded. Perhaps most significant is the increase in the amount of carbon dioxide and other “greenhouse gases” released into the atmosphere.

The result of the buildup of these gases is an overall [warming of the climate](#) and the impacts of this change on both the natural environment and people have been, and will be, severe. Reducing the rate at which fossil fuels are burned will not stop climate change, but it can lessen its impacts and allow more time for natural and human systems to adapt. Actions taken to conserve energy and reduce the impact of climate change also will affect behavior in a way that will support a healthier population and lifestyles and economies that are resilient to change.

Walking, biking, and public transportation should become progressively more important for local trips in the future, transportation modes such as rail (freight and passenger) and buses will be needed to maintain mobility over longer distances and to provide access to and from the region. Expanded intercity bus service, improved rail infrastructure, and direct transit links to passenger rail stations and eventual reestablishment of passenger rail service to the region will support energy conservation, land use, and economic development objectives.

12.4 Renewable Energy

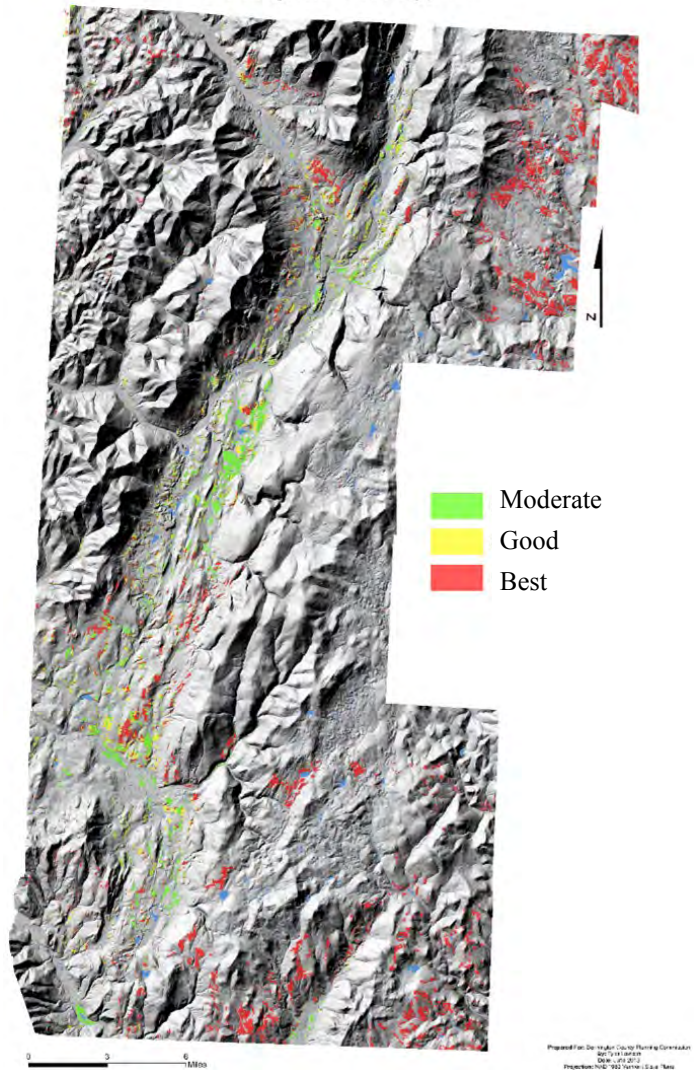
Even as the amount of fossil fuels consumed by the region’s residents and businesses declines over time, a considerable amount of energy will be needed to support sustainable economic progress, heat buildings, operate machinery and appliances, and facilitate transport of people and goods. Conservation and efficiency will facilitate maintenance of a healthy economy and quality of life using less energy, while renewable energy resources will provide much of the energy that is used. Because of the cost required to acquire, process and transport these energy resources, much of the region’s future renewable energy will need to be derived from local sources.

Energy from renewable sources can help address space and water heating needs, provide fuel for transportation, and generate electricity (that can, in turn, be used for heating, transportation, and many other functions). Space and water heating can be accomplished using solar energy, wood (cordwood, pellets, or chips), biodiesel, and geothermal sources. Certain biofuels, especially ethanol, methanol, and biodiesel, can be used to provide energy for various types of vehicles. Electricity is likely to become increasingly important as a way to deliver energy for a wide range of uses, and can be produced from a number of renewable sources including biomass (wood), wind, and water. Other energy carriers such as hydrogen can be produced using renewable energy. For any renewable source,

Solar Energy

Because of rugged topography, some sites in the region have better access to sunlight, and therefore greater potential energy yields, than others. A primary consideration in siting a commercial solar electric generating facility should be the availability of as much unobstructed sunlight as possible. Other factors to consider are access to electrical transmission and/or distribution facilities, avoidance of critical natural resources and prime agricultural land (better used for local food production), the presence of flood or fluvial erosion hazard areas that could damage the installation, and aesthetic considerations (i.e., a large solar array adjacent to an historic district or in the foreground of an important scenic viewshed would be inappropriate).

Solar Energy Potential for Bennington County, VT



182



Photovoltaic panels installed on the roof of a building at Hand Motors in Manchester.

buildings is a particularly effective way to utilize space with minimal impacts. Similarly, solar thermal panels or evacuated tubes can be located on the roofs of commercial buildings, schools, or other structures such as indoor swimming pools, where significant water heating is required.

As noted in the discussion of energy conservation strategies, using the sun for passive or active space heating, for heating water for domestic use, and for small-scale generation of electricity at residential as well as at larger commercial, industrial, or institutional properties can be particularly efficient. The thermal

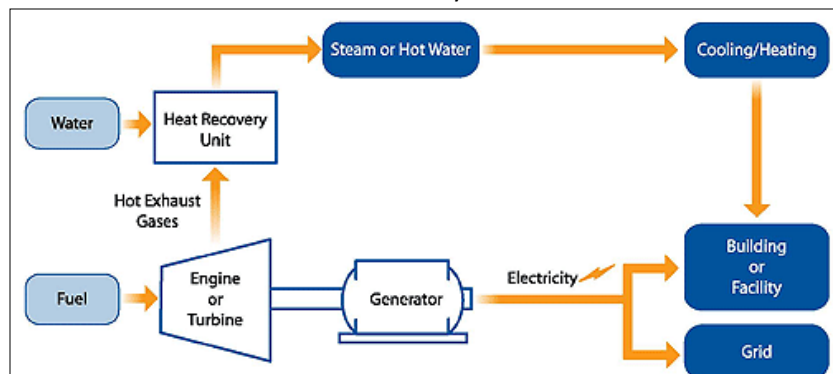
energy produced is used on-site and electricity generated can be fed directly into the regional distribution system. [Financial incentives and net metering](#) programs as well as [community solar projects](#) can significantly reduce cost and facilitate development of such installations. Continuation of these programs will support expansion of this important technology.

Wood (Biomass) Energy

Prior to the rapid expansion of fossil fuel use that began in the late 19th century, space heating needs in the region were met almost exclusively by locally harvested wood. As noted earlier, the region's forests, and those of surrounding areas, have adequate capacity to meet all of the residential space heating needs of local communities while also providing adequate amounts of raw materials for institutional biomass heating systems and the production of wood pellets for use in pellet stoves and furnaces.

Wood and other biomass products also can be used to generate electricity, but the low energy density of these materials and the efficiencies associated with generating facilities means that extremely large volumes of biomass would be needed to fuel such a facility. This demand for local wood

could strain the supply, drive up the cost of wood for more efficient space heating applications, and also increase the radius of the area needed to supply this energy resource to the region. Any biomass to electricity applications must find a useful application for the large amount of excess heat produced. A [combined heat and power](#) (CHP) application is one possible way to



Combined heat and power applications represent a potentially viable use of biomass to generate electricity and provide space heating for a number of nearby buildings.

increase efficiencies.

A significant increase in utilization of local wood products for energy does pose some serious challenges. Much of the forested land in Bennington County is not currently available for harvesting because it is located in federally designated wilderness or other protected areas. Furthermore, long-term “sustainable” harvesting of large acreages of forest land that involve complete removal of woody biomass to maximize energy yield could deplete soil nutrients and reduce future productivity and degrade certain wildlife habitats. Net energy considerations must be considered as well, because cutting, transporting, and processing trees for ultimate use as firewood, woodchips, or pellets requires a great deal of energy, mostly derived from petroleum fuels.

Despite the hurdles that must be overcome to make wood a significant, and perhaps primary, local energy source, its abundance, reliability, and the fact that reliance on this fuel provides jobs and recycles money in the regional economy suggest that planning for greater utilization of the resource should be pursued. The reduced net carbon and sulfur dioxide emissions realized through utilization of biomass rather than coal, oil, or gas provide additional reasons to pursue exploitation of this renewable resource. Research on sustainable harvesting and processing, and identification of preferred locations and extent of annual biomass removal should be conducted.

Wind Energy

With its extensive high elevation north-south ridges, Vermont and Bennington County have a relatively large number of sites potentially suitable for commercial wind energy generating facilities. Relative to nearby states, however, Vermont has seen relatively little wind energy development. The six megawatt (MW) [Green Mountain Power wind facility in](#)

[Searsburg](#) has proven successful and efforts currently are underway to add turbines and expand generating capacity at that site. Development of a wind energy facility on Little Equinox Mountain in Manchester was explored several years ago, but has not been pursued recently.

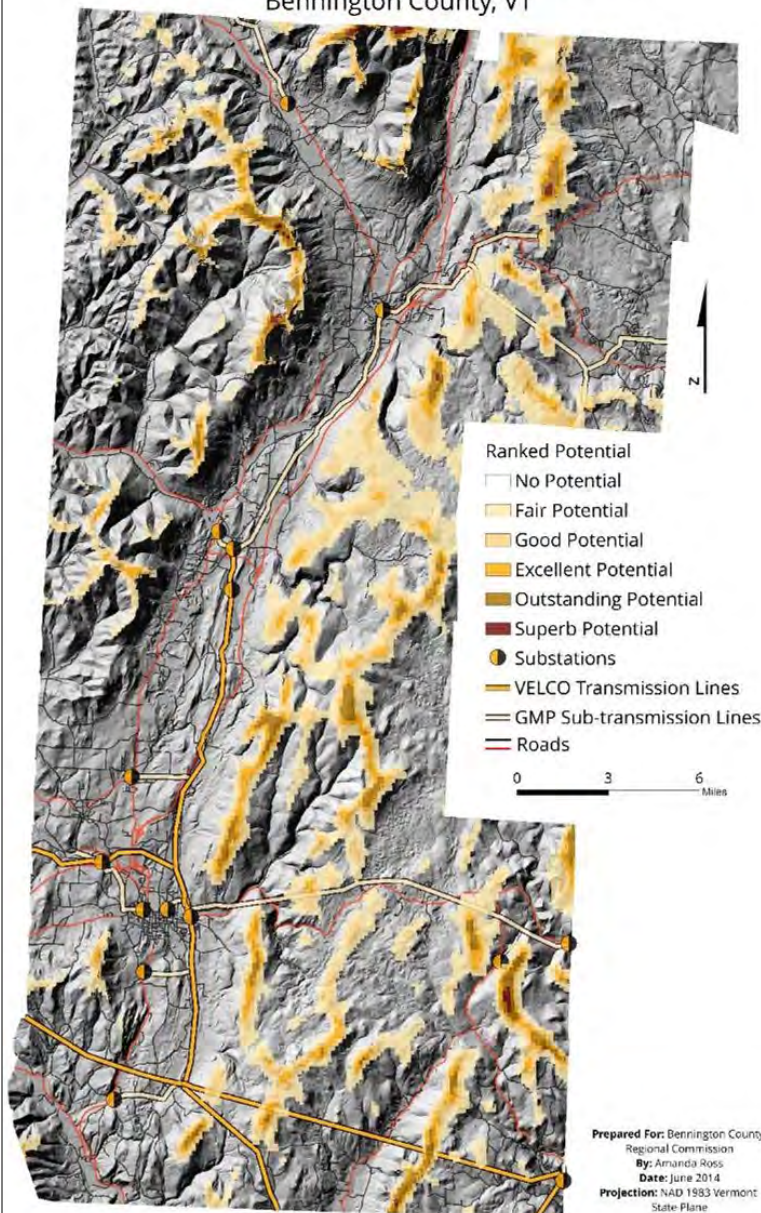
Wind energy has one of the best net energy yields of any renewable source, generally in the range of 20:1 (ratio of energy return to energy invested), which is comparable to, or better than, many nonrenewable sources. Current state of the art terrestrial based systems use 2.5 MW turbines; thus eight of these turbines would be capable of generating 20 MW of power (nearly 40% of regional demand at peak production). There are sites with sufficient wind energy to accommodate such a facility in Bennington County, although a number of concerns would need to be resolved. To achieve high efficiencies, wind turbines must be large; the 2.5 MW turbines have an overall height (tower plus rotor

The Intermittent Nature of Renewable Energy

Most renewable energy sources are only available intermittently, that is, when the particular energy source is available (the sun is shining, the wind is blowing, or the water is flowing at sufficient volumes). Biomass energy plants do not suffer from this problem, but also require relatively large amounts of fossil fuels to harvest, transport, and process the fuels that they use. Many hydroelectric facilities can manage water flows so that adequate generating capacity is available when demand for electricity is high.

Because of the intermittency problem, even if substantial increases in local renewable energy development occurs, large-scale regional nuclear and fossil fuel facilities will be relied upon to ensure that a base load of electricity always is available. Current research is focusing on energy storage and use of smart grid technology to lessen the intermittency problem and allow for a more complete transition to renewable energy technologies.

Potential Wind Energy Sites Bennington County, VT



The high elevation ridgelines in Bennington County have the best wind resource availability, but also pose special environmental and aesthetic concerns.

blade) of approximately 400 feet, raising concerns over aesthetic impacts to prominently visible ridgelines (which also tend to have superior access to wind resources). The Little Equinox Mountain proposal in Manchester and some wind energy proposals in Windham County have faced strong opposition from some local residents and municipalities for these reasons.

The BCRC should work with state agencies, local governments, utilities, and other interested parties to identify sites where commercial wind energy development is appropriate. A recent analysis completed for the BCRC by Green Mountain College (map at left) identifies the high elevation sites in the county where good wind resources are present and most environmental constraints to development are not too severe. The analysis also includes the location of electric transmission infrastructure, which must be present for a project to be viable. It will be important for the BCRC and local communities to fully understand wind resource potential as well as the environmental constraints and aesthetic and social concerns associated with wind energy development.

Small scale wind turbines also have potential for addressing some of

the region's demand for electricity. There are numerous home and business sites that receive consistent wind flows. Although the initial cost is high, state and federal incentives reduce the cost so that investing in a 2.5 kilowatt (KW) system on a site with a reliable wind resource can meet a majority of a home's electricity demand with a reasonable payback period. For instance, an average home in New England uses 600 KWH of electricity per month, an amount that can be reduced to 400 KWH through the use of energy efficient lighting and appliances and with some modest lifestyle adjustments. A 2.5 KW turbine operating with average wind speeds of 11.2 mph can produce 357 KWH of

electricity per month. At a site with an average wind speed of 13.4 mph, that output is increased to 528 KWH. If enough small scale generators are deployed across the region, this “distributed” electricity generation will provide important capacity for the region and state. As with small-scale solar energy projects, maintenance of adequate incentives is critical to continued expansion of these systems.

Hydroelectric Energy

At one time, Vermont derived the vast majority of its electricity from hydroelectric generating facilities. Over 80 sites were used at one time or another to produce power in Bennington county alone (Potential for Hydropower Development at Existing Dams in New England, 1980). Large and small hydro facilities still contribute a significant share to Vermont’s total generating capacity and existing dam sites in Bennington County have the potential for producing at least 3 MW of electricity.

The operation of a hydroelectric facility is quite simple, relying on a volume of water (flow) falling over a distance (head) to turn a turbine and generate electricity. Because hydroelectric generation does not require purchase of any fuel (it is similar to wind generation in this way), operating and maintenance costs are very low. Initial construction costs can be very high, however, if new dam



The owner of the “Paper Mill” dam and former mill building on the Walloomsac River in Bennington is re-establishing hydroelectric generation at the site. A similar project is planned for the former tannery dam in Pownal. Other sites having high potential for hydroelectric development in the region include the dam at Lake Paran and the four Paran Creek dams in North Bennington, and the dam on the West Branch of the Batten Kill in Manchester.

construction is required. In addition, construction of dams is very energy intensive, significantly reducing net energy yields – and prolonging payback times – for development of new sites. Environmental concerns, primarily related to fish habitat, and permitting also pose impediments to development of new hydro sites. For these reasons, initial efforts should focus on redevelopment of hydroelectric generation at existing dam sites. At the same time, studies should be undertaken to evaluate the potential for hydroelectric generation at other sites around the region.

Liquid Biofuels

Gasoline and oil are very desirable energy sources because they are portable sources that contain energy at very high densities. Recent research and development efforts have been focused on attempts to produce liquid fuels from crops that have some of the same advantageous characteristics as petroleum fuels. Liquid biofuels already in production and showing some promise for various applications include ethanol and biodiesel/vegetable oils. Ethanol can be produced from a variety of feedstocks, but its low net

energy yield suggests that it has limited potential for broad-based applications and in Bennington County, where cropland acreage is limited, it is not likely to be developed as a local energy resource.

A number of agricultural crops contain relatively large amounts of oils that can be easily acquired through mechanical pressing and used directly as a fuel (vegetable oil) or processed into biodiesel. One local farm already has demonstrated that this process is viable in Bennington County and can be used in a variety of applications. Biodiesel can be used either as a stand-alone fuel or blended with petroleum diesel in vehicles and machinery (including some space heating boilers). Many people have demonstrated that, with some modifications, diesel vehicles can operate efficiently burning clean vegetable oil.

Common crops that can be grown in our area and used to produce oil and biodiesel fuels include soybeans, canola, and sunflowers. A logical application for biodiesel fuel is in agriculture; farmers can dedicate a share of their land to production of oil crops which they can refine into biodiesel to run their machinery, thus avoiding the need to purchase petroleum diesel fuel. The net energy benefits of such an application are optimal because transportation energy costs are minimal.



The vegetable oil pressing and biodiesel processing facility at State Line Farm in Shaftsbury demonstrates the potential for liquid biofuels in the region.

Geothermal Energy and Cold-Climate Heat Pumps

The heat contained within the Earth can be used in a number of ways. Bennington County does not have access to high temperature geothermal resources that can generate electricity, but like most places in the country, the lower temperature geothermal resources that are present can be used to heat (and cool) buildings through use of heat pump systems.

Geothermal heat pump systems include a series of tubes installed several feet below the ground surface (a heat exchange unit), the heat pump that removes heat from the exchanger during the winter or adds heat from the building in the summer, and a distribution system to move heated or cooled air throughout the building. Heating and cooling buildings by concentrating this naturally occurring and renewable energy source is very efficient, moving three to five times more energy than is

consumed by the electrical components of the system.

A large new academic building at Bennington College and state office buildings in Bennington rely on geothermal heating systems to meet space heating and cooling needs. Buildings and sites will need to be evaluated on an individual basis. For example, a geothermal system may be excessively costly and even unnecessary for a well-designed building on a site with good access for passive and active solar heating. With several thousand geothermal heat pump systems installed each year in the United States, it is likely that this technology will become increasingly important in the local market.

Cold-climate heat pumps use similar technology to transfer heat between indoor and outdoor air, using less energy and generally costing less than electric resistance, oil, or propane heating systems. In cooling mode, heat pumps move heat from inside to outside the building while in heating mode, the refrigerant flow is reversed to extract heat from outdoor air and deliver concentrated heat inside the structure. These heating systems are simple to install and relatively inexpensive, making their use in both new and existing buildings feasible. As with geothermal systems, the electricity required to operate the heat pumps can be obtained from renewable energy sources, reducing the region's dependence on fossil fuels.

12.5 Policies and Recommendations

1. Review and update the Bennington Regional Energy Plan so that it reflects current conditions and can be used to assist with local energy planning and in state regulatory proceedings.
2. The value of energy conservation and development of renewable energy resources should be given significant weight when evaluating new projects and programs.
3. All practical energy conservation measures should be taken during the siting, design, and construction or reconstruction of buildings; specific practices and guidelines identified in this plan should be followed.
4. Use of renewable energy systems and other innovative energy efficiency technologies are encouraged in the construction or reconstruction of buildings.
5. Commercial and industrial uses should include energy conservation and efficiency in their business plans and operating procedures.
6. Town governments, state agencies, school districts, and large institutional uses should include energy conservation and efficiency in their plans and day-to-day operations; building design and the purchase and use of equipment and vehicles should include considerations of energy conservation and efficiency.
7. Energy conservation and efficiency in the transportation sector should be promoted through fuel pricing, effective land use planning, investments targeted to encourage use of alternative transportation modes (bicycle and pedestrian, public transportation, rail), and funding for infrastructure to support alternative fueled vehicles.

8. A high priority should be given to allocation of resources for organizations and programs that offer assistance in planning and financing energy conservation projects.
9. Improvements that will enhance the reliability of the electricity transmission system should be supported, along with sound proposals for distributed generation of electricity, combined heat and power facilities, and projects that advance deployment of “smart grid” technology in the region.
10. Support economically and environmentally sound development of the region’s renewable energy resources.
11. Biomass for space heating should be utilized provided that expanded use of the region’s forest resources is accompanied by appropriate management plans.
12. Small and large scale wind energy facilities are appropriate in the region. Development of commercial wind energy facilities should be preceded by a public process that identifies suitable sites and sizes for such facilities.
13. Development of hydroelectric potential is encouraged, especially at existing dam sites.
14. Passive and active solar heating of buildings is strongly encouraged.
15. Projects that require significant energy inputs must consider projected fuel availability and costs over a timeframe of twenty or more years; projects with an excessive reliance on nonrenewable fossil fuels should not be pursued.
16. Economic and social initiatives that lead to greater reliance on local markets for food, raw materials, and finished products should be supported.
17. Maintain the regional energy committee to oversee energy planning, educational and informational programs, and technical support to local governments. Seek continuing funding for regional energy planning.
18. Develop and implement an energy education program designed to reach specific audiences, including: municipal governments and school districts, businesses and organizations, and individuals.
19. Advocate for energy conservation and sound development of renewable energy resources at hearings and regulatory proceedings.
20. Provide technical advice and support to town energy committees.
21. Consider development of a local natural gas distribution system, to be supplied by trucked supplies of compressed natural gas, to serve a cluster or clusters of high-energy consuming businesses and institutions.

XIII. COORDINATION AND IMPLEMENTATION

13.1 Coordination

Effective planning requires coordination among organizations and between various levels of government. The BCRC must work with local governments including elected and appointed boards, commissions, and staff, that represent its constituent towns and villages. It is important for the BCRC to maintain communication and an effective working relationship with area business groups, social service and community action agencies, and conservation and other public service organizations. Because state and federal agencies fund many of the local and regional programs and projects in which the BCRC is involved, while also providing technical support and exercising regulatory control, it is vital that close coordination at that level is maintained as well. The BCRC also needs to coordinate many aspects of its work program with neighboring regions.

The BCRC uses many approaches to ensure that this level of coordination is conducted with appropriate frequency and effectiveness. At the local level, this Regional Plan is an important coordinating document. It provides a consistent regional framework for the development of local plans and implementation actions. The fact that consistent [statewide goals](#) guide the development of local, regional, and state plans in Vermont also supports coordinated planning. Each of the seventeen municipalities that are members of the BCRC are represented by commissioners appointed by the local legislative body. Those commissioners serve a key coordinating function, representing the interests of their town or village as a member of the BCRC while returning important information to their communities. BCRC staff also consults with each municipality on a regular basis to identify current issues and needs and provides information about new state or regional programs, initiatives, and funding opportunities. Of course, in the execution of its regular work program, the BCRC staff works closely with towns and villages as they update their plans and bylaws and undertake a range of special projects. This close involvement with local staff, boards, and commissions establishes a consistent and enduring relationship that is critical to local-regional coordination and helps ensure that conflicts between neighboring communities are avoided.

Many local groups and organizations, in addition to municipal governments, contribute to the vibrancy of the region and participate in various aspects of community planning and development work. The BCRC engages with those entities in a variety of ways to promote effective and coordinated planning. Several interest group commissioners are elected to serve on the BCRC each year. Those commissioners represent: economic development, housing, transportation, energy, land and water conservation, agriculture/local food, local business, and public health interests. The interest group commissioners provide an important perspective to regional planning and serve as liaisons between the BCRC and the businesses and organizations that they represent. BCRC staff and commissioners also regularly attend meetings, participate in projects, and serve on the boards of many local and regional organizations. Some of those organizations include:

- Bennington County Industrial Corporation
- Bennington Economic Development Partners
- Shires Housing

- Alliance for Community Transformations
- Regional Workforce Development Committee
- Bennington County Conservation District
- Better Bennington Corporation
- SW Vermont Rail Corridor Committee
- Bennington County Sustainable Forest Consortium
- Chambers of Commerce in Bennington and Manchester

The BCRC also has established contractual relationships with a number of regional and intermunicipal organizations in an effort to improve the effectiveness of a coordinated work effort. The BCRC provides staff support for the Local Emergency Planning Committee (LEPC 7), has a staff person dedicated to work that is funded through the Vermont Department of Health, receives funding from Southwest Vermont Health Care Corporation to support a regional Americorps VISTA program focused on healthy community initiatives, and supports coordinated solid waste planning and management through a cooperative agreement with twelve towns.

At the state and federal level, coordination is greatly facilitated by the BCRC's active participation as a member of the [Vermont Association of Planning and Development Agencies](#) (VAPDA), the statewide consortium of regional planning commissions. The BCRC also is an active member of the [Vermont Community Development Association](#). Many of the BCRC's planning programs are directly funded through state and federal grant programs, thus bringing those services to the local level. BCRC staff regularly attend meetings and trainings conducted by state and federal agencies and, in turn, are able to provide important information to local and regional interests in Bennington County. The BCRC also organizes and sponsors numerous meetings and workshops throughout the year that bring experts from various state and federal agencies to the region. Many of these training and informational sessions now are available online, and BCRC staff participate in many of those "webinars" while publicizing the availability of those opportunities to interested parties in the region.

Special mention should be made of the fact that a federal agency, the United States Forest Service, is the largest landowner in Bennington County. The BCRC works closely with staff at the [Green Mountain National Forest](#) to ensure that local and regional interests are coordinated with federal land management priorities and projects.

Coordination between the region and state also is enhanced by BCRC review of state agency plans, programs, and projects. Those documents and initiatives are reviewed for consistency with the Bennington County Regional Plan, with the plans of municipalities, and are assessed to determine if they support the findings and recommendations of relevant studies that have been completed at the local or regional level.

The BCRC shares a common border with two other Vermont regional planning commissions, the [Rutland Regional Planning Commission](#) (RRPC) to the north and the [Windham Regional Commission](#) (WRC) to the east. Coordination between the regions and regional planning commissions is accomplished in many ways. The commissions review and consider the plans of those adjacent regions when developing their own plans, co-sponsor events that are of interest to officials and residents in the neighboring regions, and also participate in joint studies that cover issues of inter-regional importance.

Rutland County

Towns and villages in the Northshire are particularly interested in resources, developments, and activities occurring in Rutland County, which is connected to the Bennington County by US Route 7 and the Vermont Railway along the Valley of Vermont and by VT Route 30 along the Mettawee Valley. The regions have many common interests. Manchester is a center for employment for many people living in Rutland County towns, while many Northshire residents work and shop in Rutland and surrounding communities and use the Rutland Southern Vermont Regional Airport in Clarendon. The upper reaches of the Otter Creek and Mettawee watersheds begin in Bennington County and extend to and through Rutland County, so water quality issues are a joint concern of both regions.

Shared transportation corridors are another mutual concern. Maintaining Route 7 as the major highway along the western side of Vermont is a critical economic development concern for both regions and the recent NY-VT Intercity Passenger Rail Study focused on alternatives for extending rail service through both regions. The Mettawee Valley is an important agricultural resource for both regions and both regional planning commissions have cooperated with each other, local governments, and the Vermont Land Trust, to conserve significant parts of this unique landscape. The two regions also have jointly worked to create and promote the Stone Valley Byway, a state-designated scenic byway that follows Route 30 north from Manchester, connecting the important marble, slate, and agricultural heritage shared by the two regions. The Appalachian and Long Trails also connect the two regions, along the crest of the Green Mountain Range, and cooperative planning with the Green Mountain National Forest will maintain those shared forest and recreational assets.

Windham County

Windham County and Bennington County are connected across the forests of the Green Mountains. Three principal highways connect the two regions: VT Route 9, VT Route 30, and VT Route 11. The BCRC and WRC worked together to oversee creation of the Molly Stark Byway along Route 9 and maintaining that byway designation, the quality of the highway, and promoting the economic resources along it remain important areas of regional cooperation. Routes 11 and 30 are important economic corridors connecting Manchester to nearby mountain towns, ski areas, and the eastern side of the state.

The Kelly Stand Road, known as the Arlington-West Wardsboro Road in Windham County, is another important connection between the two regions. A gravel road that follows a narrow valley next to the Roaring Branch through most of Sunderland, the Kelly Stand Road provides access to many recreational opportunities in the Green Mountain National Forest while also being the only roadway between Route 9 to the south and Route 30 to the north connecting central communities in Bennington and Windham Counties. In the winter, the upper portions of the Kelly Stand Road are closed, but it functions as a major recreational corridor for winter sports enthusiasts. Much of the roadway in Bennington County was completely washed away by a tropical storm in 2011. Cooperation between towns in both counties and the US Forest Service led to reconstruction and re-opening of the road in 2014.

Considerable development occurs in and around the ski areas in the mountains between the

two regions. Cooperative planning between the two regions will help ensure that development at Bromley, Stratton, and Mount Snow/Haystack benefits the economies of both regions while not adversely impacting natural resources or the transportation system.

A number of towns along the border between the Bennington and Windham regions share services across municipal and regional boundaries. Some of the northeastern communities in the Bennington Region, for example, participate in a solid waste alliance, educational districts, and emergency management/services with towns in Windham County. At the same time, some towns in the southern portion of the Windham Region have looked to nearby towns in the Bennington Region for solid waste planning, medical, and other services.

The BCRC and WRC, together with economic development partners from both regions, recently conducted a joint effort to promote economic recovery from Tropical Storm Irene. This joint effort included shared staff resources and training programs focusing on village center and downtown revitalization as well as creation of a new marketing program to serve the entire two-county region. These combined efforts to promote the economy of the entire southern Vermont region will be continued, and coordinated with regional planning and development organizations in nearby western Massachusetts.

Berkshire County

Berkshire County, Massachusetts, lies immediately south of Bennington County. US Route 7 and VT Route 8 lead from Bennington County towns to Williamstown, North Adams, and other communities in Massachusetts, some of which are significant employment centers for residents of Pownal and Stamford. Many services located in those Massachusetts towns are important to residents of southern Bennington County, including a regional high school that is attended by students from Stamford. The recent reduction in some hospital services in North Adams has initiated an evaluation of the need for additional medical services in the southern part of Bennington County.

A cluster of liberal arts colleges exists in close proximity across the state line. Bennington College, Southern Vermont College, Williams College, and the Massachusetts College of Liberal Arts are within a few miles of each other and represent an opportunity for collaboration in educational programming and related economic development. The Berkshire region also contains a wealth of cultural and recreational resources, including several prestigious art museums, theaters, entertainment venues, and forest preserves. Joint marketing and economic development initiatives, highlighting the attractions in both regions, are being explored.

One branch of the Hoosic River rises in Vermont and then meets the other branch in Massachusetts. The river then turns northwest and flows through Pownal. The river represents an important natural, recreational, and economic resource to both regions. Coordinated efforts to improve water quality and recreational access, especially for canoeing and kayaking are ongoing. Efforts are underway to re-establish hydroelectric generation at a dam on the Hoosic River in North Pownal. One impediment to relicensing is the presence of pollutants in the river bottom behind the dam, many of which were transported downstream from former mills in Adams and North Adams—a reminder of the need for coordinated watershed-wide planning.

Potential development on one side of the state line or the other also can lead to a need for

inter-regional coordination. Proposals for an electricity generation and manufacturing facility at the Pownal Race Track property, for example, raised concerns about traffic and environmental impacts that might be felt in Williamstown. It is important for the BCRC to remain aware of development proposals on either side of this, or other regional borders, and work with local and regional officials in those adjacent areas to effectively participate in the review process.

Rensselaer and Washington Counties

Coordination with the two New York State counties that border Bennington County to the west also is extremely important. Most of Bennington County lies in the Hudson River watershed, with the Batten Kill, Walloomsac, and Hoosic Rivers all flowing directly into those neighboring counties. Cooperative watershed planning organizations covering the [Hoosic River](#) (including the Walloomsac) and [Batten Kill](#) regions have been established and are supported by the BCRC.

Air quality is another concern that is particularly relevant to these counties. The prevailing winds in the region are from the west, so any air pollution coming from that direction could impact Bennington County. Significant degradation of air quality in the region could not only be detrimental to public health, but could also affect development potential in Bennington County if certain thresholds are exceeded. The BCRC should monitor developments in eastern New York and participate in regulatory proceedings as appropriate.

Employment centers in Manchester, Arlington, and Bennington draw many of their workers from neighboring communities in New York State. While it is a regional objective to provide housing for more of these employees closer to their place of work, maintaining good highway connections along Routes 346, 67, 9, 279, 313, and 153, as well as improved opportunities for carpooling and public transportation, will continue to be important.

The economy of Bennington County is linked to the large metropolitan area in New York's Capital District, in and around Albany. That area provides employment, shopping, and cultural attractions for many Bennington County residents, and is a major transportation hub with intercity bus and rail stations and an international airport. The area also is an important market for Bennington County regional tourism and for goods and services produced in the region. Maintaining the transportation infrastructure between running the Capital District and Bennington County is essential. In addition to the primary highway corridor (NY Route 7 and Route 279) and secondary highway corridor (NY Route 67), improvements that will allow greater access via rail will be extremely important and will require cooperation and coordination with local and county officials in New York State.

13.2 Implementation

The BCRC undertakes a wide range of activities, in addition to its coordinating function described above, to implement the Regional Plan. Those activities will be described in general here, while many specific policies and recommended actions are contained in individual chapters. This Plan should be reviewed each year when preparing the Commission's annual work program and an implementation matrix completed at that time. The matrix should identify actions to be taken to advance specific objectives and should include timeframes, responsible parties, cost, and other relevant issues.

The following section will include a brief description of implementation actions organized pursuant to the program areas maintained under BCRC's current organizational structure. There is significant overlap between those programs, and coordination among staff, BCRC committees, and other cooperating entities is crucial.

Comprehensive Municipal Planning

A majority of the policies and programs identified in this plan will be most effective when implemented locally. Considerable emphasis, therefore, will continue to be placed on the many local assistance programs that have been a mainstay of regional planning in Bennington County.

- ◆ **Municipal Plans.** The BCRC will offer assistance to municipalities as they prepare new or updated plans. BCRC staff will help local planning commissions assemble and analyze data, conduct research and surveys, and prepare text and maps. As part of the plan development process, during regular consultations, and whenever requested by a municipality, the BCRC will review local plans to evaluate their consistency with statutory goals and their compatibility with the Regional Plan and with the approved plans of other municipalities in the region. Currently, all seventeen of the region's municipalities have plans approved by the BCRC.
- ◆ **Bylaws.** Every municipality in the Bennington region has a zoning bylaw in effect and many have subdivision or integrated land use regulations. The BCRC will work with individual towns and villages to prepare new or amended zoning, subdivision, or other regulations that are determined to be necessary to respond to changing conditions and to implement municipal plans.
- ◆ **Newsletters and Technical Bulletins.** The BCRC will continue to prepare and distribute its bimonthly newsletter that contains important information about recent activities and developments in the region, new state initiatives, funding opportunities, regulatory requirements, and upcoming events that may be of interest to local officials. The BCRC also will distribute technical bulletins, prepared by commission staff or other entities, that provide guidance to local planners and officials on various topics of interest.
- ◆ **Training.** The BCRC will organize, sponsor, and conduct workshops and training seminars for local officials. These training sessions may be offered in collaboration with state agencies and/or other regional planning commissions. Topics that will be covered include: proper procedures for preparing and adopting municipal plans and regulations and for conducting hearings and rendering decisions; mixed use development and walkable communities; village center, downtown, neighborhood, and growth center designation programs; inter-municipal shared services and agreements; housing; innovative responses to infrastructure challenges in planned growth centers; and other issues that are identified by local officials. Meeting with local boards and commissions often is the most effective means of outreach and enables the BCRC to respond to particular issues or concerns.

- ◆ **Special Projects.** The BCRC works with individual towns and with groups of towns to conduct special planning studies. These studies may include such things as low-impact development, integrating flood resilience with local plans and regulations, capital budgeting, energy plans, natural or historic resource inventories and plans, park and open space planning, and plans to address targeted housing needs. The BCRC is available to assist towns either as a principal consultant or with technical and data support services.
- ◆ **Mapping.** The BCRC utilizes a Geographic Information System (GIS) to assist with local and regional planning projects. A wide range of data is available at the BCRC and through the Vermont Center for Geographic Information. Maps and geographic analyses will be prepared as needed to support local planning and plan implementation projects.
- ◆ **Grant assistance.** The BCRC will continue to assist municipalities in the preparation of applications for grants to support development of comprehensive or special plans, housing initiatives, transportation improvements, environmental projects, economic development programs, infrastructure studies and projects, and other projects designed to implement local plans.

Comprehensive Regional Planning and Regulatory Review

In addition to preparation of this Regional Plan, the BCRC will complete regional studies in a variety of areas that can be used to help guide development decisions and public and private investments. The BCRC maintains a number of committees that provide support for these studies and implementation actions. Existing committees include: the Executive Committee, Transportation Advisory Committee, Brownfields Redevelopment Committee, Solid Waste Planning Committee, Working Lands Committee, Energy Committee, and a Development Review Committee.

The BCRC is a statutory party to state land use (Act 250) regulatory proceedings and may intervene in public utility (Section 248) hearings before the Public Service Board. The BCRC considers the information and policies contained in the Regional Plan to determine whether to support a project, to request changes to the project, or to assert that a project should not be built as proposed. The BCRC conducts a staff review of all Act 250 and Section 248 projects and will actively participate in proceedings by attending hearings and providing testimony when it is determined that a project will have “substantial regional impact.” A development is considered to have substantial regional impact when it is determined by the BCRC to have one or more of the following characteristics:

1. A development that may modify existing settlement patterns by:
 - a) locating in an area that does not currently contain development of a similar type or scale; or
 - b) locating in a remote area, including any permanent development in an Upland Forest area; or
 - c) constituting a large-scale development occurring outside an established growth center.
2. A development that may significantly affect the capacity of regional public facilities and/or

require their expansion, extension, or relocation by significantly increasing traffic on area roadways, generating large quantities of solid waste, creating high energy demands, or adding a substantial number of students to a regional educational facility.

3. A development that would significantly impact the region's economy by affecting the cost or availability of affordable housing in the region, affecting the cost or availability of energy in the region, creating a large number of new jobs, or initiating a new sector of economic activity in the region.
4. A development that may impact any regionally significant natural or cultural resource. These resources include, but are not limited to: wildlife habitat, sand and gravel resources, important hydrological resources, unique and fragile natural areas, public water supply watersheds and wellhead protection areas, prime agricultural and forest resources, important scenic resources, and historic and archaeological resources.
5. A development that involves the construction of, or which would significantly impact the function of, important regional facilities including, but not limited to: state highways, educational institutions, hospitals, recreational facilities, solid waste facilities, energy generation or transmission facilities, regional water or sewer facilities, bridges, dams, and airports.
6. A residential, commercial, or industrial development that, because of its large size, will result in impacts that will be felt beyond the municipal borders.
7. A development lying within two or more municipalities, or a development dependent upon the infrastructure or community services of a neighboring municipality.

Transportation Planning

The BCRC contracts annually with the Vermont Agency of Transportation to ensure that local transportation projects and priorities are coordinated with the state. The BCRC will work with local officials and its Transportation Advisory Committee to identify priority projects in the region and will review plans for improvements to state highways and bridges. The BCRC also will: develop corridor management plans, participate in efforts to extend and improve regional rail service, prepare bicycle/pedestrian and traffic calming plans, and assist with the review and development of public transportation plans. The BCRC will continue to assist with the preparation of intersection, roadway, and bicycle-pedestrian facility designs that are consistent with “complete streets” and healthy community design principles. The BCRC will provide, when requested, technical assistance to towns and villages seeking to complete infrastructure inventories and traffic studies, and will offer project management services to any communities implementing local transportation facilities (LTF) projects.

Environmental Planning

The BCRC will continue to be engaged in a variety of environmental programs, cooperating with the Bennington County Conservation District, US Forest Service, Vermont Agency of Natural

Resources, regional watershed alliances, the Vermont Land Trust, and other organizations. Projects may include: river basin plans, land and water conservation projects, water quality studies, and regional forest plans. Results of any studies will be presented at workshops, in technical bulletins, and directly to local officials by BCRC staff. The BCRC will continue its Brownfields Redevelopment program, with activities subject to receipt of grant funding, focusing on assessment and remediation plans for properties with known or suspected environmental contamination in designated growth centers, villages, and downtowns, and at potential renewable energy sites.

Community and Economic Development

The BCRC will continue its program in sustainable community development that focuses on identification and improvement of local assets that support economic development in the region. The BCRC will cooperate with organizations such as the Bennington County Industrial Corporation, the Bennington Economic Development Partners, the Bennington Farm to Plate Council, Northshire Grows, Manchester's economic development office, and local businesses and business organizations to advance specific projects related to workforce development, housing, educational services, healthy communities, local food systems, downtown and village center redevelopment, and conservation and wise development of energy and natural resources.

The BCRC recently spearheaded creation of an economic development strategy for Bennington and is cooperating with local and state officials on specific implementation tasks identified and prioritized in that study. A major community and economic development effort will involve creation of a similar economic development strategy for Manchester and other Northshire towns and eventual consolidation of the Northshire and Bennington/Southshire strategies into a single coordinated regional economic development plan. The BCRC will take a lead role in managing implementation tasks identified in those documents.

Recognizing that a lack of public water and sewer infrastructure is primarily responsible for limiting growth and development in many of the region's village centers, the BCRC will assess the extent of the problem and will help towns and villages develop implementation projects to increase the capacity for compact mixed use development in these areas.

Maintaining a fully staffed and effective community and economic development program at the BCRC is seen as an essential service to local communities. Funding for the program, however, is not stable since state contracts and grants do not directly support this work, requiring the BCRC to cobble together grants and other funding from various sources on an annual basis. Securing stable funding for this important program, therefore, is a priority that will help ensure effective implementation of planned community and economic development projects.

Emergency Management Planning

The BCRC will continue to assist towns and villages by supporting completion of local emergency operations plans and hazard mitigation plans. The BCRC will continue to provide training and support for development of local food resilience plans and related intermunicipal agreements, support for the Local Emergency Planning Committee 7 and its emergency response exercises, and

special implementation projects funded through the hazard mitigation grant program. The BCRC also will provide staff support to the State Emergency Operations Center during an emergency and will assist with damage reporting and recovery planning as needed.

Energy Planning

The BCRC will regularly update the Bennington Regional Energy Plan and help municipalities develop energy plans and implementation strategies. The BCRC will continue to work on energy conservation projects with local energy committees, Efficiency Vermont, the Vermont Energy and Climate Action Network, the Vermont Agency of Transportation, and cooperating business organizations. A recent cooperative home energy conservation program with NeighborWorks of Western Vermont (NWWVT) will be continued and expanded, with the ultimate goal of establishing a full-time NWWVT staff person working at the BCRC office and with BCRC staff.

The BCRC will provide support for new renewable energy development projects that evidence a relatively high net energy yield without adversely impacting critical natural or cultural resources and will actively participate in major Section 248 reviews of energy generation and transmission projects. As part of the regional energy planning process, the BCRC will develop maps and siting guidelines to help facilitate development of renewable energy projects in appropriate locations.

Solid Waste Planning

The BCRC will continue to work with municipalities to manage solid waste reduction, recycling, and disposal programs. The BCRC will work with towns and villages to provide educational materials, through newsletters, workshops, and the BCRC's solid waste website, about new state solid waste requirements that are phasing in over the next several years. The BCRC will facilitate development of a new regional solid waste implementation plan that will identify a management structure that will be responsible for implementing all elements of that regional plan. If requested by participating municipalities, the BCRC will provide staff support for regional solid waste management.

Community Public Health

All of the implementation actions taken by the BCRC and member communities will give significant consideration to effects on public health. The BCRC will work with SVHC, ACT, the Vermont Department of Health, and other health care organizations and interest groups to advocate for inclusion of healthy community design principles in all transportation and land use projects. The BCRC also will continue to seek funding from the Vermont Department of Health and provide support staff for implementation of projects designed to reduce unhealthy behaviors and to create communities that encourage safe and healthy lifestyles.