

# WINDHAM REGIONAL PLAN



“Canoe Weather”

Oil on Panel by Dan Fisher

**December 2001**

Windham Regional Commission  
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Dan Fisher studied painting at the Pratt Institute and received his BFA with high honors in 1974. He has exhibited extensively in the eastern U.S. and in California. Working on location, Fisher uses thin glazes of oil on canvas-covered panel. His landscapes convey an urgent immediacy – a bold and passionate response to his surroundings.

Dan Fisher lives and works in West Windham, Vermont.



## Photographs

Landscape photographs contained in this plan are by Bud Knickerbocker, WRC Staff. All photographs were taken in the West River Valley.

## **Resolution Windham Regional Plan Adoption**

**Whereas**, 24 VSA Chapter 117 provides that regional planning commissions shall adopt regional plans and sets standards for the content and adoption of regional plans; and

**Whereas**, the Windham Regional Commission (WRC) has continuously operated with a duly updated Regional Plan; and

**Whereas**, the Commission in its Annual Work Program for FY2001 and 2002 directed that an updated regional plan be prepared; and

**Whereas**, the Regional Plan Update Committee and staff have prepared drafts of the Windham Regional Plan for public review; and

**Whereas**, the Commission has held two duly warned public hearings and four informal community meetings to discuss and consider comments and recommendations; and

**Whereas**, additional comments and recommendations have been received by WRC staff through direct communication by local officials and interested citizens, and have been accorded the same due consideration; and

**Whereas**, the Regional Plan Update Committee has found that the testimony offered improves the Plan and helps to ensure that it best reflects the needs of the Region and desires of the Commission's member towns; and

**Whereas**, the Regional Plan Update Committee now recommends modifications based on testimony received;

**Now, Therefore, Be It Resolved** that the Windham Regional Commission adopts the Windham Regional Plan as presented on \_\_\_\_\_, 2001; and

**Be It Further Resolved** that amendments to this Plan may be considered by the Windham Regional Commission in FY 2002 as appropriate to reflect further needed revisions.

Adopted by a majority vote in excess of 60% of the town representatives to the Windham Regional Commission on the \_\_th day of \_\_\_\_\_, 2001.

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Piet van Loon, Chair

---

Stewart Read, Secretary

## ACKNOWLEDGEMENTS

Updating and improving a document like the Windham Regional Plan is a time-consuming and complicated task. Like town plans, the regional plan covers a wide array of planning and development topics, and it tries to address a broad range of local, state and federal concerns. Also like town plans, it must relate to ever-changing legal and environmental backdrops. Drafting and maintaining such a comprehensive document requires significant contributions of time by local officials, business owners and operators, representatives of a variety of environmental and community service concerns, and dedicated citizens from across the 27-town region. These people took time from very busy schedules to review drafts, attend meetings, discuss and comment on various proposals, and help ensure that the final document was responsive to their many concerns and suggestions. They made a significant contribution to the welfare of their towns and neighboring communities. *Our sincere thanks to all who helped update the Windham Regional Plan.* In the process, we have come to believe that smaller, more frequent changes may serve all parties better than a comprehensive update every 5 years, and so we anticipate changing our own approach to this task, as well.

Especially involved were members of the Regional Plan Update Committee, chaired at the outset by Jane Morano and later by Ray Schneider. The Committee met to review drafts in great detail and conducted community meetings and public hearings. A special thank you is extended those individuals:

Elaine Beckwith	Jamaica	Jane Morano	Rockingham
Melinda Bussino	Westminster	James Rogers	Wilmington
Corwin Elwell	Brattleboro	Ray Schneider	Dover
Elizabeth Garfield	Townshend	Jane Southworth	Brattleboro
John Kristensen	Guilford	H. W. "Piet" van Loon	Newfane
Reginald Maynard	Whitingham	John Whitman	Readsboro
Kevin McElhinney	Brattleboro Area	Matt Yakovleff	Wilmington
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# **WINDHAM REGIONAL PLAN**

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# INTRODUCTION

*A revolution in conservation thinking (has occurred) during the past twenty years... Except in pockets of ignorance and malice, there is no longer an ideological war between conservationists and developers. Both share the perception that health and prosperity decline in a deteriorating environment.*

Edward O. Wilson  
*The Diversity of Life, 1992*

## VISION FOR THE WINDHAM REGION

The following statements of long-range desires constitute a shared vision for the future of the Windham Region (the Region). They form the basis of this plan and will provide a background for understanding the plan's policies and programs. When readers of the plan, including state agencies, towns and citizens, are uncertain about the reasons for a policy or program, returning to the vision statement should help. The vision is:

### **For The People....**

- A high quality of life, defined as a composite of our economic, social, cultural and ecological well-being;
- Support for “new economy” infrastructure and telecommunications, while protecting the environment;
- A special place to live and work with a caring attitude for the environment, for each other, and for our communities and their institutions;
- A strong sense of history and culture;
- A support system for future generations, with a sound economy, a healthy environment, quality education and effective health services;
- A sense of independence and self-reliance that also recognizes our interdependence and the need for mutual cooperation;

### **For the Place....**

- A variety in land use that reflects the Region's diverse mix of rural lands, small communities and regional centers, with the natural environment and working landscape part of our daily lives;
- A Region made better as a result of our efforts;

### **For the Communities....**

Individual places with their own identity and self destiny, commercial, and industrial centers, residential communities, historic villages and recreational centers, all of which both contrast and complement each other.

- A functional man-made environment, with interest, beauty and value that complements our natural environment.
- Decision-making that encourages public involvement at every stage, and affirms the legal right and obligation of elected and appointed officials to act. An educated and informed citizenry ready to make effective choices.
- Dialogue within and among the Region's towns about where and under what conditions change and growth should occur, and support for a type and pace of change that are appropriate for the region and its communities.

### **For the Future....**

- A sustainable future with an identification of—and focus on—critical issues.
- Development, conservation and preservation interests working together to the benefit of our communities and the environment.
- A regional commission that recognizes and supports the goals, policies and issues of member communities as expressed in Town Plans, and that fosters cooperation among town, state, and federal governments and between public and private interests.
- Recognition of the rights and responsibilities associated with property ownership.

## **THE WINDHAM REGIONAL COMMISSION**

The Windham Regional Commission (WRC) is a voluntary association of 27 towns, formed in 1965, subsequently constituted by the State Legislature, and now operating under the Vermont Municipal and Regional Planning and Development Act (24 V.S.A. Chapter 117). The WRC's mission is to assist member towns to provide effective local government and to work cooperatively with them to address regional issues. Each member town appoints two Commissioners who represent that town's interests in regional affairs. Additionally, the WRC has up to ten citizen interest commissioners who represent other regional interests such as education, environment, housing, and business. The WRC is supported by an annual appropriation from member towns, a share of the state property transfer tax, and by private, state, and federal grants.

The WRC was created following Governor Philip Hoff's 1962 expansion of the state-planning program, with four basic goals:

- Promote economic development, increasing jobs and income;
- Preserve the natural beauty of Vermont;
- Obtain and maintain efficiency in government expenditure;
- Safeguard and extend local autonomy in planning and development decisions.

## **PURPOSE AND USE OF THE WINDHAM REGIONAL PLAN**

The purpose of the Windham Regional Plan (the plan) is to provide guidance for change in the Windham Region. The Plan reflects shared values and concerns of the people who live in the 27-town

Region and it discusses issues facing the Region with statements of policy, maps, and recommended actions for the WRC, state agencies and towns. Based on a set of regional goals, the plan sets long-term policies for the Region and identifies actions needed to further those goals and policies.

### **Who Uses The Plan?**

Towns with active planning programs use the Regional Plan as a guideline for local planning efforts, or they may adopt portions of this plan as their own. When applicable, the District Environmental Commission and other state agencies use the plan to review both public and private development proposals. As a source of regional information, the Plan serves citizens and government agencies.

### **WRC Commitment**

The Plan is the basis for the WRC's day-to-day operations. The WRC commits its staff and resources to work for implementation of the Plan's stated goals and policies. The WRC's Executive Board, committees and professional staff implement the Plan.

### **Plan Organization**

Each element of the Plan presents historical and background information as well as current information, data, and analysis. The Plan's policies are found in Chapter X; they form the core of the Plan and they state the WRC's position and intent. Chapter XI contains program and action statements recommending specific steps for the WRC, governmental agencies and others to pursue in order to implement the policies.

### **Maps**

This Plan contains some maps that present important background information and others that, like the Plan's policies, present a vision for the Region's future. The text and maps must be used in concert to be properly understood.

The maps present information in a generalized format. More detailed information often is available from other maps or data sources, and those are referenced on the maps or in an appendix. Users of this Plan and its maps are encouraged to consult those sources when more detailed information is needed regarding the presence, absence or precise location of a given map feature.

### **Legal Authority And Use Of The Plan**

The Plan is to be used by the WRC, town planning commissions, selectboards, state agencies, landowners, and citizens in a number of ways:

- To provide guidance for planning and development initiatives at the local level;
- To guide basic decisions for planning programs at the WRC;
- To serve as a basis for evaluation and review of developments and subdivisions proposed under Act 250; and
- To assist in determining compatibility of agency plans affecting land use with regional and local planning and development priorities (3 V.S.A. Section 4020(a)), Section 4305(d).

## **WINDHAM REGION GEOGRAPHY**

The Region consists of the 23 towns in Windham County; the neighboring towns of Readsboro, Searsburg, and Winhall in Bennington County; and Weston in Windsor County. Situated in Vermont's southeastern corner, the Region is bordered by Bennington and Windsor Counties to the west and north, Massachusetts to the south and New Hampshire to the east. The Region's area is nearly 600,000 acres, or over 900 square miles.

The topography is generally hilly, with steep slopes on the river valleys on the east slopes on the Green Mountains. The Connecticut River Valley contains areas of relatively flat and gently rolling land. The Green Mountains form the western edge of the region with a landscape of ridges and mountain peaks with narrow stream valleys. Stratton Mountain is the highest point in the region at 3,936 feet. The lowest point is along the Connecticut River in Vernon at 200 feet.

In addition to the Connecticut, other major rivers of the region are the Deerfield, Green, North, Saxtons, West, and Williams, all tributaries of the Connecticut. There are two major flood control reservoirs on the West River, Ball Mountain and Townshend, and two major storage reservoirs for hydropower generation on the Deerfield River, Somerset and Harriman.

## **WINDHAM REGION HISTORY**

Much of the Region's history is evident on today's landscape. Native American carvings, stonewalls, cellar holes, railroad beds, abandoned quarries, and many of our public buildings, homes, and barns remind us of our heritage.

### **Early European Settlement**

Early European settlers came to a heavily timbered region with abundant wildlife. Early forestry focused on efforts to clear the land for homesteads and agricultural use. Harvested trees were used primarily for building and fuel; secondary uses were manufacture of potash, tannin, and other commodities. By the late 1700's, timber industries made important contributions to the Region's economy from international sales.

### **Agriculture**

Agriculture shifted from subsistence operations to market-oriented production. In the early 1800's, Vermont became a world leader in wool production with prized Merino sheep imported from Spain. The Town of Westminster was a center for wool production in Vermont. During the height of wool production, many carding, spinning, and weaving mills were established in small towns. The Vermont sheep industry peaked in 1840 and declined dramatically after the Civil War, when demand for wool declined. Dairy farming eventually replaced sheep operations as the predominant form of agriculture. Today, raising sheep is on the ascendancy in Vermont.

### **Population On-The-Move**

In the mid 1800's, Vermonters began to move around. Many hill farms were abandoned by their owners after years of clearing, grazing and cultivating took their toll on the thin, steep soils. Some people moved west, heading for more fertile land, encouraged by the opening of the Erie Canal in 1825, the California gold rush in 1849 and the Homestead Act of 1862. Other hill farmers moved to larger, nearby towns for jobs in growing industries. In the smaller villages, businesses that relied on hill farmers subsequently failed, and in some cases the villages themselves were abandoned. The Civil War also contributed to Vermont's population decline, as soldiers who had seen more fertile lands in the Ohio Valley and other areas emigrated after the war.

### **Manufacturing And Other Industries**

The Region's plentiful rivers and streams provided power for woolen mills, paper mills, and other industries as well as for transportation. Log drives occurred on the larger rivers until early in the twentieth century. Roads and railroads, themselves an important industry for the Region, utilized river corridors and included routes along the Connecticut, West, and Deerfield Rivers. Railroads also played an important role in shaping the Region and encouraging the development of Brattleboro and Bellows Falls as regional centers. The railroads carried freight and passengers, bringing more people to the region and facilitating commerce with Boston, New York and points south.



## **Brattleboro And Bellows Falls**

Brattleboro and Bellows Falls benefited significantly from the nineteenth century railroad expansion. Brattleboro hosted a range of industries, including organ manufacturers, an iron foundry, a hospital, print shops, and a cigar factory. Bellows Falls also was an industrial center that included paper mills, a farm machinery company, lumber mills and marble works. The industries in both towns provided jobs and appealed to many who left farms to work in factories. In the latter part of the twentieth century, the development of an efficient and reliable highway system allowed Brattleboro and Bellows Falls to emerge as major warehousing and trucking centers.

## **Tourism**

In the late 1800's, tourists were attracted to the Region for its heritage, natural beauty and recreational activities. In the 1950's, the ski industry began to play a significant tourism role as alpine skiing and accommodations brought increasing numbers of skiers and visitors during the winter months. The completion of the Interstate Highway System in the 1960's began a new era characterized by easy and convenient access to the Region from large metropolitan areas, resulting in explosive growth in vacation homes and related facilities. In the 1980's and 90's, the Region's ski resorts focused on expansion and development of new facilities to attract visitors during all seasons.

## **REGIONAL GOALS AND RELATIONSHIP TO VERMONT PLANNING GOALS**

A set of regional goals has withstood the test of time for relevance and importance to the Windham Region. These goals evolved from prior plans and from detailed surveys of local officials in 1985, 1990, and 1995, and they continue to be the subject of on-going dialogue between the WRC and its member towns. The regional goals listed below correspond generally to the Vermont Planning Goals.

- To provide a vital and diverse economy with rewarding job opportunities and high environmental standards for the Region's citizens;
- To encourage and strengthen agricultural and forest industries;
- To plan development so as to maintain the Region's historic settlement pattern of compact villages and urban centers separated by rural countryside;
- To provide for safe, convenient, economic, and energy efficient transportation systems including options such as public transit and paths for pedestrians and bicyclists, where appropriate;
- To maintain and improve the quality of air, water, wildlife, and land resources in the Region;
- To identify, protect, and preserve regionally important natural and historic features of the Vermont landscape;
- To promote the development of housing suitable to the needs of the Region and to ensure the availability of safe and affordable housing for all citizens of the Region;
- To provide for wise and efficient use of the Region's natural resources, and to require that proposals for mineral extraction minimize adverse effects on aesthetics, water quality, air quality, and special community resources (such as historic sites, recreation, or scenic areas), and to ensure that effective site rehabilitation plans are provided and implemented;

- To encourage energy conservation and efficiency, the development of renewable energy resources, and the availability of a reliable and sufficient energy supply;
- To plan for, finance, and provide an efficient system of public facilities and services (such as schools, water and wastewater facilities, highways and bridges) to meet future local, regional, and state needs;
- To broaden access to education and training for all citizens;
- To support affordable access to high quality health care services for all citizens;
- To maintain and enhance recreational opportunities for both residents and visitors in keeping with the carrying capacity of natural resources and public facilities.

## **REGIONAL PRIORITIES**

The priorities outlined below have been identified and retested through communications with member towns. The priorities are not arranged in an order of importance. The WRC will continue to reassess and address them during the next five years.

### **Economy**

We must strive to keep our existing economy healthy and provide a favorable climate for new enterprise. Job development and career opportunities do not occur in a vacuum; they rely on quality educational services, adequate infrastructure, decent and affordable housing, affordable health care, and a desirable living environment.

### **Agriculture And Forestry**

Strategies to help agricultural and forest industries remain viable need to be developed and supported. Agricultural lands are both a valuable, nonrenewable resource and a frequent target for development. Fragmentation of forest parcels and changes in land use and owners' backgrounds and attitudes threaten the commercial use of the forest as a timber resource and the welfare of wildlife populations, as well as its recreational and aesthetic values. Defining, identifying, and protecting those productive agricultural and forestlands is essential for the future.

### **Natural Resource Protection**

**Water Quality** – Protecting surface and ground water quality while providing for appropriate growth and development remains a priority for the Region. While surface water quality has improved in recent years, acid precipitation, non-point source pollution and groundwater contamination continue to threaten water quality. Increased local, regional, and national efforts are needed to overcome these threats to water quality.

**Scenic Resources** – Among the region's most valuable resources are its natural beauty and its attractive towns and villages. Important scenic areas must be identified and protected.

**Air Quality** – Clean air is essential to a healthy environment. Certain types of development and the cumulative effects of various air emissions can degrade air quality. We must do our best to ensure that air leaving the region for use by others is of good quality.

## **Land Use**

Settlement Pattern – Maintaining the region's pattern of compact villages and downtown areas separated by undeveloped countryside is of paramount importance, and inappropriate land use decisions that threaten this settlement pattern must be avoided. New development should be guided so that it is compatible with existing community character and other land use concerns. Sound land use planning is needed at both the town and regional levels.

## **Waste Management**

Solid Waste Disposal - Techniques of integrated waste management—recycling, composting and source reduction — must be improved to responsibly manage our trash. Long-term waste disposal solutions will also need to be developed to serve the Region and its towns.

Wastewater Disposal - Improperly treated and stored sludge and septage can be a serious environmental hazard; they must be composted or otherwise treated to reduce volume and remove toxins, and the resultant material should be put to maximum beneficial use.

Hazardous Waste - The use of toxic and other hazardous agents in industry and in homes must be further reduced. Paint products, cleaners and other wastes that are toxic, corrosive or explosive must be separated from other trash and properly recycled or disposed of in order to protect the Region's environment and public health.

## **Education**

Financing Education – Budgets and tax policies must be balanced to finance quality public education for the Region's students without over-burdening local taxpayers.

Job Development and Career Opportunities - Enhanced educational opportunities need to be provided in programs for basic skills, such as math, computers, and communications, and in re-training programs for both entry level and advanced workers seeking new work pursuits or needing to adapt to a changing marketplace.

## **Housing**

Affordability - A shortage of adequate, affordable housing in the Region continues. Housing conditions throughout the Region need to be improved, and financing of affordable housing for low and middle-income families must be available.

## **Transportation**

Planning – In order to promote ease in travel and avoid unnecessary loss of the Region's rural character, existing problems related to traffic congestion must be resolved. Freight movement by truck continues to increase, and the functional conflicts that arise from increased heavy truck traffic in towns and villages must be addressed.

Maintenance – The highest priority for towns in the Windham Region continues to be maintenance of the existing highway and bridge network. Major reconstruction or bridge replacement projects must take local and regional compatibility into account more thoroughly than in the past. Conformance to town and regional plans, avoidance or acceptable mitigation of traffic impacts, and consistency with established economic patterns and community character will be essential for successful design and permitting processes.

Public Transportation – Over the long term, an aging population will create more demand for regional and inter-regional public transportation. In the short to mid-term, changing demographics will increase demand for localized or special service transit services, such as improved commuter and shopper services, paratransit for those with mobility impairments, and resort-oriented shuttle services.

**Health Care**

Health care and its cost and availability are major concerns of families, towns, and employers in the Region. The promotion of health care education, preventive practices, screening, and immunization should be supported. Access to primary care, emergency treatment, and health care institutions—including long-term care services—is needed.

# LAND USE

*“Vermont is losing its privacy, and some of its beauty is being tarnished as development steadily moves north. Our state, in the last decade of this century [1990s] is being gentrified. It is becoming more like the name it was first called in the eighteenth century: New Connecticut.”*

Peter Miller, 1990

## SETTLEMENT PATTERN

Physical limitations have played a dominant role in the Region's development pattern. European settlement first occurred in the Connecticut River Valley where water, good soil, and access to a natural transportation route were available. Towns and villages evolved at the intersections of streams, as exemplified by Brattleboro and Bellows Falls in the Connecticut River Valley, and Wilmington and Jamaica in the Region's interior.

A linear pattern of development was the natural response to the river and stream valleys and the establishment of a road system along those streams, linking village nodes in each major valley. These roads encouraged a land use pattern of mixed residential and commercial uses to radiate from each village. The resulting pattern of the Region is one of small villages located in stream valleys with expansion along connecting roads. This pattern, so rich in historic tradition, has become increasingly costly in terms of public services and energy consumption. In some areas, the rural open landscape has been compromised significantly.

In a regional context, it is evident that the horse and buggy shaped eighteenth century villages, railroads and rivers influenced the development of nineteenth century towns and regional centers, and the automobile has altered the twentieth century rural landscape. Preserving the outstanding landscape quality that remains while encouraging appropriate economic growth and development is our challenge at the start of the twenty-first century. Each distinct land use category — regional centers, villages, and rural lands — offers its own set of challenges, needs, and constraints.

Public investment in lands, facilities, services, and utilities shapes development and land use patterns. In many cases, public investment is at least as influential as private development in determining the growth of the Region's communities. The most significant public investments have been the construction of the interstate highway system, flood control dams, wastewater treatment and water supply facilities, and acquisition of Green Mountain National Forest lands. State highway improvements, electric generation stations, distribution lines, and transmission and substation facilities also represent substantial infrastructure investments that have responded to growth and continue to influence and support it.

Since the 1950's, the ski industry has been an important contributor to the Region's settlement pattern and alpine ski facilities and accommodations have brought steadily increasing numbers of skiers to the Region. The 1980's saw new expansion of facilities and services for four-season recreation. Tourist-related industries and vacation home construction accompanied these trends and in many respects are more significant growth factors than the recreation facilities themselves.

The Region's close proximity to the metropolitan Northeast and ease of access via Interstate 91 and the railroads are important factors that have influenced settlement patterns. The rural environment of the Connecticut River Valley and the Green Mountains is a strong magnet for visitors and for new residents to the Region. The current land use pattern is characterized by extensive forested areas, agricultural lands (primarily in the Connecticut River Valley), rural residential development, small villages, two regional centers, a regional highway and rail network, and ski and vacation home resort developments on the eastern slopes of the Green Mountains. Local, state and federal governments policies regarding economic

opportunities and programs—employment, community services, tax policies—may have broad and unforeseen implications for the region's future growth and land settlement.

## **TRENDS**

Census data show a declining population in regional centers—Brattleboro and Rockingham—and a rising population in outlying towns<sup>1</sup>. Regional centers provide most of the services for the Region's permanent population, and may not be expected to carry a majority of the region's total population growth themselves, but these data indicate a continuing trend toward rural sprawl that is counter to the land use policies and aspirations of this Plan and most municipal plans. Of all major land use changes in recent past decades in this region, the most significant indicators of land use and development trends appear to be the following.

### **Agriculture**

In Windham County, approximately 83,000 acres were farmed in 1970. The net loss of farmland acreage during the last 30 years has been roughly 36,000 acres or about 43 percent of the agricultural land base. The 1997 Census of Agriculture shows that between 1987 and 1997 the number of acres of land in farms decreased by about 12.5 percent, from 53,474 acres to 46,818 acres. That included a drop of approximately 10,000 acres from 1987 to 1992, and then a gain of about 3,000 acres in the following five years. The total number of farms decreased from 287 to 270 between 1987 and 1992, then rose to 305 by 1997. The number of smaller farms has increased while the number of larger farms decreased in the first five years, but has been somewhat stable since<sup>2</sup>. Windham County, in fact, has been reported to have the most diverse agriculture in the state.

### **Forest Lands**

Forests continue to dominate the landscape with approximately 86 percent of the land base classified as forested (USFS survey, 1983). Most of the Region's approximately 500,000 acres of forest are in non-industrial private ownership, held by many individuals with an average holding of less than 100 acres. Forests are valuable as a timber resource; as wildlife habitat; for recreation, including hiking, hunting, trapping and fishing; as a retreat; and as a scenic resource.

Over the last decade the Current Use Program (more properly called "Use Value Appraisal ") has increased awareness of the value of conservative timber management by providing tax relief for landowners who agree not to develop their land and to practice forestry according to state-approved forest management plans. Approximately 105,000 acres of the Region's forests (about 21 percent of the Region's forested land) are enrolled in this program. Despite improvements in forest management, many individual owners, trends toward forest parcel subdivision and residential and recreational development in forests continue to threaten traditionally significant timber production and hunting.

### **Residential Development**

From 1980 to 1990, 2,885 year-round housing units were constructed resulting in an 18.4 percent growth rate. From 1990 to 2000, 2,028 new year-round housing units were constructed for a growth rate of 10.9 percent. Some of this new housing was situated in or near growth centers, but much of it was built in outlying rural areas. Most residential development has occurred in scattered small subdivisions (less than 10 lots) or on individual single lots, taking advantage of existing frontage on public roads. In fact, 2000 U.S. Census population figures show a clear and continuing trend for residential growth in outlying towns and slower growth in regional centers. For example, Brattleboro's resident population actually declined 2 percent from 1990 to 2000 and its share of the total regional population dropped from 28.2 percent to 25.8 percent during that time, while population grew and shifted to rural towns (see population tables).

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<sup>1</sup> Some economic data are presented on a County basis, instead of for the region, due to the format of U.S. Census reports. Windham County comprises 23 towns. The Windham Region is all of those plus Readsboro, Searsburg, and Winhall in Bennington County and Weston in Windsor County.

<sup>2</sup> U.S. Census of Agriculture; 1987, 1992, 1997

Scattered residential development is less dramatic than large-scale suburban development, especially when it occurs in largely forested areas that help to conceal it, but it may have similarly detrimental impacts on the landscape and natural resources.

### **Villages And Hamlets**

Many of the region's small clustered villages and hamlets have seen little new structural development, either commercial or residential. Basically, these villages have limited infrastructure to support future growth and available, buildable land is in smaller units. Once cultural centers for their residents, many villages have become homes for people who travel to other places for work, errands and recreation. Those villages on major regional routes are faced with increased through-traffic including traffic generated by local residents, tourists, through-trucks, and local delivery trucks, a trend that was noted in earlier Windham Regional Plans and that appears to continue unabated or even accelerated

### **Vacation And Second Home Development**

Between 1980 and 1990, 59 percent of all new housing units were built for vacation or seasonal use (4,205 new seasonal out of 7,090 total new units). From 1990 to 2000, the total number of seasonal units dropped by 509, from 9,799 to 9,290 (a drop of 5.2 percent). While some seasonal units certainly were constructed during those years, the smaller number reported in the U.S. Census indicates that many were converted to year-round use. The net twenty-year increase in seasonal units was 3,696. Seasonal units as a percentage of total units were reported in each of the last census years as follows: 1980: 26.3 percent; 1990: 34.6 percent; 2000: 31.1 percent.

### **Resort Areas**

The region's larger resorts (Mount Snow/Haystack, located in Wilmington and Dover; and Stratton, located in Stratton and Winhall) have expanded to become destination resorts providing facilities and accommodations for four-season recreation. Accompanying this trend is overall upgrading and modernizing of facilities to include wider ski trails, extensive snow-making operations, new and faster ski lifts, and expanded base facilities (restaurants, visitor services, and parking). Haystack and Magic Mountain (located in Londonderry) have experienced financial strains in recent years, with Haystack being purchased by Mount Snow, and Magic Mountain having been closed and sold to new owners who reopened in 1998. Stratton is owned by Intrawest, a British Columbia-based corporation, and American Skiing Company, which in turn is undergoing some restructuring at this time, owns Mount Snow/Haystack. The general industry trend in Vermont continues toward larger, more diversified resorts that are held by outside corporations. All of the Region's small independent ski areas are closed. No new ski areas have been developed, and none are anticipated.

### **Commercial And Industrial Development**

Historically, commercial development has occurred in the established urban centers of Brattleboro and Bellows Falls and the Region's larger villages: Wilmington, Putney, and Londonderry. Wholesale trade, distribution and other transportation-based businesses have accounted for a large portion of the economic development in regional centers, and much of the recent development elsewhere has been in the form of individual establishments scattered along state highways. This linear pattern of strip development contributes to traffic congestion and safety problems, loss of village and neighborhood settings, and loss of rural open spaces. The most dramatic examples have occurred along Route 5, Putney Road and Canal Street in Brattleboro, where commercial and industrial uses continue to be sited. Although lesser in intensity, Route 9 in West Brattleboro and portions of Route 30 and Route 100 in other towns also are experiencing strip development in response to local and visitor traffic. Development trends noted above should be expected to increase land use pressure from commercial sprawl.

Changes in the commercial and industrial sectors in the past couple of years included some significant losses, such as closing of The Book Press (printing) with a loss of 350 jobs, closing of The Bright Side (dyed clothing) and a loss of 60 jobs, closing of Smith, Inc (machined wood products) and the loss of 30 jobs, and the combined effects of several bank mergers with a net loss of about 160 jobs. But gains have included the relocation and expansion of Northeast Cooperatives (natural foods distribution) with an

addition of 240 jobs, the acquisition of Geka Brush (cosmetic brushes) by Bridgeport Metal Products which is now expanding, and a growth rate at Sonnex (automotive products) in Rockingham of about 15 jobs per year. Also at the time this Plan is drafted, it is hoped that C&S Wholesale Grocers will expand its corporate headquarters in Brattleboro. Fullflex (specialized elastic products) closed in early 2001 but has since chosen its Brattleboro plant to re-open and expand production.

There has been little construction of new large facilities that was experienced in the 1980's. Many businesses have chosen to expand on-site, nearby or to into rehabilitated or vacant buildings. Industrial development in outlying rural towns continues to be small in scale, perhaps due to lack of public infrastructure. While the productive capacity of sawmills has increased in Windham County, the number of sawmills has decreased from 37 to 23 in the last 15 years. Windham County still has the second highest number of sawmills in the state. The decline of sawmills has occurred in rural towns while there has been increasing capacity of industrial mills in regional centers. The number of active gravel pits has expanded to meet commercial and local government demand.

### **Public Utilities**

Substantial investments in wastewater treatment facilities exist in Bellows Falls, Brattleboro, Saxtons River, Putney, Wilmington (2 plants), Dover, Whitingham (2 plants), and Readsboro. Most of these were built in the 1970's initially for pollution abatement, but continue today to facilitate growth, particularly in Bellows Falls (upgraded in 1989), Brattleboro, Dover, and Wilmington. The Brattleboro wastewater facility also serves the village of Algiers, in Guilford, using one of the more recent system expansions. The four communities of Brattleboro, Bellows Falls, Readsboro, and Wilmington have constructed municipal water systems. Brattleboro completed construction of a major water filtration system in 1990. Putney is currently assessing the feasibility of a village water supply system.

Still anticipated in the next few years is electric utility restructuring, which will decentralize generation, transmission, and sale of power and allow electricity to be bought and sold on the open market, much as has happened with long distance phone service. The Vermont legislature did not act on this measure in 2000, and news of severe shortages in California following that state's electric utility restructuring has emphasized the need to proceed with caution.

The Vermont Yankee nuclear power station has a federal license that expires in 2012, and steps toward a re-licensing application are expected to begin during the life of this Regional Plan. Also, the spent nuclear fuel cooling pool—which is in the reactor building—will reach capacity by 2006, so Vermont Yankee is expected to begin application procedures in 2001 or 2002 for developing a “dry cask” storage facility to contain some of the older spent nuclear fuel outside of the reactor building. Rowe Yankee, just south of the Massachusetts border near Readsboro, has ceased operation but all of its spent fuel remains on site, in a cooling pool in the reactor building.

### **Transportation Improvements**

A number of road improvements and bridge repairs along state highways have occurred and continue to occur. Bridge repair and replacement and state paving programs have consumed increased portions of the state transportation budget, and this will continue in the near future. The State Transportation Capital Program is expected to be under significant financial pressure for at least five years, as long-awaited projects come on line. The Agency of Transportation recently projected that its backlog of “shelf projects”—that is, projects that are ready for construction but have no identified funding source—to increase from \$25 million in the summer of 2001 to about \$75 million in mid-2002<sup>3</sup>, worsening an already difficult statewide transportation budget problem.

Additionally, a great deal of local highway work has been needed to address increased traffic and use due to growing tourism, increased through-traffic and development of rural lands. This highway work has brought about better access to rural areas and at the same time contributes to increased rural sprawl. The

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<sup>3</sup> *VTrans Today* — quarterly update from the Secretary of Vermont's Agency of Transportation, July 2001.



highest priority for towns in the Windham Region continues to be maintenance of the existing road and bridge network, and few new roads will be constructed in the Region; any that are will be in order to bypass congested villages whose character is threatened by through traffic. Local interest in developing intermodal facilities such as park & ride lots, multi-use paths, and intermodal passenger and freight facilities continues to grow.

### **Outdoor Recreation**

There has been a notable increase in trail use, especially hiking, mountain biking, and snowmobiling; and water based activities, especially boating and swimming, in the Region. Hunting and fishing continue to be not only major recreational activities for residents, but also significant elements of the region's tourist base. Posting of private property and subsequently diminished access to hunting and fishing resources may become increasing concerns in the Region. Public access to many areas is limited by private ownership of trails and shore lands. Some of the more popular areas that provide public access are experiencing user conflicts related to increased use and a lack of adequate parking and sanitary facilities.

### **Land Protection**

Some private landowners have protected their lands from development. Thousands of acres have been permanently protected by land trusts through techniques, including outright purchase and acquisition of conservation easements.

### **Technology**

Rapidly changing technologies have lasting impact on land use patterns. Wireless communication networks for digital cellular and Personal Communication Services (PSC), which use a higher frequency spectrum than cellular, create a demand for towers separated by distances as short as two to three miles. Towns may choose to amend zoning by-laws or write ordinances that provide input on location as well as dismantling of wireless communication towers.<sup>4</sup>

Small businesses as well as individuals with access to the Internet may opt to work and maintain their homes in rural areas and villages. This may increase the need for additional services in small communities. Revised wastewater disposal regulations—anticipated in 2002—have the potential open significant new areas for residential and home-office development, sometimes on steeper slopes (up to 30 percent) and in areas with higher water tables (with a separation from high ground water of as little as 12 inches).

### **Population Changes**

Concern about land use change and the rates of population and seasonal housing growth were major factors leading to the passage of Vermont's Growth Management Law (Act 200) in 1988. From 1980 to 1990 population growth in this Region was 12.5 percent, compared to statewide growth of 10 percent during that time period. From 1990 to 2000, regional growth was 7 percent, compared to statewide growth of 11.5 percent. The Region's population, while continuing to grow at a substantial rate, is expected to lag behind the rates in some other regions and the state as a whole. The number of year-round housing units constructed between 1990 and 2000 resulted in a 10.9 percent increase. But seasonal housing stock, which had grown dramatically from 1980-1990, decreased by 5.2 percent during the last decade, from 9,799 units in 1990 to 9,290 in 2000. The construction boom of the 80's came at a time when many of the Region's resorts expanded their facilities to prolong the ski season and accommodate four-season use. A downturn in demand for seasonal housing, accompanied by a leveling off of the rapid growth of the skiing and resort industries and the general aging of the population, may result the conversion of seasonal units to year-round housing becoming a significant trend in the next five to ten years.

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<sup>4</sup> For information on the Federal Communications Act of 1996 and Vermont Act 94 of 1998, see *Communications* section of this Plan.

Changes have occurred in the Region due to the cumulative growth of the past 30 years. Parts of the Region have experienced inflated housing and land costs; commercial and rural sprawl; traffic congestion; increased demand for town services (schools, highways, and public facilities); loss of open space, wildlife habitat, productive agricultural lands and public access; and a decline in the importance of the forest products industry and agriculture. Housing cost and availability are substantial problems in this Region and throughout Vermont, as well as in much of the Northeast.

POPULATION CHANGES IN THE WINDHAM REGION <sup>5</sup>							
TOWN	1940	1950	1960	1970	1980	1990	2000
Athens	136	139	142	159	250	313	340
Brattleboro	10,983	11,522	11,734	12,239	11,886	12,241	12,005
Brookline	104	132	127	180	310	403	467
Dover	244	252	370	555	666	994	1,410
Dummerston	615	790	872	1,295	1,574	1,863	1,915
Grafton	393	422	426	465	604	602	649
Guilford	686	796	823	1,108	1,532	1,941	2,046
Halifax	353	343	268	295	488	588	782
Jamaica	567	597	496	590	681	754	946
Londonderry	859	953	898	1,037	1,510	1,506	1,709
Marlboro	225	311	347	592	695	924	978
Newfane	672	708	714	900	1,129	1,555	1,680
Putney	904	1,019	1,177	1,727	1,850	2,352	2,634
Readsboro	847	913	783	638	638	762	809
Rockingham <sup>6</sup>	5,737	5,499	5,704	5,501	5,538	5,484	5,309
Searsburg	135	84	73	84	72	85	96
Somerset	5	8	4	0	2	2	5
Stratton	117	54	24	104	122	121	136
Townshend	694	584	643	668	849	1,019	1,149
Vernon	559	712	865	1,024	1,175	1,850	2,141
Wardsboro	401	377	322	391	505	654	854
Westminster	1,403	1,400	1,602	1,875	2,493	3,026	3,210
Weston	457	468	442	507	627	488	630
Whitingham	789	816	838	1,011	1,043	1,177	1,298
Wilmington	1,221	1,169	1,245	1,586	1,808	1,968	2,225
Windham	183	146	135	174	223	251	328
Winhall	212	255	245	281	327	482	702
Total	29,501	30,469	31,319	34,986	38,597	43,405	46,453

Source: U.S. Census Bureau, 1940 - 2000 Population and Housing Estimates

<sup>5</sup> These data are estimates of permanent population, as counted by the U. S. Census. That means that college students are counted at their school residences, seasonal and vacation populations are not counted in resort towns, and the significantly increased workday population in some towns also is not counted.

<sup>6</sup> The village of Bellows Falls, identified in this Plan as a regional center, is in Rockingham.

POPULATION SHIFTS IN THE WINDHAM REGION							
TOWN	POPULATION CHANGE			SHARE OF REGIONAL POPULATION			
	70 - 80	80 - 90	90 - 00	1970	1980	1990	2000
Athens	57.2%	25.2%	8.6%	0.5%	0.6%	0.7%	0.7%
Brattleboro	-2.9%	3.0%	-1.9%	35.0%	30.8%	28.2%	25.8%
Brookline	72.2%	30.0%	15.9%	0.5%	0.8%	0.9%	1.0%
Dover	20.0%	49.2%	41.9%	1.6%	1.7%	2.3%	3.0%
Dummerston	21.5%	18.4%	2.8%	3.7%	4.1%	4.3%	4.1%
Grafton	29.9%	-0.3%	7.8%	1.3%	1.6%	1.4%	1.4%
Guilford	38.3%	26.7%	5.4%	3.2%	4.0%	4.5%	4.4%
Halifax	65.4%	20.5%	33.0%	0.8%	1.3%	1.4%	1.7%
Jamaica	15.4%	10.7%	25.5%	1.7%	1.8%	1.7%	2.0%
Londonderry	45.6%	-0.3%	13.5%	3.0%	3.9%	3.5%	3.7%
Marlboro	17.4%	32.9%	5.8%	1.7%	1.8%	2.1%	2.1%
Newfane	25.4%	37.7%	8.0%	2.6%	2.9%	3.6%	3.6%
Putney	7.1%	27.1%	12.0%	4.9%	4.8%	5.4%	5.7%
Readsboro	0.0%	19.4%	6.2%	1.8%	1.7%	1.8%	1.7%
Rockingham	0.7%	-1.0%	-3.2%	15.7%	14.3%	12.6%	11.4%
Searsburg	-14.3%	18.1%	12.9%	0.2%	0.2%	0.2%	0.2%
Somerset	---	0.0%	150.0%	0.0%	0.0%	0.0%	0.0%
Stratton	17.3%	-0.8%	12.4%	0.3%	0.3%	0.3%	0.3%
Townshend	27.1%	20.0%	12.8%	1.9%	2.2%	2.3%	2.5%
Vernon	14.7%	57.4%	15.7%	2.9%	3.0%	4.3%	4.6%
Wardsboro	29.2%	29.5%	30.6%	1.1%	1.3%	1.5%	1.8%
Westminster	33.0%	21.4%	6.1%	5.4%	6.5%	7.0%	6.9%
Weston	23.7%	-22.2%	29.1%	1.4%	1.6%	1.1%	1.4%
Whitingham	3.2%	12.8%	10.3%	2.9%	2.7%	2.7%	2.8%
Wilmington	14.0%	8.8%	13.1%	4.5%	4.7%	4.5%	4.8%
Windham	28.2%	12.6%	30.7%	0.5%	0.6%	0.6%	0.7%
Winhall	16.4%	47.4%	45.6%	0.8%	0.8%	1.1%	1.5%
Total	10.3%	12.5%	7.0%	100.0%	100.0%	100.0%	100.0%

## **REGIONAL LAND USE**

Future growth will be governed by natural resource constraints, public and private investment decisions, the policies of town plans and this Regional Plan, and local regulations that are adopted to implement town plans. The following guidelines help to coordinate and guide change and development in the Region.

### **Planning For Growth**

In 1988, the Vermont Legislature introduced into the Municipal and Regional Planning and Development Act the concept of "growth centers." The Vermont Planning Goals encourage economic growth in locally designated growth areas or employed to revitalize existing village and town centers, or both. In 1999, the Town of Brattleboro and the WRC completed work on the Brattleboro Growth Center Pilot Project, which included much work necessary to implementing regional growth center planning. Smaller towns have also shown interest in local growth areas and some have begun to identify specific areas for future growth.

### **Character And Density Of Development**

Clustering development promotes traditional New England settlement patterns: structures grouped closely together on small lots surrounded by open space, farmland and forest. Clustering buildings on the most appropriate portions of a parcel with the simultaneous protection of important resource lands is a viable alternative to traditional single-lot zoning. Even for some commercial establishments, clustering can reinforce the rural townscape and encourage the efficient use of roads and other utilities, thereby reducing costs. Architectural styles and building materials also affect the character of development, and the use of traditional New England styles and materials blends with existing settlement. Development sprawl, often characterized by boxy one-story buildings, detracts from the character of the Region's traditional landscape.

Density ranges and averages allow for more flexibility than do standard minimum lot sizes in zoning bylaws. Density targets can allow small lots to be developed in order to maintain significant resources in larger tracts. Recommended dwelling unit density ranges and average densities should be based on existing and desired land use patterns in a particular area. Density ranges allow for a variety of parcel sizes based on an upper and lower limit. Recommended average densities can be based on a gross density for the area or on the overall parcel size. The recommended densities should be designed to accommodate the number of dwelling units compatible with the proposed land use category. Density of development in any particular area or site should be determined using as a guide the physical site limitations, the character of the area, the availability of water supply and waste water treatment facilities, the impact on the land's resources, the effect on adjacent land uses, and the services that will be required to accommodate such densities. The table on the following page shows dwelling unit densities for a number of towns in the Region.

### **Resource Protection**

Areas and resources requiring extra protection and preservation efforts include aquifers, drinking water source protection areas, wetlands, floodplains, important forest resources, pristine waters, important fish habitats, shore lands, prime agricultural soils, steep slopes, and areas prone to erosion, habitat areas for threatened or endangered plant and animal species, other critical and necessary wildlife habitats, historical and archaeological resources, and scenic vistas. The protection of these areas can be accomplished through an eight-part effort:

1. Better resource mapping and identification;
2. Incorporation of mapping into town plans and the regional plan;
3. Protection through local zoning (including clustering and transfer of development rights) and state regulations;
4. Full enforcement of local and state regulations;
5. Minimizing the impacts of adjacent development on these areas;
6. Encouragement of landowners to place conservation easements on important lands;

7. Encouragement and education of landowners to manage their lands in ways that protect and enhance the valuable resources on their lands; and
8. Proposing techniques to compensate landowners for the public benefits provided by these lands.

DWELLING UNIT DENSITIES IN THE WINDHAM REGION							
		1980		1990		2000	
Town	Acres	Number of Units	Acres per Unit	Number of Units	Acres per Unit	Number of Units	Acres per Unit
Athens	9,019	135	67	187	48	210	43
Brattleboro	20,884	4,866	4	5,551	4	5,686	4
Brookline	8,294	205	40	265	31	274	30
Dover	22,947	831	28	2,438	9	2,749	8
Dummerston	19,796	711	28	875	23	893	22
Grafton	24,456	360	68	404	61	434	56
Guilford	25,330	642	39	873	29	931	27
Halifax	25,482	397	64	460	55	493	52
Jamaica	31,669	737	43	918	34	967	33
Londonderry	23,017	993	23	1,277	18	1,317	17
Marlboro	26,063	388	67	467	56	497	52
Newfane	25,615	725	35	1,035	25	977	26
Putney	17,085	847	20	1,027	17	1,049	16
Readsboro	23,219	417	56	495	47	466	50
Rockingham	26,948	2,336	12	2,487	11	2,425	11
Searsburg	13,702	85	161	102	134	87	157
Somerset	17,602	22	800	22	800	28	629
Stratton	29,989	288	104	895	34	1,091	27
Townshend	27,347	432	63	758	36	668	41
Vernon	12,868	428	30	663	19	784	16
Wardsboro	18,727	547	34	719	26	766	24
Westminster	28,953	986	29	1,297	22	1,412	21
Weston	22,760	407	56	447	51	537	42
Whitingham	25,047	582	43	737	34	802	31
Wilmington	27,173	1,645	17	2,227	12	2,232	12
Windham	16,751	319	53	361	46	354	47
Winhall	28,494	906	31	1,340	21	1,717	17
Region Total	599,239	21,237	28	28,327	21	29,846	20
Total without Brattleboro	578,355	16,371	35	22,776	25	24,160	24

Sources: Dwelling units—*U.S. Census 1980, 1990, 2000*

Acreage—VGIS coverage TBHASH; see Appendix A note #1.

## Land Use Categories

The following regional land use categories recognize existing settlement patterns; availability of existing and planned public infrastructure (water, sewer, and roads); and land use policies established in existing town plans. Concentrating development in order to maintain the Region's characteristic settlement pattern is a major element in town plans in the Region. The promotion of this settlement pattern will:

- Reduce the pressure to develop farmlands, commercial forests and important resource areas;
- Minimize new building along connecting regional roads;
- Reduce the growth in auto travel, thereby reducing traffic volume, congestion, air pollution, and fuel consumption;
- Minimize the initial costs and the loss of electricity through electrical distribution lines;
- Ensure that regional centers and villages will be vital communities providing a mix of land uses and meeting a variety of human needs, including housing, jobs, and social services;
- Guarantee that continued re-investment in regional centers and villages will serve the public interest; and
- Increase local control of future development.

Land use categories and the policies associated with each are described below. This concept is modeled after previous land use elements adopted and carried forward in the Windham Regional Plan for over 25 years. The purpose of establishing land use categories is to complement, support and reflect town land use planning by presenting a regional structure for settlement patterns and planning for future growth. Much work has been done by town planning commissions to develop local land use plans, and it provides the basis for the land use planning, vision, and structure presented here. Planning must continue to improve at the town and regional levels in order to further develop and more completely address all of the provisions of the Vermont Municipal and Regional Planning and Development Act.

## Regional Centers

The regional centers are the areas surrounding the cores of Brattleboro and Bellows Falls. These areas are fully served by municipal water supply and wastewater treatment facilities and contain a full range of services supporting development, including transportation, solid waste, power, and communications. This term should not be confused with *regional growth center*, which requires local designation following a specific local and regional planning process.

Regional centers will continue to provide services for the Region's permanent population. The centers will also provide a diversity of other institutional, governmental, cultural, and recreational uses. This Plan recognizes and supports these centers as the locations where a major share of the region's expected primary residential growth, commercial services, and industries can occur. It also is noted that while these centers continue in their role as regional economic centers, relative population shares have continued to shift from these centers to outlying towns.

Brattleboro and Bellows Falls each has a Designated Downtown, under the Vermont Agency of Commerce and Community Development's *Vermont Downtown Program*, two of eleven designated downtowns in the state. Participation in this program requires documentation of a viable downtown center, a commitment to enhancing and maintaining the downtown district, and sound financial and administrative plans. Designated downtowns are eligible for priority funding in a number of state programs, and projects can be eligible for downtown transportation and capital improvement funds, reallocation of sales tax receipts for building materials related to expansion or rehabilitation of downtown properties, an income tax credit for rehabilitation of certified historic buildings, and other benefits.

### **Regional Growth Centers**

Regional growth centers are areas with specific boundaries established by the involved municipalities, with the assistance of the Windham Regional Commission that include existing built-up urban areas or towns, major tourist or resort areas, or areas designated for future regional economic growth; and which:

1. Are a focus for regional activities, including employment, trade, tourism, housing, cultural and recreational activities, and regional institutions, and have the potential or need for reinvestment to support these activities, or
2. Have vacant or under-utilized land appropriate for development with a potential for regional impact, and which have or plan to have the infrastructure to serve such development.

The WRC will continue to explore the concept of regional growth centers with potential growth center towns and neighboring towns. Where a growth center planning process has occurred and involved towns support the designation, amendments will be considered to this Plan identifying portions of one or more towns as regional growth centers. Included in the amendment would be: areas designated for different types and densities of development based on desired growth and projected need; open space areas within the growth center; a growth center boundary and resource protection plan designed to maintain the boundary; needed regional facilities and services; and an implementation plan.

***Brattleboro Regional Growth Center:*** *The Brattleboro Regional Growth Center Pilot Planning Project enabled the Town of Brattleboro, the WRC, and Brattleboro's neighboring towns to be involved in the development of a process for growth center designations. As part of the growth center planning process, an inventory was conducted of services, cultural resources, historic resources, recreational resources, and natural resources located in the growth center area. The significance of these services and resources to growth center planning was assessed and major issues were identified. Data on population, housing, tax rate, and commuting patterns for Brattleboro and neighboring towns was assembled, and discussed with the towns. Meetings to discuss the regional growth center concept and issues regarding Brattleboro and growth were held with each neighboring town. Through this information-gathering phase of the project, it became apparent that a Regional Growth Center designation was appropriate due to the wealth of regional services and resources in the growth center area, and the interconnected relationship of the neighboring towns and the Town of Brattleboro.*

*Through an analysis of population, employment, and land use historical growth and development information, projections for future growth needs and desired growth forecasts were developed. Areas for long-range (20 year) and short-range (10 year) commercial/industrial and residential development and redevelopment, infrastructure expansion, and service and resource expansion were identified based on desired growth forecasts. A long-range vision for specific desired or needed land uses, services and resources was proposed for areas of regional significance in the growth center area. Completed in three phases, the study clearly showed that the growth center has the land and infrastructure capacity to accommodate desired and projected growth.<sup>7</sup>*

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<sup>7</sup> Brattleboro Regional Growth Center Study. 1999. WRC

**Local Growth Areas:** *Designated portions of a town may be identified in an approved town plan for growth, establishing proposed use, infrastructure, and specific boundaries, and they may have little or no impact on adjacent towns or the Region.*

*Local growth areas are portions of a town that:*

- 1. Are so designated in an approved town plan,*
- 2. Have specific boundaries established by the town that respect its historic settlement pattern,*
- 3. Protect natural and agricultural resources,*
- 4. Are not linear areas located along roads,*
- 5. Have little or no impact on adjacent towns or the Region, and*
- 6. Have the following characteristics:*
  - a. An existing built-up urban or village center serving the surrounding community where continued reinvestment will occur;*
  - b. Vacant or under-utilized lands in or adjacent to a village;*
  - c. Vacant or under-utilized land which is the target for growth at a higher density than the surrounding areas based on the goals and policies of the Vermont Planning Law, such as a new, compact residential area located within a rural residential land use area; or*
  - d. An area with a combination of the above conditions, such as a village and vacant land immediately surrounding it.*

*The WRC will support individual towns that wish to designate villages or other identified areas within one town as local growth areas. There are no such locally designated growth areas in the Region at the time this Plan is drafted.*

## **Resort Centers**

Large-scale resorts are located in the western tier of the Region in the Green Mountains. The resorts provide recreational facilities and services and contribute to the Region's seasonal housing stock. Each resort has invested in private wastewater treatment facilities or has access to municipal facilities. Route 100, the state's interior recreational travel corridor, together with Routes 9, 11, 30 and 103, provides access to the resorts.

Resort development is generally concentrated around the ski area base facilities, and these built-up areas are recognized as resort centers. This Plan recognizes four resort centers: Mount Snow, Haystack, Stratton Mountain, and Magic Mountain. Growth in the vicinity of these resort centers, which has been stimulated by resort development and expansion, is sometimes referred to as secondary development. Seasonal homes are perhaps the most discussed form of secondary development, but lodging and restaurants are also prevalent near the Region's resort centers. Much of this secondary development has occurred in places having sewer systems, along major routes, and in and around historic village areas. The resort centers currently do not have specific boundaries that define their limits, and future efforts to better define these areas and plan for their development need to take into account the substantial changes that have occurred—and continue to occur—in the resort industry.



The resort centers are located in the Region's uplands where elevations range from approximately 2,000-4,000 feet, soils are often shallow, and slopes are steep. Many streams and rivers originate from these lands, some are productive forestlands, and some are valuable wildlife habitat. These conditions have been a guiding factor in resort center planning, development, and expansion.

Successful resort centers will provide year-round recreational activities for residents and visitors. This plan promotes the orderly expansion of recreation facilities, commercial services, and housing in resort centers. It recognizes commercial recreation as a legitimate land use that should not depend on secondary housing development for its economic viability. Town and regional facilities must not be overburdened nor should natural resource protection be compromised by either primary or secondary development at resort centers.

Resort centers deserve continuing and comprehensive planning attention by towns, resort managers, and the WRC working in cooperation. It is appropriate that the results of this coordinated planning be incorporated in town and regional plans and be reflected in programs and decision making at all governmental levels. This planning should reflect and address the relationship between resort based areas, related recreation and facility developments, transportation corridors, and historic village and settlement patterns. Growth Center planning for Resort Centers and associated areas qualifies for priority funding through the VT Community Development block grant program.

That portion of Dover that includes the Mount Snow base area, the West Dover village, the golf course and airport tract and related Route 100 and Handle Road development, constitutes such an inter-related area. This area also contains important natural resources and historic development. Comprehensive multi-town planning of this special area can address many positive opportunities and conversely avoid future land use conflicts, congestion, and infrastructure deficiencies.

## **Villages**

Most of the Region's towns have villages that provide for a concentration of residential, commercial service, small industry and government uses. This Plan recognizes twenty-two villages: Algiers, Bondville, Grafton, Jacksonville, Jamaica, Londonderry, Newfane, Putney, Readsboro, Saxtons River, South Londonderry, South Newfane, Townshend, Vernon, Wardsboro, West Dover, West Halifax, Westminster, Weston, Whitingham, Williamsville, and Wilmington.<sup>8</sup> Infrastructure improvements vary from village to village based on the size of the community. Some villages have invested in wastewater treatment facilities, water systems, sidewalks, lighting and recreational lands. It is important to note that the size and density of development exist along a continuum, so that the difference between a hamlet and a village may at times seem insignificant.

Villages are points for individuals to connect with other people and services, and for customers to connect with businesses. This requires providing safe and convenient ways for various modes of transportation to link in the villages or at the village edges. Automobiles and trucks are essential in the villages and must be effectively accommodated, but they must not dominate the human and economic functions for which the villages exist. Functional conflicts that arise from incompatible transportation uses need to be addressed effectively, such as when a given road must function simultaneously as both a village street and an arterial highway.

***Village Post Offices:*** *An issue of great—and growing—importance for villages in this Region and across rural America is the local Post Office and its place in the community. In recent years, the United States Postal Service has implemented many new or renovated Post Office projects that had significant negative effects on their villages, and several have been proposed in this Region.*

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<sup>8</sup> Not all of the villages identified in this Plan are separately incorporated. Seven villages are incorporated: Bellows Falls, Jacksonville, Newfane, North Westminster, Saxtons River, Townshend and Westminster. Two of these, Bellows Falls and North Westminster, fall into what this Regional Plan identifies the Bellows Falls regional center.

*While certainly there have been some successful projects, other projects and proposals have been architectural misfits, either because of size or style, and still others have contributed to sprawl and a loss of community by relocating facilities outside their historic settings. Often, the perceived need to accommodate more and larger trucks has been cited as a driving issue for those projects.*

*Whenever similar projects are proposed, the U.S.P.S. needs to cooperate actively and effectively with the affected community, the WRC, the Vermont Division for Historic Preservation, and other interested parties, particularly historic preservation trusts and similar not-for-profit organizations.*

## **Rural Lands**

“Rural land” is a generic term that includes the specific rural land categories listed below. Rural lands are made up of a variety of components including forest lands, agricultural lands, wildlife habitats, open lands, lands used for recreation, hamlets, and low density residential development. These lands are important primarily for their resource use and potential, as well as for limited economic and residential use. These areas are generally characterized by a mixed pattern of agricultural, forestry, residential, outdoor recreational, and some small-scale commercial and industrial land uses. An essential quality of the rural landscape is that the land has the capacity to be worked or used, and preserving the “working landscape” helps to protect its components.

In spite of difficult access, topography, or lack of wastewater treatment facilities and/or water systems, many areas of rural lands have attracted more residential development. Such development is an appropriate use at low densities in many areas, but it has encouraged and will continue to encourage rural sprawl if it becomes the dominant settlement pattern throughout the Region's rural lands. This rural sprawl has caused the fragmentation of large land parcels containing significant productive rural lands and resource protection areas.

Rural lands are easily transformed into suburbia. First come the needs for transportation and utilities as roads are widened, then paved and lined with poles for electricity, telephone, and cable. Public health requires pure water supplies and safe disposal of human waste, garbage and increasing amounts of trash. Schools and their buses, churches, and parking lots lead to stores and more traffic, sometimes beginning the cycle over again. As employment becomes more decentralized, home businesses can thrive until too much success changes the character of a neighborhood from residential to commercial. The crux of the issue is the concept of rural living and its relation to suburban lifestyles. Sometimes rural residents are unwilling to forego suburban amenities that make life more comfortable, but the demand for these amenities in rural areas threatens the essence of the landscape they cherish.

The following rural lands categories are designed to reduce this fragmentation, protect important resources and provide for areas in which residential development can occur while maintaining the rural landscape.

***Hamlets:*** *Though sometimes referred to as villages, hamlets are a distinct land use that is primarily—and sometimes exclusively—residential. A hamlet is either an existing historic cluster of residential development within a rural area or an area proposed to allow for the development of a small concentrated settlement within a rural area. A hamlet allows for a mixture of land uses that are consistent with the traditional hamlet settlement pattern and that will not unnecessarily duplicate services offered in the village or commercial areas. The principal land use for hamlet areas should be residential. Hamlets provide an area for rural residential growth that maintains the historic settlement patterns and densities. In order to achieve traditional hamlet densities, it may be necessary to have shared water supply or sewage disposal systems.*

***Rural Residential Lands:*** *These areas include lands which have already been committed to rural*

*residential development, are located near existing villages and services, do not have access to municipal sewer and water infrastructure, and are easily accessible by the existing road system. These lands do not contain significant amounts of high value natural resource lands, and may accommodate moderate density mixed use development that is compatible with existing land uses and sensitive to the limitations of the land. Rural land uses such as agriculture, forestry, recreation, commercial, and light industrial are appropriate, as long as they relate satisfactorily to existing land use.*

***Productive Rural Lands:*** *Productive rural areas include lands that contain resources that have significant economic value when in productive use, generally are not located near municipal sewer and water, and are committed to productive resource use, low density residential, and mixed use development. These lands are not predominated by high value natural resource areas needing protection. They may accommodate low density mixed use development that is compatible with existing land uses and sensitive to the limitations of the land. These areas are a major component of and contributor to the working landscape of the Region and require a level of protection for this reason.*

*Productive rural lands include productive and potentially productive resource areas such as active agricultural lands, high value agricultural soils, forestlands, and sand/gravel/mineral deposits and operations. Rural land uses such as agriculture, forestry, recreation, low density residential, and low intensity mixed-use development are appropriate land uses. These lands provide a significant contribution to rural areas by maintaining open space and providing lands for rural lifestyles and occupations.*

***Resource Lands:*** *Resource lands are predominated by lands requiring special protection or consideration due to their uniqueness, irreplaceable and fragile nature, or important ecological function. Resource lands include fish and wildlife habitats, areas hosting state Natural Heritage or federally identified endangered and threatened species, unique and fragile natural areas, wetlands, shore lands, floodplains, aquifer recharge areas, steep slopes, lands over 2,500 foot elevation, ridgelines, essentially undeveloped forestlands having limited access to improved public roads and regionally significant scenic corridors and areas. Resource lands of special value should be preserved and protected to the greatest extent possible. Any development or land use in these areas should be designed to have a minimal impact on the resource. It is important to limit and manage human interaction in resource areas. Resource lands also include those areas that are currently in some form of legal conservation such as public ownership, private non-profit ownership for conservation purposes, or conservation easements. The most appropriate land uses for resource lands are conservation, forestry, recreation, and low impact, very low-density rural uses.*

*The 2000 U. S. Census total population of the Region is 46,453. The following table presents some theoretical future population numbers for the rural land areas, and the number of dwelling units that could support those totals under different density schemes. The combined totals range from a low of 63,150 to a high of 142,925. This table addresses only rural lands and does not include the acres of land or the number of residents that would fall in the other land use categories.*

### Possible Population Totals Under Alternative Rural Land Development Densities

Rural Land Category	Approximate Acreage	Possible Target Density	Number of Units Resulting	Population Served At an Average of 2.5 Persons per Household
Rural residential	57,000	1 unit per 5 acres	11,400	28,500
		1 unit per 2 acres	28,500	71,250
Productive rural lands	284,000	1 unit per 25 acres	11,360	28,400
		1 unit per 12 acres	23,670	59,175
Resource lands	250,000	1 unit per 100 acres	2,500	6,250
		1 unit per 50 acres	5,000	12,500

# ECONOMY

*No business, which depends for its existence on paying less than living wages to its workers, has any right to continue in this country. By living wages, I mean more than a bare subsistence living – I mean the wages of a decent living.”*

President Franklin Roosevelt

## BACKGROUND

Historically, agriculture and manufacturing comprised the foundation and framework for the Region's economy. The steady decline of both these elements in the second half of the twentieth century resulted in difficult economic times. The end of the twentieth century has seen modest evidence of new life in the Region's agriculture and manufacturing sectors. Rather than marking the start of a return to previous conditions, however, these gains may be indicators of new trends and potential new technologies.

Traditional land based industries have diversified to capture new markets for Vermont-grown, Vermont-made specialty foods and wood products. Developments in technology and communication have changed manufacturing, offering new products, new techniques, and new ways of doing business. While the regional economy now enjoys a wide base of support from many industrial sectors, the trend of the last two decades has continued and much job growth has been in relatively low paying service jobs.

The largest sectors of employment in the Vermont portion of the Keene-Brattleboro Labor Market Area at the turn of the twenty-first century are the service industries (30.8 percent) and wholesale and retail trade (25.4 percent). Health care makes up almost 20 percent of services, and food stores 20 percent of retail trade. The Region's long-term economic shift away from agriculture, natural resources and manufacturing of durable goods to the service industries (most notably tourism, health, and education) reflects a statewide trend that began in the 1970's. In 1950, farms and agriculture employed over 35 percent of the state's workforce. In 1998, agriculture directly involved about 2 percent of the Windham Region labor force.<sup>1</sup>

While large businesses tend to be very visible and their expansion or contraction grabs headlines, small businesses are a significant component of the Region's economy. More than 75 percent of Windham County businesses employ nine or fewer persons, and account for 20 percent of employed workers. Traditionally, the small businesses sector tends to be where some of the most dynamic growth occurs. Having the majority of workers employed in numerous and diverse businesses also makes the Region less vulnerable to economic impacts from changes in any particular business sector or individual company. Brattleboro is the largest employment center in the Region, and one of the three largest in Southern Vermont. Brattleboro employment in 1998 exceeded the town population.<sup>2</sup>

The Region's economy was relatively stable from 1990 to 1994, during which time there were slight declines in the construction, retail trade, and government sectors, while other sectors showed an average growth of 2 percent. Wholesale trade and educational services experienced growth of over 5 percent in the same time period. From 1994 through 2000, Windham County and most of Vermont rode a national wave of economic prosperity. For the most part this growth was driven by factors outside the state: developments in technology and communications, and an unprecedented bull run of the stock market.

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<sup>1</sup> Vermont Department of Employment and Training, 4/18/01

<sup>2</sup> *ibid.*

Aspects of Vermont that may be loosely grouped under the heading “quality of life” merit a large portion of the credit for the state having been positioned to benefit from these national trends.

New technologies, particularly in communications, contribute to conditions for locating businesses in rural areas like the Windham Region. The Region’s strategic gateway location within a few hours drive of the northeastern U.S. metropolitan corridor provides an additional advantage specific to our area. Employment and income levels in the Region rose dramatically in latter half of the nineties, and regional unemployment declined to about 2.3 percent in 2000.

In 1998, the per capita income in Vermont was \$25,368 compared to \$23,233 in 1990, a 9.1 percent increase (adjusted for inflation to equal 1998 dollars). The per capita rate is based on working age population rather than number of actual workers, and a more meaningful comparison might be the change in household income for the same period. There was a change in median household income from an adjusted \$41,082 in 1992 to \$41,000 in 2000, a 0.1 percent decrease.

In other words, median income growth has been flat, in terms of purchasing power per household. This is consistent with national trends, which show middle to low middle incomes have not risen at the same rate as higher incomes. Both *The Vermont Job Gap Study* and the 1999 *Report of the Joint Legislative Study Committee on a Livable Income* document that a significant percentage of Vermont full time workers still do not earn enough to pay for all the basic necessities of living. The 1999 Joint Study found that about 10 percent of Vermont families with at least one full time worker did not earn a livable income. Both of these Vermont studies point out the costs that must be borne by our communities when families can’t meet basic needs. Providing livable wages for all workers in the Region is a demonstrably worthy and economically sound goal.

The Windham Region, like much of the rest of Vermont, has struggled to make a long, slow recovery from the decline of manufacturing that began in the sixties. The recent expansion, led by technology and by focused economic promotion, has contributed to a significant revitalization of partially abandoned downtowns and underutilized commercial and industrial sites. At the same time, there has been pressure for sprawling business and residential growth outside the traditional villages and downtowns. This has led to a growing concern that the character of the Region and the state as a whole may be changing in ways that undermine two of our major economic assets: the traditional rural Vermont landscape and the quality of life here. *The 1997 Windham Region Strategic Plan for the Economy* (included herein by reference) was developed as a tool to further the economic policies of the Regional Plan. A key recommendation of that *Strategic Plan* states:

To maintain and improve the area’s quality of life, the Region should promote the diversity of business and cultural activities and preserve the variety of resources that make it special.

Employment projections for 2001 to 2006 in Southern Vermont indicate that the fastest growing jobs will include Systems Analysts, Emergency Medical Technicians, Paralegals, and Numerical Control Machine Operators. The occupations with the largest job decline are expected to be Stock/Sales Clerks, and Farmers. Overall job growth is expected to be 21percent from 1992-2005.<sup>3</sup>

The Region continues to attract and keep businesses, because it offers an appealing environment for employees to raise families, it has a wealth of high-quality outdoor recreation resources, and it enjoys transportation access via the railroad and Interstate highway system. In 2001, the most visible challenge to economic growth may be meeting the need to provide affordable housing to those workers. It is difficult to find conclusive data, but anecdotal evidence suggests the Brattleboro area and the Region as a whole suffer from a shortfall in the creation of new housing units in an affordable range to significant portion of the workforce. This condition exists outside the Windham Region, through much of the Northeast U.S.

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<sup>3</sup> Vermont Department of Employment and Training, 2001

Market conditions, both local and national, have discouraged the creation of speculative building — which often is what produces multi-unit rentals and condominiums. National conditions include changes in Federal tax laws, such as the depreciation timeframe, that make commercial residential development financially less attractive than it formerly was. Additionally, local conditions make it challenging to create developments that have the residential densities necessary to maintain low per-unit costs. Solutions may include expansion of village and downtown infrastructure, in particular sewer and water, enabling the growth and development of traditional villages and downtowns. Given the costs involved and a strained local tax base, state and federal assistance will likely be key components to realizing this goal, a goal that meshes with a growing desire to minimize sprawl and encourage compact, mixed commercial, and residential development. Another significant aspect to consider is the nature of the build-out that may occur if and when pent-up demand has is given outlet. If the Federal government provides financial incentives for developers, then regional and local planning will be key factors in preserving the quality of life that is essential to Vermont's economic health.

## **SERVICES**

The service sector is the largest and fastest-growing sector of Windham County's economy. This includes all services other than education, lodging, amusements, and recreation. Of the largest service employers in the Region, 40 percent are health care providers, including The Brattleboro Retreat, Eden Park Nursing Home, Brattleboro Memorial Hospital, and Carlos G. Otis Health Care Center. The Region is a natural location for health care providers because its proximity to major urban areas gives access to specialized equipment and services. Some of these service providers are among the fastest growing and high-wage areas of the economy, in part because of the growth in the health service industry. But in general, while service is an important sector in terms of providing stable employment, wage levels overall, are lower compared to other sectors.

Higher paying service industries such as health care, business, professional, legal, and information services are dependent on communications and information technology. The growth of this sector will reflect the Region's access to and encouragement of telephone, computer, and cable enterprises. Bellows Falls is home to an important Internet Access Provider, and Marlboro College has established a technology graduate center in Brattleboro. These types of enterprise help to keep the Region competitive and attractive to technology dependent business.

## **TOURISM: TRAVEL, HOSPITALITY, RECREATION, AND ENTERTAINMENT**

The Windham Region has attracted tourists for generations. With the construction of Interstate 91 and the development of the ski industry, the Region has experienced a tremendous growth in tourism over the last 30 years. Its location in Southeastern Vermont brings it within convenient range of travelers from large urban areas. Brattleboro is at the junction of Interstate 91 and three major state highways, making it a gateway for travelers headed to other parts of the Region and Vermont. The past decade has not seen an influx of new skiers and the industry is searching for new markets, such as the younger snowboarding generation. Sparse snow winters and industry changes have made the ski business capital intensive and contributed to a decrease in the total number of operating ski areas. The surviving ones have grown in size and in scope of services, to the point that in peak seasons the resort area populations rival the Region's two traditional centers.

The three major components of the Region's tourism and recreation industry are ski resorts, summer and fall tourism, and seasonal and second homes. Each affects the economy in different ways and provides different types of employment. The first two are primarily seasonal industries and the last has year-round effects on the economy—many current full time residents of the Region first came to Vermont as seasonal tourists. Businesses that have benefited from the growth related to tourism and recreation include the

cultural arts, entertainment, lodging, restaurants, gasoline stations, retail shops, outdoor equipment sales, construction and building materials, and maintenance and repair services.

Tourism, recreation, hospitality, and entertainment have statistically been parts of the service and trade sectors. Taken as one block, however, tourism and travel-related industries have a dramatic effect on the economy of Vermont and the Region. A 1994 tourism marketing study sponsored by the Vermont Agency of Transportation and the Vermont Department of Travel and Tourism revealed that:

- Retail expenditure was the largest spending category (30 percent), followed by lodging (24 percent), food and restaurants (24 percent), local transportation (10 percent), skiing (6 percent) and recreation other than skiing (6 percent);
- Major segments of leisure travelers were: touring vacationers (18 percent), ski vacationers (10 percent), outdoor vacationers (8 percent), and special event attendees (7 percent);
- Two-thirds of overnight visitors came during the fair weather months of May through October;
- The most popular areas of the state to visit were the Southeast and Southwest regions, with the Mount Snow resort area being one of the 10 most popular attractions in Vermont; and
- Visitors were especially impressed with the quality of Vermont's rural environment, the friendliness of the people, and the sightseeing attractions. The only area in which Vermont was perceived as below par was in nightlife and related entertainment.

Heritage and cultural tourism provides another opportunity to further promote and increase tourism opportunities. It has the advantage of using assets that are already here and encouraging the preservation of the very details that distinguish Vermont. Heritage tourism, according to the National Trust for Historic Preservation, “means traveling to historic and cultural attractions to learn about the past in an enjoyable way.” With its wealth of historic villages and sites and cultural attractions, the Windham Region is well positioned to promote heritage tourism. One piece of the cultural heritage of Vermont is its long history of family-based farms, and agriculture remains a key feature and attraction in the “look and feel” of Vermont. Recent promotions of agri-tourism not only attempt to draw tourists, but provide markets for Vermont’s agricultural products and thus help to keep farming viable.

The Connecticut River Scenic Byway is an example of a large-scale heritage tourism project that involves the Windham Region. The project area stretches from the New Hampshire/Quebec border through the river valley to South Hadley, Massachusetts. In an inclusive corridor management planning process, communities along the corridor determine whether or not they desire to have the Scenic Byway pass through their community and, if they do, select a proposed byway route. The Scenic Byway is an opportunity to enhance and support economic development, and particularly the historic agricultural economy of the Connecticut River valley, in the communities that it passes through. Bellows Falls and Brattleboro both are developing Waypoint Interpretive Centers that will provide informational focal points for tourism along this corridor.

The proposed development of the Molly Stark Trail along Vermont Route 9 is another potential enhancement to heritage tourism in the Windham Region. The Molly Stark Trail traverses all of Southern Vermont and development of a scenic byway is a priority for both the Windham Regional Commission and the Bennington Regional Commission.

The success of the Region's travel and tourism industry is directly linked to the viability of its agriculture industry. Urban dwellers are drawn to the area's rural environment, viewing farms as scenic centerpieces of the surrounding countryside. Tourism provides a source of employment and a market for products from the farm community, and is a wealth generator for the overall economy and a tax source for the state



treasury. Each farm that goes out of production and into development diminishes the landscape and makes it less appealing to visitors. Developing alternative agricultural models to the beleaguered family dairy farm may be important for the overall economy of the Region.

## LAND-BASED INDUSTRIES

Land-based industries include not only agriculture, forestry, and fishing, but also specialty foods and food processing, wood products, and stone industries. The Region's largest land-based industries feature specialty food producers such as Vermont Bread, Vermont Pretzel, the internationally honored Vermont Shepherd Cheese, and several beverage companies. Lumber companies such as Cersosimo Lumber and Georgia Pacific also make up a large portion of the sector.

## AGRICULTURE

Agriculture plays an important role in defining the Region's lifestyle and landscape, and it has long contributed to the stability and diversity of the regional economy. From 1982 to 1992 the number of farms in Windham County decreased from 298 to 270. But from 1992 to 1997 the number of farms increased to 305.<sup>4 5</sup>

In part, this can be attributed to increased consumer interest in products from Vermont during that time. The demand for Vermont maple syrup, cheddar cheese, locally grown apples and the production of locally made products and their markets are doing well. The market value of agricultural products sold in Windham County calculated in average total sales per farm in 1992 was \$52,170. Average total sales per farm in 1997 were \$66,775. After adjusting for inflation, this represents slightly more than a \$7,000 real increase in average sales per farm, even though the average farm size is decreasing in the County.

While the number of large farms in Windham County essentially remained the same during this time, the average size of all farms decreased from 163 acres to 154 acres. One-third of the farms are 50-179 acres. Overall, land in farming increased by close to 3,000 acres in the County over the same period of time<sup>6</sup>.

Production of fruits, vegetables and maple sugar bring significant commercial returns. The 1992 Census of Agriculture reported a 10 percent increase in the number of farms producing vegetables, orchard fruits, and greenhouse crops for sale since 1987, resulting in a 22.6 percent increase in sales from these "specialty crops." Sales of crops, including nursery and greenhouse crops, increased by 50 percent between 1992 and 1997. The number of existing farms producing nursery and greenhouse crops also doubled in the County during this period (1997 Census of Agriculture). But some sectors, such as apple and other orchard fruit production, are beginning to undergo significant change in 2000 as global and hemispheric economic changes bring new competition and new pressures to bear. And the Region is expected to see a significant decline in orchard fruit production in the next few years.

The number of Windham County farms in livestock, poultry, and related products decreased overall, with the exception of the farming of sheep, lambs, and wool, which increased by 37 percent. Sales and the number of farms in cattle and calves (beef and dairy) is down from 1992 and the number of farms in dairy has decreased, but total sales of dairy products has increased slightly. While total sales of crops, including nursery and greenhouse crops, nearly doubled between 1992 and 1997, total sales from livestock, poultry, and their products still outweigh total sales from crops. Dairy products account for nearly 80 percent of

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<sup>4</sup> U.S.D.A. 1997 Census of Agriculture

<sup>5</sup> These data can be confusing. For example, the U.S.D.A. for the purpose of the census, defines a farm as *any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year*. The State of Vermont, for the Current Use Program, defines a farmer as *a person who earns at least one-half of his annual gross income from the business of farming*. Directly comparable federal/state data are not available.

<sup>6</sup> U.S.D.A. 1997 Census of Agriculture

total sales in livestock and related products<sup>7</sup>.

## **FORESTRY**

Forests are one of the Region's most important economic resources. Approximately 86% of the Region is forested and all but a small percentage of that land (0.7 percent of Windham County) is considered commercial in that it supports periodic harvest. These forests provide wood products, game for hunting (which brings in significant income to the Region), maple products, and the basis of a livelihood for many people.

Timber industries have played an important role throughout the Region's history. The commercially important forest species in the Region are sugar maple, white pine, white ash, red oak and the birches. Hemlock is less important commercially, but is widespread in the Region and is often harvested for paper pulp. In 1998, Windham County ranked first in total for sawlog and veneer log harvest with 29.989 million board feet. The County is typically ranked in the top four counties for overall sawtimber harvest, leading the state last year in the harvest of red oak (1.495 million board feet) and white pine (9.976 million board feet), two important species for the state in terms of value and yield. In 1999 Windham County also ranked first in harvest of yellow birch (2.080 million board feet), cherry (1.255 million board feet), and sugar maple (6.260 million board feet)<sup>8</sup>.

Windham County has the second highest number of sawmills in the state. Brattleboro is host to one of the largest kiln drying facilities for lumber in the United States. A number of secondary wood-related industries including construction materials, furniture manufacture, toy manufacture, cabinetry, boat building, musical instruments, and basket making are located in the Region. The strength of the industry is directly related to the availability and good management of forestlands. A more detailed description of the importance of forestlands is in the Forest Resources Section.

## **WHOLESALE/RETAIL TRADE**

Between 1980 and 1990, the number of trade sector employees in the Region increased by 55 percent. The growth rate in the wholesale sector during that period (121 percent) reflected the arrival and growth of two food-warehousing companies among the top employers in Brattleboro. Here again, the Region's roadway network has been an advantage to its economic development. In 1998, retail trade made up 17.5 percent of the Region's employers, making it the second largest sector of the economy. Average wages for retail are the lowest of all sectors (\$9.29/hr in 1999), while wages for the wholesale trade sector, only 7.9 percent of employees, are among the highest (\$14.93 in 1999.) The location and design of retail business can also have a great impact on quality of life issues such as road congestion, land use, and aesthetics.

Most of the service and trade establishments have developed in Brattleboro and Bellows Falls, in a few villages, and in the major resort areas. In Brattleboro and Bellows Falls, public and private initiatives have been undertaken to improve the physical and financial conditions in the central business districts. The Region's villages, particularly those adjacent to resort areas (Londonderry, Bondville, West Dover and Wilmington) have grown, making them attractive commercial alternatives to Bellows Falls and Brattleboro. The resort areas themselves have expanded to meet vacationers' demands at the resorts. This commercial development has occurred in conjunction with expansion of recreational facilities at the ski resorts for four-season use.

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<sup>7</sup> *ibid.*

<sup>8</sup> Vermont Forest Resource Harvest Summary, 1999

## MANUFACTURING

The manufacture of intermediate and finished goods was the sector of largest employment in the Region from 1930 until the 1980's, when it fell behind both service and trade sectors in terms of employment. In the 90's manufacturing began a comeback in the Region, and in 1998 it accounted for 15.4 percent of the employment, an increase of 6 percent from 1990 levels. Although no longer providing the highest wage rates in the Region, manufacturing continues to provide relatively high-paying jobs with an average wage in 1999 of \$13.65.

Manufacturing activity has taken place primarily in Brattleboro and Rockingham. Each town has increased and improved land available for manufacturing. Brattleboro's Exit One Industrial Park offers 92 acres and the Southern Vermont Industrial Park on Putney Road has 70 acres. Both have municipal water and sewer and convenient access to Interstate 91. The Bellows Falls Industrial Park is 31 acres and also served by municipal water and sewer systems and convenient access to Interstate 91. The plan for the Bellows Falls Designated Downtown includes an industrial redevelopment area to focus on revitalizing underutilized industrial buildings within walking distance of the Village Square.

The Brattleboro Development Credit Corporation and the Bellows Falls Area Development Corporation encourage and support manufacturing industries in the Region. These organizations have worked with the Vermont Industrial Development Authority to secure aid for industrial development. The WRC has been involved in various community development programs designed to create low-interest loans for business and industry.

## EDUCATION

Among the Region's major employers, School Supervisory Unions and the School for International Training provide educational services for local use and export. In addition, there are several independent primary and secondary schools as well as a branch of Vermont Community College and private colleges. The wide array of educational services offered in the Region draws students and families from all over the world, which contributes to the demand for lodging, dining, transportation, and retail industries. Some area schools occupy unique market niches: Landmark College and Greenwood School in Putney serve learning disabled students, while the Austine School provides for hearing disabled people and their families. World Learning Inc., the seventy-sixth largest employer in the state, focuses on international studies and training.

As an industry, education accounted for nearly 8 percent of the gross state product in 1989. In 1998, private and government education accounted for 11 percent of employment in the Vermont portion of the Brattleboro-Keene labor market area<sup>9</sup>. The potential for growth in this sector is great, especially considering increased access through distance learning technologies. The technology-oriented Marlboro Graduate Center offers training opportunities for current residents of the Region and serves as a magnet to new technology based business.

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<sup>9</sup> VT DET Labor Market Bulletin 3<sup>rd</sup> Quarter 2000

# NATURAL RESOURCES

*A new degree is taken in scholarship as soon as a man has learned to read in the wood as well as he reads in the study.*

Ralph Waldo Emerson, 1838

Protection of natural resources begins with an understanding of the complex balance of energy, ecosystems, and all living organisms. This interconnected web of life-support systems makes the sustainability of natural resources both a global and a local issue. Rapid consumption, misuse, or degradation can deplete and destroy both renewable and non-renewable natural resources.

The Windham Region is fortunate to have a wealth of valuable natural resources. Extensive forested lands, river valleys, upland streams, and wetlands create an ecosystem in the Region that sustains numerous plant and animal communities in addition to supporting human habitation. This interconnected ecosystem of humans, animals, plants, earth, air, and water can be sustained through careful resource use and preservation.

## SURFACE WATERS

Surface waters are predominant landscape features throughout the Region, often determining both the location and form of regional settlement. Surface waters include rivers, permanent and intermittent streams, lakes, ponds, vernal pools, and wetlands. The Region's abundant surface water is a valuable resource providing:

- Aquatic and wildlife habitat;
- Recreational opportunities;
- Scenic enjoyment;
- Riverine aquifer recharge;
- Water for drinking and irrigation;
- Hydroelectric generation; and
- Assimilation of properly treated waste.

## WATERSHEDS

The majority of the Windham Region is located within the Connecticut River basin with small portions located in the Hudson River and Lake Champlain basins. These basins contain many rivers and tributaries, each with their own unique values and uses. The table on the following page shows the Windham Region's major watersheds and their respective acreage within the Region.

The principal surface water planning issues are:

- The protection of water quality from non-point sources of pollution;
- Remediation of waters identified as impaired by the state water quality assessments;
- Stream channel stability and floods;
- Public access;
- Education;
- Dam management;
- Use of waters for snowmaking;
- On-site septic management; and
- The management of waters to accommodate competing uses.

WINDHAM REGION WATERSHEDS		
BASIN/WATERSHED	ACREAGE IN REGION	PERCENT OF REGION
CONNECTICUT RIVER BASIN	592,271	99
West River	238,120	40
Williams River	21,648	4
Saxtons River	49,875	8
Deerfield River	174,482	29
Connecticut River Tributaries	108,146	18
CHAMPLAIN BASIN	498	.08
Mill River – Otter Creek	498	.08
HUDSON RIVER BASIN	6,422	1
Batten Kill	5,410	.9
Hoosic River	1,012	.1
TOTAL	599,191	100

## LAKES AND PONDS

Within the watersheds of the Region, there are 28 lakes and ponds of over 20 acres. These waterbodies provide their own special habitats and recreational opportunities, as well as issues. Some of the issues particularly pertinent to lakes and ponds are exotic plants such as Eurasian milfoil, competing recreational uses, and dam management and removal.

## WETLANDS

The Region's wetlands are vital for their abilities to recharge groundwater, regulate and filter surface water flow, store water, mitigate floods, and provide aquatic and wildlife habitat. Consequently, they require careful protection. The National Wetlands Inventory (NWI) Maps show Class I and Class II wetlands. Class I wetlands are so classified through a petition process. There are currently no Class I wetlands in the Windham Region. Class III wetlands are not mapped and are usually less than ½ to ¼ acre in area.

## WATER QUALITY

Under Section 303(d) of the Federal Clean Water Act, states are required to monitor surface water quality and to publish the results periodically. The most recent report for Vermont, dated July 6, 2000 shows the great majority of surface waters in the Windham Region to be in good condition. There are a number of exceptions, however, and their locations are shown on the accompanying map of “Impaired Surface Waters” together with the basic causes of their impairment. Additional details are contained in the appendices.

WINDHAM REGION LAKES AND PONDS OVER 20 ACRES		
LAKE/POND NAME	TOWN	ACREAGE (SURFACE AREA)
Ball Mountain Reservoir	Jamaica	85
Burbee Pond	Windham	23
Cole Pond	Jamaica	41
Gale Meadow Pond	Winhall/Londonderry	195
Gates Pond	Whitingham	30
Grout Pond	Stratton	86
Harriman Reservoir	Whitingham/Wilmington	2,157
Haystack Pond	Wilmington	27
Howe Pond	Readsboro	51
Jacksonville Pond	Whitingham	20
Lily Pond	Londonderry	21
Lily Pond	Vernon	41
Lowell Lake	Londonderry	102
Minard's Pond	Rockingham	46
North Pond	Whitingham	20
Pleasant Valley Reservoir	Brattleboro	25
Lake Raponda	Wilmington	116
Sadawga Pond	Whitingham	194
Searsburg Reservoir	Searsburg	25
Sherman Reservoir	Readsboro/Whitingham	16
Shippee Pond	Whitingham	24
Somerset Reservoir	Somerset/Stratton	1,597
South Pond	Marlboro	68
Stratton Pond	Stratton	46
Sunset Lake	Marlboro	95
Townshend Reservoir	Townshend	100
Wantastiquet Pond	Weston	44
Weatherhead Hollow Pond	Guilford	33
TOTAL		5,328

Source: *Uses of Public Waters Rules, Vermont Water Resources Board*

## **POLLUTION**

The primary causes of non-point source water pollution have been identified as construction activity near shore lands and the removal of riparian vegetation. Riparian buffers are important for removal of chemical

pollutants and sedimentation from runoff, preventing them from entering surface waters. Other sources of non-point water pollution include excessive or inappropriate use of chemicals for agricultural purposes, road salts, and inappropriate disposal of industrial or household hazardous products.

## **DAMS**

There are numerous small and large dams constructed on streams and rivers in the Windham Region, providing a variety of benefits including power generation, flood control, and recreational opportunities such as swimming and boating. However, these structures can have significant negative environmental impacts as they contribute to stream siltation, alter water level and flow fluctuations, change water temperature, and impede fish passage. This is of particular concern in the quest to restore the Atlantic salmon to the Connecticut River basin. Dam operations continue to be of regional concern. New programs have been developed to evaluate dams and aid property owners with the removal of small private dams or their improvement for fish passage.

## **RESORT INDUSTRY**

Ski area expansions may require additional water for snowmaking and construction of new snowmaking ponds. New regulations require ski areas to bring their water withdrawals for snowmaking into compliance with minimum flow regulations as part of any expansion of snowmaking. Ski areas in the Region have also become heavily involved in the construction of resort housing, causing significant demands for potable water supplies and sewage disposal.

## **MANAGEMENT OF WATER RESOURCES**

Improved watershed management and cooperation among towns, state and federal agencies, and area residents will be required to meet competing uses of the Region's rivers, lakes and ponds. The Basin Planning process outlined in the 2000 Vermont Water Quality Standards (WQS) sets forth a process for developing management plans for the Waters of the State.

The WQS also establish classification of all surface waters into classes and management types. Once classified, the waters must be managed to obtain and maintain the designated classification. Classes are A and B, with management subsets in each. Class A waters are specifically identified in the WQS; all other waters are Class B and have not yet been assigned to a particular management type.

Class A(1) Ecological Waters are to be managed to achieve and maintain waters in a natural condition; Class A(2) Public Water Supplies are to be managed for public water supply purposes; Class B waters "shall eventually be designated as either Water Management Type 1, Type 2, or Type 3 by amending these rules." These management types refer to allowable departures from reference conditions for a variety of criteria, such as aquatic biota, aesthetics, public water supply, irrigation, and recreation. The lower classification types may vary further from the desired reference condition.

## **GROUNDWATER**

Groundwater provides the primary supply of potable water for most of the Region. Despite its high resource value, it remains a poorly understood resource. Groundwater moves beneath the ground through aquifers, which are underground water bearing formations of sand, gravel and fractured rock. Due to Vermont's geology, groundwater is often unpredictable as it travels through a maze of cracks in bedrock formations. It can infiltrate rock fractures and travel quickly in unknown directions for long distances, or break out to the surface in a short distance.

Groundwater occurs in the unconsolidated sediment of streams and buried valleys and in bedrock fractures. While groundwater potential in areas of unconsolidated sediment is generally favorable, wells producing water from rock fractures usually have low yields (ranging from two to 15 gallons per minute). The Region's mountains and uplands have either exposed bedrock or bedrock covered by a thin layer of glacial till with low permeability; in these areas bedrock fractures are the primary source of groundwater.

## **POLLUTION**

Groundwater generally moves through soils very slowly. As a result of its characteristic slow movement, the cleansing processes that occur through dilution and movement in surface water do not take place underground. When an aquifer becomes polluted, simply removing the source of contamination does not clean up the groundwater. A contaminated aquifer may remain polluted for many years and practically forever in some cases. Groundwater occurring in rock fractures is highly susceptible to contamination. While unconsolidated sediment can usually filter out organic pollution contained in water, the same water can travel for miles through rock fractures without appreciable purification. Once contamination occurs, control and abatement are extremely difficult. Consequently, one of the most important challenges of environmental planning is to prevent pollutants from entering rock fractures. Potential groundwater pollutants include septage from improperly designed or functioning septic tanks and leaching fields for waste water, leakage from underground gas and oil tanks, and improperly disposed of chemical or radioactive materials.

## **GROUNDWATER CLASSIFICATIONS**

The Vermont Agency of Natural Resources (ANR) has begun to prepare detailed groundwater maps and to classify groundwater. There are four groundwater classes defined in Title 10 VSA, Chapter 48 Groundwater Protection, Subchapter 2, Section 1394, as follows:

Class I	Suitable for public water supply. Character uniformly excellent. No exposure to activities that pose a risk to its current or potential use as a public water supply.
Class II	Suitable for public water supply. Character uniformly excellent but exposed to activities that may pose a risk to its current or potential use as a public water supply.
Class III	Suitable as a source for individual domestic water supply, irrigation, agricultural use, and general industrial and commercial use.
Class IV	Not suitable as a source for potable water but suitable for some agricultural, industrial and commercial use.

By statute, all groundwater of the state is classified as Class III water unless reclassified by the Secretary of ANR under provisions of Title 10 VSA, Chapter 48 Groundwater Protection, Subchapter 2, Section 1394. The groundwater beneath the Windham Solid Waste Management District landfill in Brattleboro has been reclassified to Class IV. All other groundwater in the Region remains Class III. A new groundwater protection rule and strategy was adopted by ANR in January 2000. This action is designed to “minimize risks of groundwater quality deterioration by limiting human activities that present reasonable risks to the use classifications...”

## **MAPPING**

Without good maps of the location of important groundwater, it will be difficult to plan for the long-term protection of this resource. This will be especially important in the siting of landfills and in planning for village centers that need a public water supply to accommodate village expansions. (Note: For further discussion on potable water supply, wellhead protection areas, and source protection areas see Community Resources.)



## **AIR QUALITY**

Air in the Region generally meets national ambient air quality standards, although for the pollutant ozone, the standard sometimes is met by a slim margin. Regarding clarity of the atmosphere, the Vermont Agency of Natural Resources has noted that visual range in Vermont—as measured by the number of days with visibility greater than 40 miles—is declining.

The Region’s air quality is impacted by both local and distant sources of air pollution. Local sources include discharges from industries, residential activities, and significantly from non-point sources such as automobile operation.

Vermonters in their daily activities are responsible for producing as much air pollution as their fellow citizens in other states. Due to its rural character and relatively small population and industrial base, the Region’s air quality is influenced more by combustion of fuels for residential heating and by car and truck emissions than by other sources.

The continuing increase in automobile use is a major reason why Vermont’s air quality has not improved as much as expected while national reductions in air pollution emissions have been occurring. Although automobile and truck engines burn cleaner and run more efficiently than they did 10 or 20 years ago, the total amount of air pollution from the transportation sector in Vermont has remained constant. Vermont’s increased use of fuel has meant that levels of nitric acid in rainfall, nitrogen dioxide, and ground level ozone have remained relatively constant in the State over the last 20 years.

The NAAQS’s are legally enforceable standards, carrying the weight of federal law. Should it be found that an area does meet any one of these standards, the area is deemed to be a “non-attainment area” and federal law requires state government to develop and file with federal government a “State Implementation Plan”—better known as a SIP—for attaining the standard.

## **NOISE POLLUTION**

Unpleasant or otherwise unwanted sound that travels through the air creates another type of pollution. Noise pollution may be caused by road traffic, airplanes, recreational vehicles, construction and industrial equipment, personal sound equipment, and yard equipment. Both humans and wildlife can be negatively affected by noise pollution.

## **FEDERAL STANDARDS**

Due to the long-range transport of air pollutants, it is difficult to control air quality on a local, regional, or even state level. We depend upon federal standards to regulate both imported and locally generated air pollution. The U.S. Environmental Protection Agency (EPA) sets National Ambient Air Quality Standards (NAAQS) to gauge air pollution. Six criteria pollutants are measured: particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, lead, and ozone. If a state does not meet one or more of the criteria pollutant standards it is considered in “non-attainment.” Vermont is fortunate to be in “attainment” for all criteria pollutants, whereas parts of our neighboring states are not. But while Vermont’s air quality currently meets the NAAQS, it is met by the slimmest of margins for some criteria and could easily fall into non-attainment<sup>1</sup>.

## **FOREST RESOURCES**

### **REGIONAL OVERVIEW**

Approximately 509,000 acres (86 percent) of the Windham Region is forested and produces enough

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<sup>1</sup>Currently, air quality in Vermont meets the NAAQS for carbon monoxide, lead, sulfur dioxide, nitrogen dioxide, and ozone. In the case of ozone smog and fine particulate matter, available data indicates that levels are very close to the federal standards. Vermont Committee to Ensure Clean Air, Draft Report, 2001.

timber annually to make the Region one of the leading producers in Vermont, especially of high quality northern hardwoods. Windham County also has the most standing timber, 3.4 billion board feet, in the state. The predominant ownership is private, non-industrial (about 72 percent), with industry and government sharing the rest. The headwaters of the major streams and rivers are heavily buffered by forestland, preserving soils, and water purity at the source. Steady population growth and second-home growth have increased development pressure in forested areas.

The timber industry in Vermont is part of a worldwide market with a long-term trend of rising prices for high quality hardwoods. This resource, coupled with a vigorous Canadian market for softwood and hardwood sawlogs, has placed Windham Region forestland owners in a tempting position to harvest and send a substantial volume of logs out of the Region and Vermont to wood processors elsewhere. With about 30 million board feet of sawlogs and veneer logs harvested annually, the regional economic effect is significant.

## **A MULTI-VALUED RESOURCE**

Forests play a major role in the ecological, economic, and social health of the Region. As a major component of our landscape, forests form the environmental setting for human activity, furnish habitat for wildlife, and contribute to water and air quality. They provide employment to foresters, loggers, artisans, and forest-product manufacturers, and also support a thriving recreation and tourism industry. In an increasingly populous and urban world, the Region's forests offer reminders of Vermont's heritage and a traditional, rural lifestyle that appeal to residents and visitors alike.

Forestlands include:

- Productive forest soils;
- Timberlands;
- Plant and wildlife habitats;
- Riparian areas and wetlands;
- Unique and fragile sites;
- Recreational values;
- Scenic quality; and
- Historical/cultural/archeological sites (stone walls, foundations, stage roads, etc.).

The potential for use conflicts creates a need for thoughtful management that embodies sound silvicultural practices while permitting multiple, compatible uses. Economic pressures threaten many forested lands with conversion to non-forest uses, yet resource values are threatened or degraded if these lands cannot be maintained in large, interconnected blocks.

## **REGIONAL FOREST ECOLOGY**

Vermont's forests have recovered from a time when agriculture dominated a largely treeless landscape, followed by heavy logging of the young forests that first colonized the disused farmlands. These habitat changes have altered the relative abundance of various plant and animal species. With the maturing of today's forest, a matrix of fields, pastures and woodlots in rural portions of the Region increasingly has become unbroken forest. By contrast, in and around villages and other settled areas, an expansion of suburban development onto former farms is eliminating or fragmenting the forest.

Our forested lands should provide diversity that will allow a healthy mix of plant and animal communities to thrive. One factor working against such diversity is the impact of the deer herd browsing on the saplings that would ordinarily renew the diversity of the forest. Deer favor feeding upon certain species of young trees and, when or where the deer population is overly abundant, their intensive, selective browsing is limiting the regeneration of species such as red oak, white ash, and sugar maple.

We must reconcile forest uses directly serving economic ends with the need for large, undeveloped and relatively undisturbed, and interconnected blocks of forest that can meet the habitat needs of wide-ranging

wildlife while minimizing human-wildlife conflicts. Forested sites of special natural value need identification and may require protection. Education aimed at improving understanding and appreciation by landowners and by the general public of the natural communities within the forest is essential to striking the right balance between natural, economic, and social uses of those resources.

## **FOREST ECONOMICS**

Forests make a significant contribution to the economy of the Windham Region. Recently, markets for good quality saw timber have been strong. That strength makes improvement harvests in many woodlots commercially viable, but also can persuade owners to liquidate the timber resource completely. Some industry-owned forestland in the Region has been heavily cut and sold for development. Research suggests, however, that the private owners of the great majority of the Region's forests are not motivated by economic incentives alone, but value highly the non-economic resource attributes of the land. Nevertheless, the typical landowner is of mature age, and the threat of a permanent conversion to non-forest uses looms large when ownership passes to a younger generation or other new ownership.

## **SOCIAL VALUES OF THE RESOURCE**

The Region's forests offer a rich selection of recreational options. Skiing and snowboarding, snowmobiling, mountain biking, hiking, hunting and fishing, wildlife observation and photography, and foliage appreciation all are popular in their seasons. Many view the resource as valuable as a precious natural environment and a source of solitude, as well as a host for recreation and forest-based employment. The resource accommodates and satisfies this wide range of values although some competing uses may at times be in conflict. State and federal public lands offer opportunities for a backcountry wilderness experience that individual private lands in smaller block sizes cannot match, and they also support the most concentrated commercial recreation in the form of ski resorts. Yet non-industrial private lands dominate our forested landscape, and their contribution to recreation and aesthetics is essential.

Questions as to whether the acquisition of additional public land is desirable, debate regarding the proper role of public and private land for environmental, economic, and recreational purposes, and consideration of policy and regulatory intervention to protect or advance social and environmental values all must be informed by regional specifics. The Windham Region's forest resource situation is unlike that of national forests in the western United States or the industrial forests in Maine, and one-size-fits-all prescriptions are distinctly unhelpful.

## **CHANGING DEMOGRAPHICS**

The changing demographics of the Windham Region, particularly in woodland ownership, are beginning to have an effect on forest management practices, as well as on public perceptions, attitudes and influence on regional forest policies. Some research indicates that new woodland owners in the Windham Region and Vermont are younger and less traditionally land-connected than historic owners and that woodland transfers are more frequent. People from outside of Vermont have taken an increased interest in and have increased influence on management of the Green Mountain National Forest.

## **FRAGMENTATION**

Fragmentation of the forested landscape can be caused by any number of types of development. Subdivision of land and construction of new homes and businesses and their attendant infrastructure create smaller, divided, even isolated parcels that are too small or inaccessible to be managed or harvested effectively or efficiently. Sales by long-term industrial owners may add to this trend. Fragmentation is especially harmful to wildlife as habitats and habitat elements are eliminated or separated.

A parallel problem that is often associated with fragmentation is parcelization, which occurs when large forest tracts are sold as smaller lots. Even if these lots are not developed, there is often a change in attitude of the landowners and a decrease in the land base available for management. This can affect people employed in the forest products industry and decrease opportunities for recreational activities.

## **LEGISLATIVE INTERVENTION**

Legislative intervention in forest-management practices and changes in forestland taxation under the Use Value Appraisal (Current Use) Program have affected both industrial and private ownership. In particular, private owners have created or inherited long-term management plans that are professionally monitored. In addition, increased public land acquisition, federal, state and local, is adding substantially to conservation of forestland in the Windham Region.

In 1997 the Legislature enacted the “Heavy Cutting” law with the intent of limiting clearcutting and severe highgrading (cutting only the best quality trees and leaving the worst quality trees.) A permit is needed for a heavy cut that exceeds 40 acres or 80 acres within a two-mile radius. In the Windham Region the nature of timber harvesting tends to be on a smaller and lighter scale; since the law’s inception there have been only four applications submitted within the Region. The forestry standards written into this legislation have helped to slow large-scale, indiscriminate liquidation and clearcutting, but tree quality in the residual stand can be quite low and yet still be in compliance.

## **EDUCATION**

The education of woodland owners in the Windham Region has been enhanced by the requirements of the Current Use program and by the continued efforts, over 50 years, of the Woodlands Owners’ Association. In addition, woodland owners have become more aware of management options to preserve and enhance wildlife habitat by educational programs sponsored by Vermont Coverts and other organizations and by cooperation between woodland neighbors. Public interest has been increased by the actions of Vermont policy makers to begin some regulatory efforts to improve forest management practices. Professional programs for loggers and other forest workers (for example, the Logger Education to Advance Professionalism or LEAP program) have increased safety levels and improved practices. Increased recreational use of forestland is enhanced by a variety of educational programs, such as those offered by the Bonnyvale Environmental Education Center (BEEC).

## **SCENIC RESOURCES**

The Region enjoys exceptional scenic quality. Mountain landscapes, farm landscapes, historic villages and towns, ridgelines, the night sky and nighttime landscapes, shorelines, and scenic views and corridors are all highly vulnerable to development. Scenic resource protection measures available to the Region's towns include:

- purchase of scenic lands;
- scenic easements, or acquisition of development rights;
- review of the scenic impact of public investment activities;
- designation of scenic roads;
- public education; and
- regulation through zoning and subdivision regulations and the Act 250 development review process.

Maintaining scenic quality requires coordination of these techniques. Many structures such as utility poles, telecommunication towers, gas stations, and streetlights are visually incongruous with our scenic landscape. Careful planning and design will provide development opportunities without adversely affecting the scenic value of the landscape.

## **SKY GLOW**

Light pollution or “sky glow” is a cumulative and increasing problem, especially near the urban clusters along the Region’s eastern border and near major resort development centers. Light projecting upwards from these areas produces a glow near the horizon which diminishes the natural quality of the nighttime landscape and night sky. As these urbanized areas continue to expand, special consideration needs to be

given to lighting design in order to minimize this cumulative adverse effect.

## **NATURAL AREAS, FRAGILE AREAS AND WILDLIFE RESOURCES**

Natural and fragile areas are landscape features with ecological, educational, scenic, and contemplative value. They provide ecological preserves of relatively unaltered environments that are important to wildlife and the natural heritage of the Region.

### **STATE LEGISLATION**

State legislation provides a means to designate Natural Areas (10 V.S.A. Chapter 83) and Fragile Areas (10 V.S.A. Chapter 158). By law, Natural Areas are owned by the Vermont Department of Forests, Parks and Recreation. Any party can own a Fragile Area, but it must have been determined to be of statewide significance. These designations provide protection and the assurance that the areas will be managed to maintain their natural integrity. Hamilton Falls, on Cobb Brook in Jamaica State Park, is the Region's only state-registered Natural Area. Consisting of a 40-50 foot high steep cascade with pools above and below and a mile-long chain of smaller cascades, falls, and pools, the site is exceptional for its geology, botany, setting and pristine water. The only state registered Fragile Area is the J. Maynard Miller Memorial Forest (the Black Gum Swamps) in Vernon. Black gum is a tree species of more southerly latitudes; this disjunct forest community is probably a relic from a warmer postglacial climatic period (between 3,000 and 5,000 years ago) when many southern plants extended their ranges into Vermont.

### **LANDS ABOVE 2,500 FEET**

Although not formally designated as such, areas above 2,500 feet in elevation are also fragile areas in Vermont (see map). Lands above 2,500 feet are especially vulnerable natural environments because of their generally thin soils, steep slopes, sensitive vegetation, important wildlife habitats and greater than average precipitation. Some 24,800 acres (4 percent) of the Windham Region are above 2,500 feet in elevation.

### **ECOLOGY**

The Windham Region is rich in areas of high ecological value. The Vermont Non-game and Natural Heritage Program tracks native rare plants and animals and plant communities that are Threatened or Endangered. These species and communities are considered rare because they have particular habitat requirements, are at the edge of their ranges, or are vulnerable to disturbance or collection. The general locations of these species and habitats are mapped using GIS and species descriptions are available through the state program. The Windham Region is home to numerous Natural Heritage sites and species. These species and their habitats deserve an extra level of protection. The Conte Fish and Wildlife Refuge EIS has identified four areas in the Region as nationally important fish and wildlife habitats: the West River including the Rock River, Winhall River and Wardsboro Brook tributaries, primarily due to the potential for Atlantic salmon restoration; Westminster Flats, for its waterfowl habitat; the Retreat Meadows, for its high value wetland ecology; and the Putney Mountain unit for its Northeastern Bulrush habitat.

### **FISH HABITAT**

Most of the Region's rivers and streams provide important cold-water fish habitats. Shaded stream banks, clean gravel and rock bottoms, and clean, cool water are necessary to maintain these cold-water fisheries. Lakes, ponds, and larger slower moving rivers provide warm-water fish habitat. Healthy fisheries are important for both their ecological and economic value. Sedimentation from runoff, bacteria from septic systems, clearing of streambank vegetation, damming of rivers and streams, and lowering in-stream water flows all impact negatively on these important fish habitats. Wetlands and other surface waters also provide specialized habitats for fish, reptiles, amphibians, mammals and migratory birds. Stream buffers and corridors provide important wildlife travel corridors. (Note: For further discussion of fish and wildlife resources, see also Surface Waters in this Chapter.)

## **REMOTE FORESTED AREAS**

The mountainous, forested landscape remote from community centers is the stronghold for the Region's large mammals, which include black bear, moose, deer, bobcat, fisher, coyote, otter, and beaver. Completing the forest ecosystem are the smaller mammals, reptiles, amphibians, game birds, raptors, and many valued songbirds and insects that depend on the Region's diverse forest species. A critical state and regional issue is the maintenance of large tracts of connected forestland to support these species. Certain deer wintering areas and bear habitat are regionally significant necessary wildlife habitat (those habitats needed for a species to continue to thrive within that area). For wintering deer, low-lying softwood stands with southern exposures provide critical shelter from deep snow and cold temperatures. Stands of mature beech and oaks, accessible wetlands, and newly regenerated soft mast areas provide important feeding habitats for the black bear. Bear travel corridors supply a necessary link between feeding and breeding areas. These areas are particularly important since food sources and supplies vary from season to season and from year to year. New roads, guardrails, and construction of homes and other forms of development, as well as indiscriminate timber cutting and outbreaks of tree disease, endanger both the quantity and quality of these important wildlife habitats.

## **SOILS AND TOPOGRAPHY**

### **SOIL CHARACTERISTICS**

Soil characteristics impact land uses such as farming, forestry, mineral extraction, and commercial development. Prime agricultural soils that are rated high for crop production potential are very limited in the Region, and are located primarily in the river valleys. Since most primary agricultural soils are flat and well drained, these soils are targets for development. Soils suitable for sand and gravel extraction are also limited within the Region. Many of the Region's soils can be shallow, unstable, highly erodible, wet or poorly drained. Wet soils may cause basement flooding and failure of footings, foundations, underground piping and septic systems. Road construction on wet sites can be damaging and prohibitively expensive. Drainage of excessively wet soils is often not an acceptable solution because of expense, rate of failure and potential for environmental damage. Any of these features alone, or in combination with steep slopes, are critical factors in determining appropriate land use in the Region.

### **EARTHQUAKE RISK**

Southeastern Vermont is considered to be at moderate risk of a moderate strength earthquake. This assessment is based on the historical occurrence of earthquakes nearby. Unstable soil factors can accentuate soil movement and increase subsequent earthquake damage.

### **SEWAGE DISPOSAL**

Development in the Region has traditionally been encouraged on soils suitable for in-ground sewage disposal systems. Permeable soils are often closely associated with sites having high potential for aquifer recharge, and pollution of subsurface and surface waters may result from development on these soils. The travel time of liquid wastes, the rate of absorption and the location of groundwater and surface waters are all important factors to consider in planning development on permeable soils.

## **MINERAL RESOURCES**

Mineral resources include deposits of sand, gravel, and other minerals, such as granite, slate, limestone, sulfide, uranium, iron ores, and ultramafics (talc, soapstone, and serpentine). With the exception of sand and gravel operations, the proportion of the industry utilizing mineral resources has steadily declined in the Region. This decline and abandonment of mining industries is primarily due to decreasing demand,

changes in economic value, and local opposition to mining operations, rather than exhaustion of the

Region's reserves. Public and private interests often are in conflict over extraction of mineral resources, and the balancing the need to use these resources with public's right to minimize potential nuisances will be an increasingly visible issue.

## **SAND AND GRAVEL**

Sand and gravel deposits of varying quality are scattered throughout the Region and are the principal mineral resources being extracted. Sand occurs in good quality deposits with large reserves along the Connecticut River Valley and near most of the larger tributaries. Deposits of good quality gravel, however, are usually small. The Region's good quality, accessible gravel reserve is low.

Sand and gravel are economically important regional resources and significant portions of them occur in only a few towns: Brattleboro, Dummerston, Vernon, Halifax, Guilford, Newfane, and Jamaica. Few towns own and operate their gravel pits even though they experience a steady demand for highway construction and maintenance of unpaved roads. In resort towns during periods when vacation housing and commercial construction are taking place, demand for sand and gravel significantly increases. The increased excavation activity at the pits and the transport of material is known to bring about impacts that negatively affect community resources (roads and bridges), neighborhoods, water quality, and air quality, which in turn may generate or renew local opposition to the utilization of the resources. As the Region grows, sand and gravel deposits will continue to be extracted for construction, fill, erosion control, and highway maintenance.

# COMMUNITY RESOURCES

*We are entering an era when small towns will be valued again, and out of necessity we will reinvent the truly local economies using local assets and local resources.*

James Howard Kunstler, 1993

## PUBLIC WATER SUPPLY

A public water supply in Vermont is defined as a water supply system, owned or developed by the same person, having fifteen or more connections or regularly serving an average of at least 25 individuals daily at least 60 days out of the year (Vermont Water Supply Rule). Public water supplies may be owned and operated by a municipality or they may be privately owned, either individually or cooperatively. Municipally owned public water supplies may be managed by a town or a by a fire district.

Municipally owned public water supply systems are often provided in the more densely settled sections of towns and villages that may not otherwise be able to provide a safe and reliable domestic water supply. Many of the Region's privately owned public water supplies serve vacation housing developments and some of the Region's smaller villages. These central water supplies also allow residents to share in the cost of acquiring and maintaining their water supplies. Generally, public water supplies are easier to maintain and protect than individual water supplies in densely settled areas.

Brattleboro, Readsboro, Bellows Falls, and Wilmington own and operate municipal public water supply systems in the Windham Region. These systems serve populations ranging from approximately 400 to 12,000 people.

The water main extension policies for towns with municipal water supplies vary throughout the Region. In Brattleboro and Bellows Falls, if a developer wishes to extend a water main, the cost of the extension is borne by the developer. Once the main is extended, it becomes part of the municipal water supply system and those who wish to connect to the extended main need only pay a connection fee. The Bellows Falls system has been extended to parts of Westminster and Rockingham.

The most common problem facing communities that have or seek to have municipal public water supply systems is obtaining funding to acquire or upgrade these facilities. All of these systems rely on groundwater for their source and they include some of the unincorporated villages in the Region that are served by privately owned public water supplies. Yields from these wells range from 12 to 300 gallons per minute.

Since the passage of the federal Safe Drinking Water Act in 1993, small-scale public water systems have been permitted through the Vermont Department of Environmental Conservation in the same manner as large systems. Water supplies are classified as “public” based on how many people they serve, not by ownership; many public water supplies are privately owned. The Vermont Water Supply Rule classifies public water supply systems, which have 15 or more service connections or serve 25 or more people, as follows:

- Public Community water systems, which have at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents (examples include municipal water systems, condominium developments, mobile home parks, and nursing homes); and



- Public Non-Community water systems, which serve non-residential groups of people and are further classified as:
  - Public Non-Transient Non-Community water systems, which regularly serve at least 25 of the same persons more than six months per year (examples include schools, factories and office buildings); or
  - Public Transient Non-Community water systems, which serve 25 or more people (need not be the same people) more than 60 days per year (examples include restaurants, motels, and campgrounds).

Each type of public water system requires a different level of chemical monitoring, with the Transient Non-Community systems requiring the least.

MUNICIPALLY OWNED PUBLIC WATER SUPPLIES IN THE WINDHAM REGION					
TOWN/SYSTEM NAME	SOURCE NAME/TYPE	POPULATION SERVED	AVERAGE DEMAND (MGD)	CAPACITY (MGD)	PERCENT OF CAPACITY USED <sup>1</sup>
Bellows Falls/ Bellows Falls Village Water Dept.	-Minard's Pond	3,500	.3	1.00	30%
Brattleboro/ Brattleboro Water Department	-Pleasant Valley Reservoir -Sunset Lake -Retreat Meadows Wells <sup>2</sup>	12,000	1.70	3.00	57%
Readsboro/ Readsboro Village	-Howe Pond	402	0.04	0.10	40%
Wilmington/Cold Brook Fire District "Golf Tract"	-Wells	330	.01	.04	25%
Wilmington/Cold Brook Fire District "Base Tract"	-Wells	808	.01	.15	7%
Wilmington Village/ Wilmington Water District	-Springs -Haystack Pond <sup>2</sup> -Reservoir	1,500	.06	Varies from .19 - 1.4	31%
Winhall/Stratton Fire District	-Wells	10,000 (200 non-seasonal)	.20	.44 max. daily	45%

Sources: Vermont Department of Health; Water System Operators

MGD = Million gallons per day

<sup>1</sup> Approximate estimate of capacity used; from best available data

<sup>2</sup> Emergency/back up supply only

PRIVATELY OWNED PUBLIC WATER SUPPLY SYSTEMS IN THE WINDHAM REGION				
TOWN	PUBLIC COMMUNITY WATER SYSTEMS	NON-TRANSIENT NON-COMMUNITY WATER SYSTEMS	TRANSIENT NON-COMMUNITY WATER SYSTEMS	TOTAL
Athens	0	0	0	0
Brattleboro	2	0	4	6
Brookline	0	1	0	1
Dover	17	2	31	50
Dummerston	1	1	2	4
Grafton	0	1	2	3
Guilford	0	1	1	2
Halifax	0	1	1	2
Jamaica	2	1	5	8
Londonderry	4	3	15	22
Marlboro	0	1	4	5
Newfane	1	1	5	7
Putney	3	10	4	17
Readsboro	1	0	0	1
Rockingham	3	2	1	6
Searsburg	0	0	1	1
Somerset	0	0	0	0
Stratton	3	0	3	6
Townshend	0	5	7	12
Vernon	2	3	2	7
Wardsboro	0	1	1	2
Westminster	4	2	3	9
Weston	0	1	6	7
Whitingham	0	0	0	0
Wilmington	5	2	11	18
Windham	0	1	2	3
Winhall	3	1	1	5
TOTAL	51	41	112	204

Source: *Vermont Department of Health*

Threats to groundwater and wells include agricultural runoff, nearby salt storage areas, road salting, contaminated runoff from paved areas, and failing septic systems. Some private systems have been pumped at rates exceeding the aquifer's capacity, resulting in yields that do not adequately meet the needs of users. Some systems have inadequate storage capacity, creating problems during power failures when

homes may be without water.

## **SOURCE PROTECTION AREAS**

The Vermont Water Supply Rule defines a Source Protection Area as the surface and subsurface area through which contaminants are likely to move toward and reach a collection point that supplies a public water system. Within the 200-foot radius of this primary collection area, contamination impacts are likely to be immediate and certain. Beyond that radius, source protection areas are tested and mapped to determine further sources of probable and possible contamination. Where there has been no mapping the state assumes a circular area with a 3,000-foot radius around the water source. Currently, there are no requirements for towns to restrict land uses within such source protection areas. Jurisdiction over the protection of public water supply sources rests with the Department of Environmental Conservation, Water Supply Division.

Decisions regarding municipal infrastructure, such as whether and where to extend water mains, greatly affect the location, density, type, and pattern of future development. Municipal infrastructure, thus, can be among a town's growth management tools.

## **PRIVATELY OWNED ON-SITE WATER SUPPLIES**

The majority of the Windham Region is served by individual private on-site water supplies, usually drilled or dug wells. Dug wells are susceptible to contamination from leachates that have reached the water table through soils. Drilled wells are susceptible to the same groundwater contamination as mentioned for public water supplies. Unlike source protection for public water supplies, private wells are not afforded specific levels of protection. New wells do have required isolation distances from potential contamination, such as septic tanks and leach fields. Individual on-site water supplies are located throughout the Region, and this is why protection of groundwater quality is extremely important to maintaining high quality potable water supplies.

Individual on-site wells can be affected by factors other than contamination. A new well drawing a high volume can deplete the groundwater supply in an area creating supply problems for existing wells. For more information on groundwater and groundwater policies, see the groundwater section of the Natural Resources Element.

## **WASTE WATER TREATMENT**

Wastewater must be treated before being released to groundwater or surface water in order to ensure adequate removal of solids, destruction of pathogens, and removal of other pollutants, such as certain metals and organic compounds. Wastewater is generated from households and from commercial and industrial operations. There are three significant categories of wastewater to be treated:

- Municipal sewage, which may be treated in municipally-owned or in privately-owned treatment plants;
- Domestic septage, which typically is treated along with municipal sewage; and
- Industrial wastewater, which may be entirely or partially treated at the source, or may be incorporated into the flow of municipal sewage.

The only large industrial sources of wastewater sludge in the Region are paper mills. Paper mill wastewater is treated, on site, by its generators. The solid and liquid portions from that process must nonetheless be treated and/or disposed of, sometimes with wastewater treatment plant sludge and septage, so it is included in this section as well as in the Solid Waste Management section.

## **PUBLICLY-OWNED WASTE WATER TREATMENT SYSTEMS**

In general, there are three levels of wastewater treatment:

- Primary treatment, which involves the physical removal of suspended particles by screens, sedimentation chambers and skimmers;
- Secondary treatment, which additionally involves digestion of organic wastes by bacteria in a controlled system; and
- Tertiary treatment, which adds further advanced steps to precipitate out solids and remove other, more difficult to extract compounds.

There are 10 publicly owned wastewater treatment plants in the Region providing secondary or tertiary treatment. There also are five privately owned treatment plants in the Region. Facility types include lagoons, extended aeration and oxidation ditches, and rotating biological contactors.

Most municipal systems in the Region are operating under capacity, with estimated average monthly flows ranging from 13 percent - 96 percent of design capacity. It should not be inferred, however, that the difference between design flow and current average flow represents available capacity. Other factors, such as capacity already allocated and/or being held in reserve, the ability to safely and economically dispose of the sludge that results from the treatment process, the organic load on the treatment plant that may be presented by different materials, and local decisions regarding how close to the theoretical limit the plant should operate, all affect the potential to use any remaining capacity. Federal regulations also play a prominent role in affecting the potential use of remaining capacity.

## **SLUDGE TREATMENT AND DISPOSAL**

Sludge disposal from municipal wastewater treatment plants is accomplished by land application (the oldest method currently in use), landfilling, or incineration. Reed bed systems, which employ specific kinds of reeds such as phragmites to absorb and retain compounds from treated sludge, are sludge treatment and storage systems, as opposed to disposal systems. No sludge is incinerated in the Windham Region, but several small treatment plants in the Region ship sludge to be incinerated in Connecticut and landfilled in Massachusetts.

Land application refers to the practice of spreading treated sludge and/or septage onto the ground, or injecting it into the ground. Land application of sludge requires stringent control over sludge quality and management practices in order to destroy pathogens and control potentially harmful compounds present in the waste. Land application is intended to serve not only as a method of disposal but also to provide an organically rich soil amendment to recycle nutrients and organic matter back into the soil. Many people are concerned about potential pollution from land application, however, based on the fact that polychlorinated biphenyls (PCBs) and inorganic compounds containing chromium, cadmium, copper, lead, mercury, nickel, and zinc also can be found in many samples of municipal and industrial sludge. The State of Vermont regulates the levels of nitrates, phosphates, PCBs, and seven metals in each sludge application project.

## **EFFLUENT DISPOSAL**

Effluent that remains after wastewater is treated and the solids removed is discharged to either surface waters or groundwater. Three plants in the Region discharge their treated effluent by "spray irrigation," which involves spraying the effluent at controlled rates and at approved times of the year onto an area that is approved for that purpose and to which access by the general public is restricted. The remaining plants discharge effluent directly into one of the following streams: Connecticut River (five discharges), Deerfield River (three discharges), Saxtons River (one discharge), East Branch North River (one discharge), Flood Brook (one discharge) and Thompsonburg Brook (one discharge).

## WASTEWATER TREATMENT FACILITIES

CATEGORY, FACILITY NAME, AND LOCATION	FACILITY DESIGN CAPACITY (MGD)	AVERAGE MONTHLY FLOW (MGD)	PERCENT OF DESIGN CAPACITY REMAINING	SLUDGE TREATMENT OR DISPOSAL TECHNIQUE (Sept. '01)	EFFLUENT DISPOSAL LOCATION
<b>Municipal</b>					
Bellows Falls	1.400	0.536	38.3%	Compost -- Claremont	Connecticut River
Brattleboro	3.500	1.710	48.9%	Land Application	Connecticut River
Jacksonville	0.050	0.015	30.0%	Landfill	East Branch North River
Putney	0.080	0.042	52.5%	Landfill/Incineration	Sacketts Brook
Readsboro	0.075	0.036	48.0%	Land Application	Deerfield River
Saxtons River	0.105	0.400	381.0%	Co-treatment – B. F.	Saxtons River
West Dover	0.895	0.210	23.5%	Land Application	Spray- Deerfield. River
Whitingham	0.012	0.006	50.0%	Landfill	Deerfield River
Wilmington, Village	0.135	0.100	74.1%	Compost	Deerfield River
Wilmington, Golf Plant	0.049	NA	--	Incineration	Spray- Deerfield. River Basin
Wilmington, Base Plant	.030	NA	--	Incineration	Spray- Deerfield. River Basin
<b>Private Non- Industrial</b>					
Flood Brook Union School	360 students	NA	--	Incineration	Flood Brook
Magic Mountain	0.030	0.028	93.3%	Incineration	Thompsonburg Brook
Stratton Mountain	0.480	0.120	25.0%	Landfill	Spray-West River Basin
<b>Private- Industrial</b>					
Putney Paper	0.800	0.220	27.5%	Landfill/Compost	Connecticut River
Specialty Paper	2.0	1.500	75.0%	Compost	Connecticut River

MGD = Million Gallons Per Day

Discharges of effluent into surface waters are regulated by state and federal agencies; regulatory requirements include tests of the pH, residual chlorine, dissolved oxygen, suspended solids, biochemical oxygen demand, bacterial counts, and the various metals and organic compounds that are regulated in sludge disposal.

### PRIVATELY OWNED ON-SITE WASTE WATER SYSTEMS

Most of the Region is served by on-site sewage disposal systems (septic systems). Proper design, construction, and maintenance of these systems is important to keep them operating effectively, thereby preventing ground and surface water contamination. Appropriate isolation distances from streams and

wells and separation from high water table will also help to prevent pollution of ground and surface waters from leachates.

Soil and topographic conditions play a major factor in on-site sewage disposal system design. Although a five-foot depth to bedrock is adequate for full building foundations, a seven to eight foot depth is generally recommended for in-ground septic systems. Where these soil depths do not occur naturally, specialized systems can be designed, constructed, and inspected thereby allowing a reasonable use of a property. Impermeable soil or the presence of a hardpan at depths of two to four feet can cause wet soil conditions in the fall and spring, especially if the site is located in a depression. Conventional septic systems may fail under these conditions, which are common in this Region, and specialized designs are expensive. Steep slopes also affect the ability of an on-site system to properly remove pollutants. New system designs now allow for mound systems to be constructed on slopes up to 20 percent. Anticipated changes in state legislation and wastewater disposal rules may result in some systems being allowed on slopes up to 30 percent and with as little as 12 inches of separation from high seasonal groundwater.

## **SEPTAGE TREATMENT**

It is estimated that over 33,000 of the Region's residents rely on septic systems for wastewater disposal, and those systems generate approximately 2.3 million gallons of septage each year, projected to increase to approximately 2.5 million gallons per year by 2010<sup>1</sup>. The majority of new housing in southern Vermont is being built with septic systems, and not on municipal sewer systems. Many domestic systems are pumped infrequently—and some not at all—which would reduce the total gallons to be treated but which also provides the basis for additional concerns about failed septic systems and potential ground water and surface water pollution. All towns in the Region except Bellows Falls and Brattleboro must rely on access to treatment plants in neighboring towns or outside the Region for septage treatment.

Commercial haulers pump septage from septic tanks, cesspools or holding tanks and are then responsible for finding an approved facility for disposal of the material. Effective collection and treatment of municipal sewage, septage, and industrial wastewater are crucial to the maintenance of a healthy environment and to the protection of water quality. The availability of sewer service may become a greater determinant of development location, if lands suitable for on-site septic systems become more difficult to locate.

## **SOLID WASTE MANAGEMENT**

Vermont's ambitious attempt to revamp its approach to waste management is summarized in the 1987 amendment to the State Waste Management Law, 10 V.S.A. Section 6601(5), which states the goals of:

...siting solid waste management facilities and implement(ing) a program for the management and reduction of wastes that over the long term is sustainable, environmentally sound, and economically beneficial, and that encourages innovation and individual responsibility. The program should give priority to reducing the waste stream through recycling and through the reduction of non-biodegradable and hazardous ingredients.

Sixteen WRC member towns belong to the Windham Solid Waste Management District (Brattleboro, Brookline, Dover, Dummerston, Guilford, Halifax, Jamaica, Marlboro, Newfane, Putney, Readsboro, Townshend, Vernon, Whitingham, Wilmington, and Winhall), three belong to the Southern Windsor/Windham Solid Waste Management District (Grafton, Rockingham, and Westminster), and eight belong to no district. Of those, three (Londonderry, Weston, and Windham) cooperate to use a central transfer and recycling facility, and one (Stratton) is considering joining the Windham District as this Plan is drafted. Wardsboro and Searsburg operate their own municipal facilities. Athens relies on private haulers for services and Somerset—an unincorporated town—has no waste management facility.

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<sup>1</sup> Population figures do not include those served by public sewer systems; Septage calculated at 70 gal/year per capita; Data taken from WRC's Composting Feasibility Study (Dufresne-Henry, 1991), adjusted for 2000 U.S. Census estimates.

## SOLID WASTE

Under Vermont law, 10 V.S.A. Section 6602(2), "solid waste" is defined to include:

...any discarded garbage, refuse, septage, sludge from a waste water treatment plant, water supply plant or pollution control facility and other discarded material including solid, liquid, semi-solid, or contained gaseous materials resulting from industrial, commercial, mining, or agricultural operations and from community activities but does not include animal manure and absorbent bedding used for soil enrichment or solid or dissolved materials in industrial discharges which are point sources subject to permits under the Water Pollution Control Act.

This definition involves a lot more than just "trash," and the proper reduction, management and disposal of this wide variety of materials requires a concerted and creative regional effort. It is helpful to consider the above definition as divided into two waste streams:

- Trash, which is a generic term used here to describe typically discarded solid material that is of residential or commercial origin; and
- Special Waste, which is material that requires special handling and/or management. Special Wastes are: automotive (wet cell) batteries, used motor oil, waste water sludge, industrial sludge, septage, infectious waste, obsolete motor vehicles, and hazardous waste. Hazardous waste is further defined later in this section.

## MINING OLD LANDFILLS

Old, unlined landfills can be excavated, or "mined," and has been done in other parts of the U. S. Reasons to do so include removing sources of groundwater pollution. An old site then could be developed to comply with current standards and become the location of the next generation of waste disposal facilities. The old site might not pass modern siting standards were it virgin land, but reclaiming an unlined landfill could have environmental and economic benefits far in excess of that shortcoming.

## RECYCLING

District or town-sponsored recycling programs are available to residents of all Windham Region towns except Athens and Somerset. Somerset is unincorporated and nearly unpopulated, and Athens relies on private haulers for all solid waste management.

MUNICIPAL SOLID WASTE GENERATION AVERAGE POUNDS PER CAPITA, PER DAY	
YEAR	AMOUNT
1960	2.7
1970	3.3
1980	3.7
1990	4.3
1993	4.4
2000	4.4

Sources: USEPA. *Characterization of Municipal Solid Waste in the U.S.*, and USEPA *Municipal Solid Waste Factbook*, 1996. In 1992, a WRC study estimated residential trash generation rate in the Region at 3.5 pounds per person, per day.

## COMPOSTING

Composting is a process of natural decomposition, and compost is what results from the microbial digestion of organic plant materials. Composting can be pursued on three levels. One level is the encouragement of backyard composting as an easy and inexpensive way to remove food and yard wastes from the disposal stream and direct it instead toward positive reuse as a soil amendment. At a second level, at a higher volume, "on-farm" composting is an effective means of managing wastes and producing valuable soil amendments and in some cases produces a new salable product. A third level at which composting can be pursued is in the management of municipal solid waste and sludge.

## HAZARDOUS WASTES

Vermont law defines hazardous waste as "any waste or combination of wastes of a solid, liquid, contained gaseous, or semi-solid form, including but not limited to those which are toxic, corrosive, ignitable, reactive, strong sensitizers, or which generate pressure through decomposition, heat or other means..."<sup>2</sup> More generally, the U.S. Environmental Protection Agency has defined hazardous waste as any material that would pose a threat to public health or to the environment if it were improperly discarded, due to its explosive, flammable, corrosive, reactive, or toxic properties.

Federal and state regulations govern the management and disposal practices of all industries, businesses, and institutions that generate in excess of 100 kg (220 pounds) of hazardous waste or 1 kg (2.2 pounds) of acute hazardous waste per month. Local and regional management is needed for certain other hazardous wastes, which include household hazardous wastes and wastes generated by "Conditionally Exempt Small Quantity Generators" (CESQG). The term CESQG generally refers to companies and institutions that produce hazardous wastes totaling less than 220 pounds per month and so are directly regulated by state instead of federal rules.

## RADIOACTIVE WASTE MANAGEMENT

### LOW LEVEL RADIOACTIVE WASTE

Most LLRW generated in Vermont originates at the Vermont Yankee Nuclear Power Station (VY). Smaller amounts come from other sources, such as hospitals and the University of Vermont. Most of the LLRW that current law projects to be generated in Vermont will result directly from the scheduled shut-down and decommissioning of Vermont Yankee. Low-level radioactive wastes, which may typically include gloves, tools, filter materials, etc., are classified by the Nuclear Regulatory Commission according to their type and amount of radioactivity. Vermont Yankee decommissioning will contribute the majority of the total LLRW produced in Vermont over the operational life of the planned storage and disposal facility.<sup>3</sup>

Low level radioactive waste (LLRW) is defined by 10 V.S.A Section 7001(7) as:

"...radioactive material that is not high-level radioactive waste, spent nuclear fuel, transuranic waste or byproduct material, as defined in 42 U.S.C. Sec. 2014(e)(2), (and) which the United States Atomic Energy Act of 1954, Section 11(e)(2), and...the United States Nuclear Regulatory Commission,... classify as low-level radioactive waste."

Vermont Yankee low-level radioactive waste currently is accepted at facilities in South Carolina and Utah. Texas may accept this waste in the future under an agreement with Maine and Vermont. That compact, approved by Congress in the 1990's, is part of a nationwide plan to store low-level radioactive waste. Over the next 35 years, Texas, Maine, and Vermont are expected to produce 2.7 million cubic feet of LLRW, and approximately 75 percent of the waste is projected to result from dismantling nuclear

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<sup>2</sup> 10 V.S.A. §6602(4)

<sup>3</sup> *Vermont Advisory Commission on Low Level Radioactive Waste, "Acres Report," 1990*



power plants.<sup>4</sup> Texas has not yet finalized its development plans for a low-level waste storage facility, and news reports indicate that the proposed development has recently become more controversial and less certain in the Texas legislature.

## **HIGH LEVEL RADIOACTIVE WASTE**

Spent nuclear fuel (SNF), which is high-level radioactive waste, is used fuel that no longer contains enough useful material to economically sustain a nuclear chain reaction. For purposes of handling and storage, it includes the fuel pellets themselves, the fuel rods that contain the pellets, and the assembly that connects and holds the rods in place. Together, these components form a "fuel bundle" or "fuel assembly." Following its use in the reactor, the fuel assembly is intensely radioactive and, while some of the radioactive elements decay relatively quickly, it will remain extremely dangerous for many thousands of years.

Upon removal from a nuclear reactor, all SNF is stored for some period in pools of water designed specifically for this purpose (Vermont Yankee's spent fuel pool is in the reactor building). From the beginning of commercial nuclear plant operation in the U.S., it has been the government's and the industry's plan to provide for permanent storage at a single location, as opposed to keeping it on-site for an extended period. Currently, all SNF generated at Vermont Yankee and at nearby Rowe (MA) Yankee is stored in on-site pools.

Vermont Yankee is licensed to operate through the year 2012, and current estimates are that 54<sup>5</sup> truck shipments of SNF will be made if the fuel is not kept on site (fewer shipments would be required if rail is the transportation mode). The SNF being transported for permanent storage would cross from Vermont into Franklin County, Massachusetts approximately six miles from the VY plant. Under current transportation scenarios, all SNF generated in the six New England states would pass through western Massachusetts in route to long-term storage.

The U.S. Department of Energy is responsible for a permanent storage program. A site is under development at Yucca Mountain in Nevada, intended to isolate nuclear wastes for thousands of years in deep geologic containment. The reliability of that plan has been debated on the bases of overall storage capacity and long-term geologic stability of the site. As a fallback to that permanent storage program, development of an "interim storage facility" has been proposed at or near the Nevada site.

All Vermont Yankee SNF generated since operation began is stored on site, and the spent fuel pool has room for normal refueling operations until 2008. In order to bridge the gap between the capacity of the spent fuel pool and the amount of SNF to be generated during the plant's licensed life, it is anticipated that Vermont Yankee will apply for a dry-cask storage system in 2001 or 2002. There are several dry-cask storage designs approved by the Nuclear Regulatory Commission. The basic concept common to all is the placement of fuel assemblies into concrete and/or steel air-cooled vessels. These are stored on the utility's grounds outside the reactor building. It is intended that the casks eventually would be removed from those storage vessels and sent to the federal government's permanent storage facility, if and when that is completed and commissioned<sup>6</sup>. The Vermont Public Service Board will review any Vermont Yankee dry-cask system that is proposed, and the Windham Regional Commission will participate in that review process. Rowe Yankee currently is establishing an on-site dry-cask storage system.

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<sup>4</sup> *Brattleboro Reformer*, 3/26/01. The Maine Yankee nuclear power facility currently is being decommissioned, and much LLRW related to that project is being sent to the Barnwell, South Carolina facility. That will reduce the LLRW to be sent to Texas by a currently undetermined amount.

<sup>5</sup> Estimate based on approximately 3,400 fuel assemblies to be used through 2012, shipped in casks that will contain 63 assemblies each.

<sup>6</sup> Currently under development at Yucca Mountain, Nevada, and significantly behind the original schedule that called for completion by 1998.

## EMERGENCY PLANNING SERVICES

### EMERGENCY PLANNING

Vermont Emergency Management (VEM) contracts with most Vermont regional planning commissions to assist with emergency planning on a regional basis. Statewide, this is changing emergency planning from a top-down system to a more locally and regionally coordinated process. The WRC is working with member towns, the Local Emergency Planning Committee (LEPC), the State Emergency Response Commission (SERC), the Vermont Agency of Transportation, the Red Cross, mutual aid organizations and other regional planning commissions to promote better emergency planning and disaster resistant communities.

Building disaster-resistant communities through sound land use planning is the primary goal of emergency planning. The proposed density, type and location of future development should take into account the predictable consequences of development in flood hazard areas, on steep slopes, where excess runoff would be generated, or on inadequate roads and should avoid as much of these negative consequences as possible. Building disaster resistant communities can help towns deal more effectively with predictable natural disasters and emergencies because of appropriate and sensible land use practices.

The emergency planning and risk assessment process involves towns' assessing their circumstances and facilities and trying to foresee the probable effects of predictable disasters. Removing facilities from flood hazard areas or protecting facilities that are in flood plains are methods for moving them out of harm's way. Emergency planning assesses the risk of predictable damage before it happens and employs sound land use practices to protect public and private property from disaster. Typical steps include:

- Mitigation is a sustained action that reduces or eliminates risk to people and property from natural hazards and their effects. These actions tend to focus on where and how to develop. Mitigation involves educating businesses and the public on simple measures to avoid repetitive damages.
- Disaster preparedness is community planning that anticipates the various damages that might occur and their probability during a disaster, and taking steps to minimize the damages to public and private property.
- Response is a time-sensitive action designed to save lives and property, as well as necessary actions needed to stabilize an emergency situation. Actions may include warning, evacuating or sheltering the public, keeping the public informed, rescuing individuals, and providing medical care. Response is usually the strongest part of a community's emergency planning and management system.
- Recovery is the effort to restore infrastructure and the social and economic life of a community, and is the last step in emergency planning and management. It should incorporate mitigation against re-occurrence as a primary goal. Recovery from any major disaster will be related to the effort devoted to building disaster resistant communities. Recovery planning should receive an equal place in emergency planning because the costs of damages can be substantial, as the following example shows.

RECOVERY COST ESTIMATES IN THE WINDHAM REGION TROPICAL STORM FLOYD -- SEPTEMBER, 1999			
Total Project Costs	Federal Share	State Share	Local Share
\$188,235	\$146,826	\$17,698	\$29,356

## **EMERGENCY RESPONSE**

### **Fire**

Most towns in the Region have local fire fighting capacity within their boundaries. The Towns of Brattleboro and Wilmington and the Villages of Bellows Falls and Saxtons River have fire departments as divisions of local government. The remaining towns are served by volunteer fire companies that serve the fire-fighting needs of the town or towns they were formed to serve, and some are partially staffed by paid firefighters. Many of these fire companies receive a significant amount of their funding from the towns they serve, but they operate successfully because of the dedication of the fire company personnel who volunteer their services and a great deal of their time. Several towns have more than one fire company within their boundaries to better serve different areas. Only Searsburg, Somerset, and Brookline do not have local fire companies within their town boundaries; Searsburg and Somerset are served by the Wilmington Fire Department and Brookline is served by the New Brook Fire Company located in Newfane.

All of the Region's fire companies are members of mutual aid systems. Mutual aid systems are associations of fire companies that allow local fire companies to receive fire-fighting assistance or back-up service from other member fire companies. There are five mutual aid systems within the Region: Southwest Mutual Aid, Tri-Mountain Mutual Aid, Deerfield Valley Mutual Aid, Tri-State Mutual Aid and Connecticut River Valley Mutual Aid.

Increasingly, the lack of volunteer fire-fighters and rescue personnel threatens to seriously compromise the effectiveness of the Region's fire companies and emergency medical squads. Limited discretionary time at work, increased costs, and increased training demands combine to restrict volunteers' availability.

### **Emergency Medical Services**

First response squads respond to calls for emergency medical service by getting to the injured person as soon as possible and stabilizing the person's condition until a licensed emergency medical transport vehicle arrives. Many members of these local rescue squads also volunteer to use their own vehicles and equipment to respond to calls for emergency medical services when contacted by a mutual aid system or some other dispatching service.

Seven ambulance/rescue squads provide emergency ambulance services between towns and health care facilities. Other entities outside of the Region provide back up service to these companies through mutual aid agreements. The professional and private ambulance services include Deerfield Valley Rescue (Wilmington), Ker-Westerlund Ambulance Service (Brattleboro), Rescue, Inc. (Brattleboro), LeFevre Ambulance Service (Bellows Falls), Bellows Falls Fire Department, Brattleboro Fire Department, and Grace Cottage Hospital (Townshend). The following towns also have volunteer rescue squads: Brookline, East Dover, Grafton, Jamaica, Londonderry, Newfane, Rockingham, Saxtons River, Wardsboro, West Dummerston, Westminster, Whitingham, Windham, and Winhall. In addition, C&S Wholesale Grocers has a full-time rescue squad for its facility in Brattleboro which will respond to Mutual Aid calls as needed. Stratton Mountain Rescue functions during winter months only.

### **Disaster and Hazardous Materials Emergency Services**

With the enactment of the Federal Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, Congress imposed upon state and local governments additional planning and preparedness requirements for emergencies involving the release or spill of hazardous materials. Provisions of this law require that facilities with hazardous materials stored on-site report these products to local fire departments, Local Emergency Planning Committees (LEPC) and State Emergency Response Commissions (SERC).

The LEPC District #6 assists with coordination of emergency services that would be provided in response to accidents at Vermont Yankee Nuclear Power Station or Rowe Yankee Nuclear Power Station or involving hazardous materials. The LEPC assisted with development of the Radiological Emergency

Response Plan in 1994 and subsequent updates, which describe procedures for responding to this type of emergency. Response assistance may be provided by local and State Police, local fire companies, public works departments, State agencies, the local Red Cross Chapter and private contractors. Other disaster relief services, such as flood evacuation and emergency shelters, are provided these same local response organizations and may be coordinated with the Federal Emergency Management Agency (FEMA) or state agencies, as appropriate.

Each town within the emergency planning zones of Vermont Yankee and Rowe Yankee (a ten-mile radius around the plant, designated by the Federal Emergency Management Agency) has its own emergency response plan that must be coordinated with the others and with state plans. In an emergency, the town's fire, police, transportation, and public works officials would be directed by an Incident Commander to provide the necessary services to evacuate the area and manage the emergency.

## **Police**

Law enforcement is organized into town and village police departments, County Sheriff's Departments and the State Police. The Village of Bellows Falls and the Towns of Brattleboro, Dover, Winhall, Wilmington, and Vernon have police departments. Towns are allowed by statute to employ constables<sup>7</sup>, although the level of activity and authority of constables varies. Typical duties of a town constable may include patrolling at sporting and community events and serving court summonses.

The Windham County Sheriff's Department patrols and responds to calls on a contractual basis with the Towns of Dummerston, Jamaica, Newfane, Putney, Stratton, Westminster and the Village of Saxtons River. The Town of Whitingham contracts for services from the Bennington County Sheriff's Department. The Windham County Sheriff's Department also has contracts for police protection with organizations other than towns, such as New England Power Company, the U.S. Army Corps of Engineers and Stratton Mountain Corporation. The County Sheriff's Departments will also respond to calls in those towns that do not have contracts and which do not have their own police department. This service, however, is provided only when staff is available and only when the Department is not responding to more urgent calls. The County Sheriff's Departments also provide back up support to town police departments and the State Police when requested.

The Vermont State Police has a local office in Rockingham; a station in West Brattleboro is used by officers but not open for public access. State Police provide back up assistance to towns that have their own police departments and often provide primary police service to towns which do not have their own police squads and which do not contract with the Windham County Sheriff's Office for service. The State Police also provide central dispatching services for some towns in the Region. The State Police have primary responsibility for patrolling Interstate 91.

## **ENHANCED 911**

Though local emergency service providers are effective once on site, the rural pattern of development in Vermont presents frustrating and life-threatening delays to callers, call takers and dispatchers. Historically, there has not been a centralized location for call taking or dispatching for emergency service providers in Vermont. In response to these problems, Vermont adopted a statewide E911 emergency calling system.

In order to maintain E911 data, each town regularly updates its street address system and forwards that information to the E911 board. After those data have been verified and entered at the state level, the WRC receives the updates and in turn makes corresponding changes to its system and related maps. In addition, the WRC assists towns with questions related to road naming and address systems.

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<sup>7</sup> 17 VSA § 2651a. Constables; appointment; removal: (a) A town may vote by Australian ballot at an annual meeting to authorize the selectmen to appoint a first constable, and if needed a second...

## **EDUCATION**

Each public school in the Region is part of a regional supervisory union. There are five supervisory unions serving towns in this Region: Windham Central, Windham Northeast, Windham Southeast, Windham Southwest and Windsor Southwest.

Local school or district boards govern all public elementary schools. Some towns that do not have their own elementary school pay the tuition for resident children to attend nearby public or independent elementary schools. There are five public secondary schools in the Region. Three are operated by union high school districts: Brattleboro Union High School District #6, Bellows Falls Union High School District #27 and Leland and Gray Union High School District #34. Wilmington High School and Whitingham School provide secondary education for their respective towns. Towns which do not have their own high school, or which do not belong to a union high school district, pay tuition for their resident high school age students to attend nearby public or independent high schools. Some are public schools outside the Region, such as Green Mountain High School (Chester), and Drury High School and McCann Technical School (North Adams, Massachusetts). Independent high schools in or near the Windham Region include The Long Trail School (Dorset), Burr & Burton Seminary (Manchester), The Academy at Charlemont (Charlemont, MA), The Austine School for the Deaf (Brattleboro), Deerfield Academy (Deerfield, MA), Northfield Mount Hermon School (Northfield, MA), The Putney School (Putney), Stoneleigh-Burnham School (Greenfield, MA), Stratton Mountain School (Stratton) and Vermont Academy (Saxtons River).

Four public post-secondary schools offer courses or programs within the Region. The Community College of Vermont (Brattleboro) is an Associates Degree granting institution that offers a wide range of courses and workshops. The University of Vermont operates a regional continuing education center (Brattleboro). Johnson State College (Brattleboro) and Southern Vermont College (Brattleboro) offer programs leading to a bachelor's degree.

The Region also hosts the campuses or regional offices for four independent colleges. Marlboro College (Marlboro) is a small independent liberal arts college that also provides the Region with a diversity of cultural activities. Landmark College (Putney) offers programs designed to meet the special needs of dyslexic students. World Learning, through its School for International Training, offers undergraduate and graduate programs at its Brattleboro campus. The Experiment in International Living also offers exchange programs for college and high school students in foreign countries throughout the world. Norwich University offers bachelors and masters degree courses through its Putney and Brattleboro offices.

Students also have access to several out-of-state post-secondary institutions within commuting distance, including Keene State College and Antioch/New England Graduate School (Keene), Greenfield Community College (Greenfield, Massachusetts), and the University of Massachusetts and the affiliated 5-college system, which includes Amherst, Hampshire, Mount Holyoke, and Smith Colleges in Massachusetts.

It is critical to plan for the needs of an aging and changing population. The Region's libraries play an important role in serving the learning and information needs of its citizens, as well as providing community centers for meetings and cultural events. Brooks Memorial Library and Rockingham Library are the Region's largest libraries. They are linked in an electronic network designed and supported by the Vermont Department of Libraries to bring the entire state's resources, state library holdings, college, university and public libraries, to citizens of the Region.

## **HEALTH CARE FACILITIES**

Five hospitals serve most of the Region's general and emergency medical care needs. A primary physician most often renders primary care, the least specialized level of medical care. Secondary care is

provided by a specialist in a non high-technology situation, usually in a private office or community hospital. Tertiary care, defined as highly specialized medical and surgical care for unusual and complex medical problems, is typically provided by university hospitals because they have more sophisticated medical technology and support facilities. There is a great diversity among the Region's hospitals in the level of services provided. Brattleboro Memorial Hospital (Brattleboro), Southwestern Vermont Medical Center (Bennington), Springfield Hospital (Springfield), and The Cheshire Medical Center (Keene, NH) provide most of the Region's acute medical care needs, with a total of 509 beds. These hospitals are secondary medical care facilities that provide surgery, X-ray, outpatient, laboratory, and physical therapy services. The focus of the Otis Health Care Center (Townshend) is primary and preventive care. The Center contains Grace Cottage Hospital, the smallest acute care hospital in Vermont (19 beds), a nursing home, an outpatient clinic and a community care home. It also provides outpatient specialties and outreach programs serving the elderly and disabled. The Dartmouth-Hitchcock Medical Center in New Hampshire and hospitals in Massachusetts and New York provide tertiary care for the Region.

The Mountain Valley Health Center (Londonderry), the Health Center at Bellows Falls, and the Deerfield Valley Health Center and Green Mountain Healthcare (Wilmington), along with the Region's many medical offices, serve the day-to-day health care needs in the Region. In order to provide immediate emergency health care, the Stratton and Mount Snow resorts provide health care facilities staffed by physicians during the ski season.

The Region's nursing homes, community care homes and therapeutic community residences are undergoing substantial change. Two home health care agencies coordinate many services in the Region, including in-home health care. Southern Vermont Home Health Agency serves the southern half of the Region, while the Visiting Nurse Alliance of Vermont and New Hampshire serves the northern half. Home health care service providers are Medicare certified by the State Department of Aging and Disabilities.

Mental health services are provided at Mental Health Services of Southeastern Vermont and the Brattleboro Retreat. The Brattleboro Retreat is one of the country's oldest and largest independent mental health organizations and provides a full range of psychiatric in-patient care and a variety of out-patient services. Mental Health Services of Southeastern Vermont has extensive outpatient programs in a number of towns in the Region.

The financial condition of the Region's hospitals is of primary concern. The level of service that the hospitals can provide is to a great extent determined by the resources available to the hospital to purchase new equipment, upgrade facilities, and attract and retain physicians. Rapidly changing technology in the health services industry requires hospital administrators to decide what new equipment is needed to best serve the Region's medical care needs and what can be afforded.

The industry's shift toward providing greater levels of outpatient services is primarily a response to requirements by third party reimbursers to provide many services on an outpatient basis. This has placed new demands on hospitals with facilities that were designed for providing in-patient services. Continued shifts toward outpatient services will require additional capital expenditures for new facilities.

Health care costs continue to rise faster than the rate of inflation. This has placed health care services out of the reach of many people at a time when a greater percentage of the population has no or inadequate medical insurance. Third party reimbursements, especially Medicare reimbursements, are declining for many types of medical procedures, increasing the amount of "free care" costs that hospitals and their paying patients must absorb. Commercial insurers and the self-insured will pay more to absorb rising "free care" costs.

## **COMMUNICATIONS**

Communications link the Region's residents with each other and with the rest of the world. Increasingly,

the Region's commercial and cultural strengths require efficient access to modern communications systems. Maintenance and development of up-to-date communications systems facilitate cooperation and understanding of regional, national, and local issues.

## **TELECOMMUNICATIONS**

Information and the ability to communicate quickly and efficiently with each other and the rest of the state, country, and world are becoming increasingly important for the Region and its residents. This results in the need for a continually advancing telecommunications infrastructure. This rapidly advancing technology has the potential to change the way people in the Region work and live.

### **Telephone**

For telephone service, most of the Region is served by Verizon New England, Inc. except Athens, Grafton, and portions of Rockingham, Westminster, and Windham, which are served by VTel. This is a rapidly changing sector of the world economy, and new service providers are entering the market frequently. Digital switches serve the entire Region, allowing custom calling and call management features to be offered. Integrated Services Digital Network (ISDN) service, which allows all-digital switched transmission of voice, video, or data over the telephone network, is feasible in much of the Verizon service territory, but remains costly and suffers from slow installation.

Cellular phone service coverage varies widely in the Region, and some areas remain difficult and less practical to serve. Coverage is incomplete for digital cellular and Personal Communications Services (PCS)<sup>8</sup> that use higher frequency spectrum than cellular. A major concern for the WRC and member towns is the impact that cellular towers and related facilities may have on a rural landscape and also in villages. Many towns are writing ordinances or amending zoning by-laws to insure optimum input on location and dismantling of wireless communication towers.

### **Telecommunication Facilities**

The rapid expansion of telecommunication facilities raises issues that include regulatory policies, health concerns, environmental quality, aesthetics, and historic resource protection.

According to the Federal Communications Commission (FCC) there are approximately 100 million wireless telephone subscribers in the United States in 2001. The Cellular Telecommunications Industry Association (CTIA) estimates that more than 3,000 new customers subscribe for wireless service each day.

To make the telecommunications issue even more complicated, analog and digital cellular technology are not the only services being deployed. Enhanced Specialized Mobile Radio (ESMR) is used for two-way fleet dispatch and also for digital wireless phone service. PCS (digital) uses higher frequencies than cellular and requires more facilities placed at closer distances. Also, PCS providers are given a blanket license for their entire geographic area, and are not required to individually license each transmitter site. Among other wireless services requiring facilities are small desktop or hand-held units for transmitting voice, data and video signals, and providing access to the Internet. All these emerging services will require facilities, some within one or two miles of each other, although not all of these will be conventional tower-mounted facilities. As the number of subscribers increases, pressure increases for expanding networks and capacity requirements in Vermont.

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<sup>8</sup> Personal Communications Services (PCS) and Personal Wireless Service Facilities (PWSF) are terms used in "official documents" and can cause considerable confusion. Their meanings are somewhat different: PCS refers primarily to digital cell phone technology, and PWSF refers to a wider range of wireless services, but for purposes of this Plan may be considered the same.

### **The FCC and the Federal Telecommunications Act of 1996**

The Telecommunications Act required the FCC to prepare new regulations for radio frequency radiation (RFR) emissions from personal wireless service facilities as well as to provide guidelines for the deployment of this wireless technology.

The Act preserves local zoning authority with some restrictions. The local government:

- Shall not unreasonably discriminate among providers of functionally equivalent services;
- Shall not prohibit or have the effect of prohibiting the provision of personal wireless services;
- Shall act on any request or authorization to place, construct, or modify Personal Wireless Service Facilities (PWSF)\* within a reasonable period of time after the request is filed;
- Shall put any decision to deny a request for a PWSF into writing and support such decision by substantial evidence contained in a written record;
- Shall not regulate PWSFs on the basis of environmental effects of radio frequency emission to the extent that such facilities comply with the FCC regulations concerning such emissions.

### **Vermont Act 94 of 1998 and Local Government Options**

This Act gives towns all the powers they need to control telecommunications towers and supporting infrastructure without zoning by-laws. Town Plans should include a telecommunications section and may go so far as to identify certain locations where facilities should or should not be located. Sections of Act 250, including Criteria 1, 8, and 10 are used to evaluate cell towers in Vermont. Historical and archeological resources must be taken into consideration under the National Historic Preservation section of the Federal Telecommunications Act.

Considering the evolving nature of the telecommunications industry, an ongoing planning process, led by a local or regional telecommunications committee, may provide the best solutions to local input. A PWSF ordinance and a town plan are crucial components of a proactive approach to the wireless telecommunications issue. The key is to have a process that is flexible enough to allow towns to negotiate acceptable solutions, based on individual community objectives.

### **Television and Videoconferencing**

Cable television is offered in a majority of towns in the Region, but there are still significant unserved pockets. The Vermont Department of Public Service has indicated that additional areas of Rockingham and Westminster have reached an appropriate density of homes and the cable companies serving these towns should extend service to unwired portions.

The use of satellite dishes to receive television signals has been widespread for a number of years, particularly in rural areas, and digital (small-dish) satellite services are common, competing with cable television for subscribers. Cable companies are allowed to offer telephone service under the new Federal Telecommunications Act and telephone companies are allowed to offer video services, so this technology area also will evolve rapidly in the next few years.

Brattleboro Community Television (BCTV), a public, educational, and governmental (PEG) access station reaches subscribers in Brattleboro with programming that includes coverage of town government meetings. Bellows Falls Community Television (BFCTV) operates a PEG station serving Bellows Falls from a location in Bellows Falls Union High School, and has programming that includes local meetings.

Video networks are creating links both within and outside the Region. Vermont Interactive Television (VIT) is a two-way, interactive audio and video telecommunications system that currently operates from thirteen sites in Vermont, including Brattleboro, Bennington, and Springfield in southern Vermont, offering videoconferencing for education, government, businesses, and non-profits between sites both within the system and around the world. VIT operates its Brattleboro site at the Key Bank on Main Street. Seven sites in Brattleboro also have the ability to input signals into the Warner Cable system through BCTV, as well as receive them. These sites are Brattleboro Union High School, Oak Grove School, the Gibson Aiken Center, Green Street School, Canal Street School, Walnut Street School, and VIT. It is



possible to share signals between the BCTV and BFCTV systems. One-way video, two-audio satellite education and conferencing systems are also becoming increasingly common at the Region's schools.

REGIONAL CABLE COMPANIES	
COMPANY	SERVING
Duncan Cable TV	Wilmington
East Dummerston Cable Television, Inc.	Dummerston
Gateway Cablevision Corp.	Dover, Whitingham
Opticable	Readsboro
Southern Vermont Cable Company	Newfane, Putney
Townshend TV Club, Inc.	Townshend
Adelphia Cable Communications	Brattleboro, Grafton, Guilford, Rockingham, Stratton, Vernon, Westminster, Weston, Winhall
Young's Cable TV Corp.	Londonderry, Rockingham

Source: *Vermont Department of Public Service*

Note: Not all franchises serve entire towns.

## Other Media

The Region is served by several commercial stations in the Region and surrounding areas, Vermont Public Radio broadcasting from Windsor, and public stations from Concord, NH; Amherst, MA; and Albany, NY.

Two daily papers, the Brattleboro Reformer and the Rutland Herald, are widely available and provide coverage of local and regional news. The Deerfield Valley News reports on events in the Deerfield Valley on a weekly basis. Towns in the southwestern corner of the Region are served by the Bennington Banner and the North Adams (MA) Transcript. The Vermont News Guide (Manchester Center) and the Message (Londonderry) serve the northwestern section of the Region. The Town Crier (Brattleboro and Rockingham), a commercial advertising weekly, provides a calendar of upcoming events and local business news. The Valley Advocate (Northampton, MA) and other free publications are widely available.

## HUMAN SERVICES

Over 100 organizations and agencies provide a variety of programs and activities to meet the Region's human service needs. Programs include social services and nutrition programs for elders, energy assistance for low-income households, employment referral services, emergency food and shelter programs, and a range of programs for children. Several telephone hotlines provide immediate information and support; there are nearly three pages of "community service numbers" in local phone books, listing services in twenty-four categories. At the time this Plan is drafted, the Region suffers from a lack of child day care services, which affects families and businesses negatively.

## OUTDOOR RECREATION

The Region's outdoor recreational resources are those unique parts of the natural environment (such as rivers, lakes, mountains, and meadows) and accompanying facilities (such as ski lifts, trails, and boat launches) that promote human use and enjoyment of the resource for leisure, exercise, exploration, education, excitement, and contemplation.

Forecasts illustrate that an increasing percentage of the state's population will consist of older residents who will spend a greater percentage of their income on recreation. This group is expected to seek more

heritage tourism and destination resorts. Funding for development and maintenance of recreation facilities and services is not expected to keep pace with demand., which may result in increased privatization of recreation facilities and services. Such privatization may reduce the availability of recreational opportunities among those who are unable or unwilling to pay for such services or facilities. The growing trend toward private ownership of ‘public spaces’ carries with it a risk of loss to the quality of life of many Vermonters. Similarly, fewer opportunities for public recreation on private land also may be a result of continued subdivision of land into smaller parcels. Historically, it appears that as parcel size decreases the propensity of landowners to post land increases. It is inevitable that more users competing for fewer available recreational resources will lead to ever-decreasing public recreation opportunities.

Certain types of recreation are expected to experience continued strong growth. Included in this group are water-based activities, especially boating and swimming. The Region's ability to meet increased demand for these pursuits may be strained because of the very limited access to lake and pond shorelines. Accessible shore lands and their accompanying facilities, such as parking and sanitary accommodations, will be under increased pressure to serve more people. Additional private waterfront development also will reduce public access to resources.

Bicycling and walking are also expected to continue strong growth in popularity and with it, support for multi-use paths, trails, and linear parks or greenways. Participation in hiking is expected to continue to shift away from long distance to short duration and day hikes. Although the Region's ski resorts continue to expand operations, interest in alpine skiing is not expected to grow significantly in relation to newer forms of downhill recreation such as snowboarding.

Conflicts among user groups, especially among water-based recreationists, are expected to increase as larger numbers of people compete for the use of the Region's finite recreation resources. These conflicts—as well as conflicts between recreationists and the advocates for preservation of the natural environment—can create the need for additional control and restrictions on the type and intensity of recreational use in a given area. Development on or near recreation resources can also cause conflicts, further limiting the use of recreational resources. Over-use of some recreational resources can degrade their quality and raises concern about “carrying capacity,” or the ability of a given resource to support a certain level of sustained use without diminishing its quality. The following are potential outcomes of intensive use of recreation resources:

- Public access to private lands for recreational use may decline because of landowner concern about vandalism, personal injury liability, and privacy;
- Vehicular and parking problems accompanying the use of recreation resources may create traffic hazards, threaten natural environments, and detract from scenic features of the resource;
- Over-use and careless use may cause degradation of the natural environment in the forms of erosion, loss or disturbance of habitat, and pollution; and
- Limited funding for maintaining public recreational facilities may lead to poor maintenance and overcrowding that would detract from the recreational experience.

## CULTURAL AND HISTORIC RESOURCES

For an area of its size, the Region is unusually rich in cultural resources. Nationally recognized musicians, artists, writers and craftspeople have chosen to make the Region their home, and their presence has helped to attract a diverse and appreciative audience to the area. The presence of the arts community enriches the lives of residents and visitors and enhances the Region's appeal as a place to live and do business. Cultural resources have a direct link to the economy through spending by arts organizations and by audiences attending events.

Arts and culture are of growing importance to the regional economy. In June 2000 The New England Council issued a report titled *The Creative Economy Initiative; the Role of the Arts and Culture in New England's Economic Competitiveness*. Among other things that report noted:

- 3.5 percent of New England's total job base is supported by what it termed the "creative cluster" of enterprises which includes graphic and performing arts, among others;
- The creative cluster grew at an overall rate of 14 percent from 1993-1997, compared to 8 percent for the New England economy as a whole; and
- In 1998, approximately 15 million people traveled throughout New England primarily for cultural events, spending more than \$6 billion.

A resident or visitor can attend a summer concert at the Marlboro Music Festival or a performance in the Brattleboro Music Center's series of choral, symphonic, and chamber works. Concerts are also held at the Yellow Barn in Putney and by the Guilford Friends of Music. Mount Snow and Stratton resorts sponsor summer musical festivals. The Weston and Saxtons River Playhouses are well known for their summer theater productions. Several other small theater companies perform in the Region at various locations throughout the year. The Brattleboro Museum and Art Center offers exhibits of work in a variety of media, often coupled with lectures or performances. Brooks Memorial Library (Brattleboro) and Rockingham Library (Bellows Falls) also host film and lecture series, and provide gallery space. The Latchis Theater in Brattleboro and Memorial Hall in Wilmington are two exceptional historic facilities that are in the planning phases for restoration and development as performing art centers.

Craftspeople form a significant segment of the Region's culture and economy, and play a major role in the heritage tourism that continues to grow in the Region. A number of art and craft festivals are held annually, as are lecture series and other events sponsored by the Windham County Council for the Arts. The Region also sustains professional storytellers, mimes, puppeteers, traditional and folk musicians, and folk, contra and Morris dancers.

In addition to hosting a wealth of performing and visual arts, the Region contains an abundance of architectural and historical resources. The National Register of Historic Places recognizes over 40 of the area's historic structures and districts as nationally significant. Numerous other sites and structures are recognized in the State Historic Sites and Structures Survey. The Region's river valleys and upland areas contain a wealth of important archaeological sites that recount the continuous culture and heritage of the Region.

# ENERGY

*Our children will enjoy in their homes electrical energy too cheap to meter.*

Lewis L. Strauss, 1954

## ENERGY USE

State and federal governments have more control of energy supplies, sources, and pricing than do municipalities, but regional efforts can play a role in energy development, energy conservation and land use decisions. Reducing the Region's dependence on outside energy sources and reducing overall energy demand are in the best interest of the Region's residents. Vermonters use a variety of fuel sources to meet energy needs, but by far the predominant fuel used is petroleum. Total electric energy use has risen steadily, despite efficiency gains. Wood use fluctuated over the years, and is currently at a plateau. Natural gas and propane use is rising slowly. The Region's major sources of energy are petroleum products, nuclear power from Vermont Yankee, local and imported Canadian hydropower and wood. Renewable energy technologies and small amounts of coal are also used. Currently, the Region's greatest energy uses are of petroleum products and electricity. The following table represents statewide energy demand, but is similar to regional energy use.

STATEWIDE ENERGY DEMAND BY ECONOMIC SECTOR (TRILLION BTU/YR) <sup>1</sup>		
	1996	ESTIMATED 2010
Transportation	45.14% (54.28)	47.0% (66.66)
Residential	28.86% (34.71)	28.3% (40.05)
Industrial	12.56% (15.10)	12.7% (17.97)
Commercial	13.44% (16.16)	12.0% (17.0)
TOTAL	100% (120.25)	100% (141.68)

Source: *Fueling Vermont's Future*, 1998, VT Department of Public Service

## HYDROPOWER

Regionally, Pacific Gas and Electric operates three hydroelectric projects along the Deerfield River in Vermont. Somerset Reservoir is yearly-cycle water storage for downstream generation supplying approximately 22.8 million kilowatt hours annually. Harriman Reservoir and powerhouse, located in Wilmington, Whitingham, and Readsboro, provides yearly-cycle storage and produces an average 100.5 million kilowatt hours annually.

Pacific Gas and Electric also operates two intermediate load hydroelectric generation facilities along the Connecticut River, with dams in Bellows Falls and in Vernon. Annual generation at Bellows Falls is 290.88 million kilowatt hours, and Vernon is 157.17 million kilowatt hours. Smaller, privately owned facilities also exist around the Region.

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<sup>1</sup> A British thermal unit (Btu) is a standard unit of measurement of heat or energy. It is the amount of heat necessary to raise one pound of water one degree Fahrenheit at its maximum density. A kilowatt-hour (kWh) of energy is roughly equivalent to 3,412 Btu.

A major supplier of hydropower for Vermont is Hydro Quebec, which supplied 67 percent Of the hydropower used by Vermont in 1993 (1,588 gigawatt<sup>2</sup> hours of electricity, or about 1.6 million kWh) and 77 percent (2,184 Gwh) in 1997. Vermont currently has 46 utility-owned hydro sites and approximately 35 independently owned hydro sites that collectively fill about 10 percent of the state's electric demand (*Fueling Vermont's Future, 1998*, Department of Public Service).

The potential for expanding the Region's hydropower generating capacity is limited because the majority of environmentally sound and economically feasible sites have been developed. At the same time, recent relicensing requirements will likely reduce the energy produced from existing facilities. The greatest potential for additional hydropower may lie in improving the generating efficiency at existing hydroelectric plants or in installing turbines at non-producing or under-productive existing dams.

Dams that either provide substantial or unique environmental restoration potential or produce very little in terms of cost-effective renewable energy resources might be considered for removal. The removal decision must be made with full consideration of the benefits derived (improved water quality, restored fisheries, increased water flow), and the costs passed on to the power companies and the consumers. Agreement on a replacement value, evaluation on a case-by-case basis, and following the guidelines of a model process for dam removal is important.<sup>3</sup>

## NUCLEAR

The Region is host to Vermont Yankee, Vermont's only nuclear power station, located in Vernon. The boiling water reactor came on line in 1972 and its current operating license expires in 2012. Vermont utilities own 55 percent of Vermont Yankee's output, rated at 540 megawatts, which supplies about 33 percent of Vermont's annual electrical use. Electricity from Vermont Yankee (VY) provides 38 percent and 36 percent of the electricity supplied to Vermont customers by Central Vermont Public Service (CVPS) and Green Mountain Power (GMP), respectively. In the mix of power supplies for CVPS and GMP, Vermont Yankee is the lowest cost long-term supply. (*Vermont Yankee Economic Study, 1999*, Vermont Department of Public Service). Removal and ultimate disposal of spent nuclear fuel from the VY site remains a continuing concern and options for spent fuel storage beyond the capacity of the in-plant storage pool are being explored (discussed more under waste management). In August of 2001, a sale agreement was reached under which the facility will be sold to the Entergy Nuclear Corp. of Jackson, Mississippi for \$180 million. Vermont Yankee officials anticipate that the sale will be completed by March 2002 following review and approval by a host of state and federal agencies<sup>4</sup>.

## FUEL WOOD

During the 1997-1998 heating season, 31 percent of Vermont households burned wood for at least some space heating. Usage of wood for space heat has declined from 48 percent in the mid-1980's to the current 31 percent. While usage of wood as a primary fuel declined markedly, usage as a supplemental fuel increased. Approximately half the 1997-1998 wood burning households used wood as the primary fuel, and half used wood as a supplemental fuel. Households using wood as their primary fuel burned about 4.8 cords per year on average. Airtight stoves remain the most popular wood-burning device. Approximately 50 percent of the households in Windham County contain a wood-burning appliance.<sup>5</sup>

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<sup>2</sup> A gigawatt is one billion watts of power.

<sup>3</sup> *Vermont Environmental Report, winter 2001*, Vermont Natural Resources Council, Inc.

<sup>4</sup> Approval is required by the U.S. Nuclear Regulatory Commission and the VT Public Service Board. Additional federal reviews will include the Federal Energy Regulatory Commission, the Environmental Protection Agency, the Federal Trade Commission, the Securities and Exchange Commission, and the Internal Revenue Service. Additional state review will be by the Department of Public Service.

<sup>5</sup> *Vermont Residential Fuel Wood Assessment 1997-1998*, Vermont Department of Public Service, December 2000.

## **WIND POWER**

In 1997, Green Mountain Power (GMP) developed a utility-owned wind-generating station in Searsburg, consisting of 11 wind turbines with combined capacity of six megawatts. The project has been a catalyst for further wind power development in New England. Recent estimates suggest that Vermont has the wind potential to satisfy as much as 10 percent of the state's electricity needs (*Fueling Vermont's Future*, 1998, Vermont Department of Public Service). Wind power is clean and renewable, but turbine placement can be difficult and controversial for reasons of aesthetics, impacts on natural areas and the need for turbine placement at approximately 2,800-3,300 feet of altitude.

## **REGIONAL DISTRIBUTION OF ELECTRIC POWER**

The New England Power Pool (NEPOOL), formed in 1971, is an association of electric utilities in New England that established a single regional network to direct the operations of major generating and transmission facilities. NEPOOL will continue to exist as the entity representing not only traditional electric utilities but also companies that will participate in the emerging competitive wholesale electricity marketplace. The Independent System Operator (ISO New England Inc.) has a services contract with NEPOOL to operate the bulk power system and to administer the wholesale marketplace.

ISO New England Inc. was established as a not-for-profit, private corporation on July 1, 1997 following its approval by the Federal Energy Regulatory Commission (FERC) as part of the framework to support the deregulation of the \$200 billion electric industry in the United States. ISO New England immediately assumed responsibility for the management of the New England region's electric bulk power generation, transmission systems, and administering of the Region's open access transmission tariff.

In the wake of significant energy shortages in California, ISO New England has reassessed the regional supply and demand of electricity, and has determined that similar shortages are not a danger for New England at this time. Also, New England is a "summer peaking" region, meaning simply that the collective electricity demand and especially peak period demands are highest in the summer. Vermont, however, is a "winter peaking" state, so our demands tend to peak at a time that those of neighboring states do not. Some additional buffering against potential shortages may result from that coincidence.

## **OTHER SOURCES**

Some Windham Region electricity users have or are in the process of developing facilities to generate electricity for their own use. Brattleboro Kiln Dry (owned by Cersosimo Lumber Company) generates electricity with its wood chip burning plant and Allard Lumber Company replaced an electric dehumidifier system with a wood chip gasifier, increasing efficiency and lowering costs. Leland and Gray High School installed a wood chip gasifier in 1992 and Bellows Falls Union High School has realized savings with a one-half megawatt cogeneration system installed in 1991.

One of the nation's first commercial landfill gas-to-electricity projects was constructed in Brattleboro in 1982. Vermont Energy Recovery Systems uses the methane produced at the Windham Solid Waste Management District's Brattleboro landfill to generate and sell electricity to Central Vermont Public Service. The project generates approximately four million kilowatt hours annually.

## **REGIONAL ENERGY NEEDS**

The "southern loop" of Central Vermont Public Service's transmission facilities currently operates at near maximum capacity. The loop consists of 75 miles of transmission lines connecting Bennington and Brattleboro with the southern Vermont ski areas (extending as far north as Bromley). Involved Region

towns include Winhall, Stratton, Londonderry, Jamaica, Townshend, Newfane, Dummerston, and Brattleboro.

The two major tie-ins to the loop (the Woodford Road substation in Bennington and the Vernon Road substation in Brattleboro) are distant from the areas of growing electrical demand. If either substation were to fail under peak conditions, the other would be unable to compensate. Central Vermont Public Service added transformer capacity at both substations in 1995, the first such improvement since the early 1970's. Future growth on the loop will necessitate an upgrade in facilities between substations.

## **ENERGY GROWTH AND DEMAND**

Total energy use is expected to increase 54 percent between 1990 and 2015. This increase stems largely from growth in transportation energy use due to increasing vehicle miles traveled and dispersed land use patterns, and growth in commercial and industrial energy use due to projected economic output from these sectors. The gap between transportation and residential energy consumption will continue to widen, as transportation energy use increases by 69 percent while residential use grows by only 21 percent between 1990 and 2015.<sup>6</sup>

Based on Department of Public Service projections, assuming no changes in energy use patterns, the Region will likely experience the following trends during the 20 years between 1995 and 2015.

- Per capita energy consumption will increase at a compound annual average rate of approximately 1 percent, from approximately 245 million Btu per person in 1995 to approximately 274 million Btu per person in 2015;
- Demand for non-renewable sources will increase from 213 million Btu per person in 1995 to 240 million Btu per person by 2015;
- Energy expenditures will rise at a compound annual rate of 1.7 percent (54 percent, in constant dollars);
- Energy demand, between 1995 and 2015, will continue to increase for each sector of the economy, residential (by 10.2 percent) commercial (by 36 percent) industrial (by 30 percent) and transportation (by 30.1 percent); and
- Almost all of the increase in transportation demand will come from increasing demand for petroleum based products such as gasoline or diesel fuels. This is based on a projected increase of 50-80% in vehicle miles traveled by 2020.

## **CURRENT ISSUES**

Issues currently being considered at the state, regional, and local levels include: locating and facilitating where major transmission or system upgrades are needed, encouraging conservation programs, such as demand-side management, and encouraging the consideration of biomass generation or wood chip burning. Identifying local power needs and the use of unconventional methods of energy production and conservation – with a focus on renewable energy sources and localized generation. For example, looking at the electric grid to find high use areas and potential sources closer to the point of use.

The Vermont Department of Public Service is currently working on the following:

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<sup>6</sup> *Fueling Vermont's Future, 1998*, Vermont Department of Public Service

- Integrated Resource Planning – this law allows the Public Service Board to direct utilities to add additional renewable energy capabilities when capacity expansion is warranted.
- Distributed Utility Planning – this approach will lead the state’s electric companies to find opportunities where small-scale community-oriented generation will be helpful to the electric system. Many of these systems will be renewable in order to adequately fit into its surroundings. The DPS is working to assure that localized generation does not create a new environmental hazard by encouraging the use of high emitting systems.
- Renewable Development Fund – a *potential* policy that would allow for funding of technologic developments in renewable resources to be supported by a surcharge on retail electric rates.
- Biomass Energy Center – the DPS is working on the creation of a biomass energy center to harness the technical and intellectual capacity of bio-energy to accelerate development and deployment of this type of energy.
- Disclosure – the provision of a standard label for consumers to obtain information about the electricity product being sold to them, such as fuel sources, air quality effects, and renewable energy breakdowns.

Additionally, proposals or opportunities to bring natural gas supplies into the Region may come up during the life of this Plan, and the WRC may need to become actively involved in those efforts or reviews.

### **Restructuring of Vermont's Electric Utility Industry**

Vermont is exploring strategies for electric utility industry restructuring. Restructuring would eliminate the concept of regulated electric utilities that are granted exclusive franchises in their respective service territories in exchange for serving everyone in the territory. Under the restructuring, each of the electric utilities' current three components, generation, transmission, and distribution, would be broken out into four separate companies for the generation, transmission, distribution, and retail sales of electricity. The Department of Public Service would work to ensure that a competitive market can develop from this restructuring, with competitive prices and competing service providers giving consumers greater choice. A bill to implement comprehensive restructuring passed the Senate in 1997, but was not enacted. Currently, several of the state’s largest utilities are seeking to recover stranded costs (the uneconomic portion of a utility’s generation assets). Several areas of restructuring are being pursued, including the prevention of concentrated wholesale market power.

## **ENERGY CONSERVATION**

Local planning efforts that are sensitive to energy issues should promote development and settlement patterns that minimize transportation requirements and encourage land use that conserves energy. Zoning bylaws, subdivision regulations, and the Act 250 process are vehicles by which municipalities can promote energy efficient development at the local level. Through planning to concentrate housing and minimize dispersed settlement and by discouraging energy-dependent development that is distant from power generating centers, energy can be distributed more efficiently.



Vermont's transportation sector consumes nearly half of the state's current energy demand, and energy expenses for transportation are projected to continue increasing at a rate faster than any other sector of the economy. Through simple changes such as ride-sharing, combining trips, walking, and using alternative transportation individuals can help reduce the Region's total energy demand. Increased and more effective public education regarding not only the environmental benefits of conservation but also the potential financial savings might be needed in the future.

Over half of the electricity used by Vermont's residential customers supplies three end uses: electric space heaters, electric water heaters and refrigerators. Alternative technologies and fuels for space heating and water heating are widely available and can be used to replace the use of electricity for these end uses. The energy efficiency of most structures in the Region could be improved by increasing insulation, minimizing air leaks and maximizing the efficiency of heating and cooling systems.

The State's Electric Plan calls upon each utility to meet the needs of its customers at the lowest total long-term cost, and to do so by giving equal consideration to all generation, transmission, and conservation options. Utilities are required to develop portfolios of options to achieve the goal of lowest projected long-term costs of service. Utilities also are required to control energy and capacity costs by modifying or controlling the amount or timing of uses rather than supply. Such "demand side management" includes programs that influence customer use as well as programs that increase the efficiency of transmission and distribution systems.<sup>7</sup>

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<sup>7</sup> *Fueling Vermont's Future, 1998*, Vermont Department of Public Service

# TRANSPORTATION

*For a quarter of a century, motoring in America was a dream. The real price of gasoline went down; new highways were spun out of the federal highway trust fund; and the suburban living pattern provided an incentive for – and depended upon – the automobile. Times have changed.*

Daniel Yergin, 1980

In the eighteenth and early nineteenth centuries the horse and buggy shaped our villages. In the late nineteenth and early twentieth centuries the railroads and rivers influenced the development of our regional centers and at the end of this century the automobile has both enabled and dictated our land use. Today the Region's transportation network continues to be essential to its economic and social well-being. Residents and visitors use it for travel to work and school, to shop and to obtain services, and for most recreational and cultural activities. We depend on it for emergency access to our homes and businesses and we rely on roads being safe and useable under extremely adverse weather conditions.

The Region continues to search for an acceptable balance between providing adequate levels of transportation services for a growing resident population, accommodating commercial and industrial growth and serving the needs of seasonal population influxes, while simultaneously preserving the character of the Region. At the same time, government policies are working toward expanding and enhancing the transportation system to make it more multi-modal and less exclusively reliant on cars and trucks. The passage by Congress in 1991 of the Intermodal Surface Transportation Efficiency Act (ISTEA) shifted the focus from the mere movement of cars and trucks to the more basic notion of travel by people and shipment of goods and information. ISTEA was then reauthorized in 1997, as the Transportation Efficiency Act for the twenty first century (TEA-21).

In 1995, the Windham Regional Transportation Plan (WRTP) was developed and included herein by reference. This section builds on the WRTP as well as additional transportation studies completed for the Windham Region since 1995.

## HIGHWAY SYSTEM

Geographic barriers to transportation in the Region include extensive ridges and several major rivers with limited crossings. These features have channeled growth into the Region's major river valleys. Consequently, the Region's roads are characterized by many sharp curves and steep hills, which are rough, narrow, and prone to heaving. While state roads and village streets are paved, many town roads are gravel, some by local policy. Most roads are old and many are below typical federally accepted highway standards for sight distances and width. In 1997, the State of Vermont developed design standards that can be used to provide adequate mobility and safety while respecting Vermont's landscape and communities.

The most significant transportation routes and villages in the Region are in the Connecticut River Valley, the West River Valley and the Deerfield River Valley. The only principle transportation route that does not follow a significant river is Route 9, which crosses east to west over Hogback Mountain in Marlboro. Other main transportation corridors are in river valleys: Interstate 91 and U.S. Route 5 follow the Connecticut River; Route 30 and the northern portion of Route 100 follow the West River; the southern end of Route 100 and Route 112 follow the Deerfield River and the East Branch of the North River; Routes 121 and 103 follow the Saxtons River and the Williams River respectively. These transportation corridors link the Region's population centers and are naturally tied to major centers in other regions, such as Keene, NH; Greenfield and North Adams, MA; and Bennington, Manchester and Springfield, VT.

Most Windham Region towns, though, are oriented toward the regional centers of Brattleboro or Bellows Falls.

The Windham Region includes 892 bridges and approximately 1700 miles of town and state highways. As is true throughout the U. S., many of those bridges and much of that highway system are in disrepair. The State of Vermont's highest transportation priorities include accelerated programs to repair bridges and repave roadways, and the same is true of virtually all Windham Region towns.

## ROAD CLASSIFICATION

Regional roads are classified in two primary ways: at the local level, by "Town Highway Classification" and at the state and federal levels, by "Functional Classification." For calculating maintenance and related costs, "two lane equivalent" miles are frequently used. The United States Forest Service (USFS) also classifies roads within and to access the Green Mountain National Forest.

### Town Highway Classification

Town highways are under the general supervision and control of the selectboard of the town where the roads are located. Town highways are classified from Class 1 to Class 4, depending on use and condition, and this classification assists in determining the distribution of the state's annual town highway allocation.

### Road Mileage in the Windham Region by Town Highway Classification

ROAD TYPE	DESCRIPTION	MILES
Class 1 Town Highways	Are an extension of state highways and carry state highway route numbers, but are town maintained.	8
Class 2 Town Highways	Are selected based on the through connections between towns and typically have more traffic than Class 3 roads in the town.	288
Class 3 Town Highways	Comprise the rest of the traveled town highways, and must be passable under normal conditions all seasons of the year by a standard manufactured passenger car.	984
Class 4 Town Highways	Comprise the rest of town highways, and need not be kept open year 'round by the town, but bridges and culverts are to be maintained.	117
Legal Town Trails	Public rights-of way, which are not highways and are not a required responsibility of the town for any construction, maintenance, repair or safety.	76
State or U.S. Highways		208
Interstate (without ramps)		39
TOTAL		1,720

Source: *Vermont Agency of Transportation and WRC-GIS 2000*

### Functional Classification

The state and federal governments also use a "functional classification" system, where at one end of the continuum speed and convenience are maximized but access between the highway and surrounding land is minimized. At the other end, access to individual parcels is provided, but speed and convenience are appropriately reduced. When a road segment is forced to serve opposing functions (for example, serving as both an inter-town or interregional travel corridor and as a local or village oriented road) a "functional conflict" exists and both safety and convenience suffer. The Vermont Agency of Transportation (VTrans) reviews the statewide functional classification annually with assistance from the towns and the regional

planning commissions and recommends additions and changes to the system.

### **Road Mileage in the Windham Region by Functional Classification**

FUNCTION	DESCRIPTION	MILES
Rural Principal Arterials (Interstate)	Primarily serve statewide and interstate travel.	39
Rural Principal Arterials (Other)	Same as above, but non-interstate roads.	36
Rural Minor Arterials	Link cities and large towns (or major resorts) and forms an integrated network providing interstate and intercounty service.	102
Rural Major Collectors	Primarily serve traffic of intra-county importance (such as to larger towns, parks, regional schools, etc.).	174
Rural Minor Collectors	Provide service to smaller communities; network is spaced to collect traffic from local roads to major collector.	116
Rural Local Roads	Provide service to adjacent land and over relatively short distances.	1214
Urban Principal Arterials	Primarily serve major centers of activity and highest traffic volume. It should carry the majority of trips entering and leaving the urban area and trips by-passing the urban area.	23
Urban Minor Arterials	Interconnect the urban principal arterial system and serves moderate length trips.	8
Urban Collectors	Provide service for traffic within residential neighborhoods, commercial and industrial.	8
Total		1,720

Source: *Vermont Agency of Transportation*

### **United States Forest Service Roads Classification**

United States Forest Service (USFS) roads provide a link between towns and to the regional transportation network. USFS classifies roads as either “Forest Highways” or “Forest Roads.” Forest Highways are public roads, which are highly important for travel to and access through the National Forest (for example the Stratton-Arlington Road and VT 9). Forest Roads provide access within the National Forest and may be under the jurisdiction of either a town or the USFS. Town-owned Forest Roads may be maintained by the town or the town and the USFS may share maintenance responsibilities. USFS-owned Forest Roads, under the jurisdiction of the Forest Service, are maintained by the USFS.

### **Bridge Classification**

Bridges in Vermont are classified according to length and by whether the ownership and maintenance responsibility lies with the town or the state. "Long structures" are those over 20 feet in length, and "short structures" are six to 20 feet long. Structures shorter than six feet are classified as culverts, regardless of design. Two-thirds of the Region's 892 bridges are owned by towns. Bridges are also classified by type of bridge. Throughout the Region examples can still be found of historic covered, metal truss, masonry arch and concrete arch bridges. Historic bridges are a particularly valuable cultural asset of many towns and

decisions about how to preserve and use them (and sometimes whether to do so) can be extremely difficult. Not surprisingly, concerns about rehabilitating or replacing obsolete bridges and the desire to preserve rural or scenic quality often conflict.

## SYSTEM CONSTRUCTION AND REPAIR

Roads and bridges eventually must be repaired or replaced. The State of Vermont has estimated that statewide 20 percent and region-wide 10 percent of the (non-Interstate) state highway's pavement is in poor condition. The state also estimates that without significant fiscal investments pavement condition will continue to deteriorate. Hundreds of bridges have exceeded their design lives (many built after the 1927 flood and designed to last 50 years) In the State Long-Range Transportation Plan, VTrans has prioritized the repair and maintenance of bridges and pavement, and the WRC works with VTrans to review and prioritize specific projects.

VTrans road sufficiency ratings, used to identify and prioritize improvements to the road network, evaluate structural condition, safety, and service, weighted by traffic volume and scored from 1 to 100. Similarly, VTrans bridge sufficiency ratings indicate whether bridges are adequate, functionally deficient, or structurally deficient. The condition of major travel routes and "long structures" (bridges over 20 feet in length) is summarized in the following figure and shown on the accompanying map.

### Sufficiency Ratings

ROADS (MAJOR TRAVEL ROUTES)			
Bad (0 to 40)	Poor (40 to 60)	Fair (60 to 80)	Good (80 to 100)
50.1 miles	91.5 miles	138.7 miles	71.9 miles

VTrans data; state highways rated in 1996; local major collectors in 1998

BRIDGES (LONG STRUCTURES ONLY)		
Structural Deficiency	Functional Deficiency	No Deficiency
20%	19%	61%

It should be noted that sufficiency ratings are weighted to help plan and budget for needed system repairs. Traffic volume over a given highway is an important factor in those decisions, and so a road with a high volume would be given a lower rating than one in similar condition but carrying low traffic volumes. The lower sufficiency rating therefore identifies that high-volume road as a higher maintenance priority.

Similarly, bridge ratings take into account the availability of and distance to alternative stream crossings. Therefore, a bridge that is structurally deficient because of a needed repair may be rated lower than one with a worse condition because there is no available alternative crossing and thus its repair is logically a higher priority than one with another bridge nearby.

## TRAFFIC VOLUME, SPEED AND CONGESTION

Traffic volumes have increased significantly on most of the Region's roads in recent years and those increases are projected to continue. These general increases are not unique to the Windham Region. Rather, they are more the local manifestation of national and statewide trends in which virtually all measures of automobile and truck use indicate a continuing increase. These projections should not be taken as a given of what the future will look like, but rather a projection of traffic volume if current travel patterns do not change and increasing mobility is not otherwise accommodated.

In many of the villages along arterial and collector roads, significant concern has been raised about the type, speed, and volume of traffic. All of these contribute to reduced quality of life, heightened safety concerns, and increase noise in the affected communities. To address this issue, many communities have begun to investigate implementing "traffic calming solutions," such as textured pavement, roundabouts, and gateway treatments.

Traffic congestion, especially at peak tourism seasons, at certain times of the day or week, and/or in certain critical locations, places a severe burden on some towns and their residents. Historically, the typical response to traffic congestion problems has been to make improvements to the infrastructure: build wider, straighter roads; replace or repair inadequate bridges; and build new roads to "by-pass" congested areas. Most of these improvements have been geared toward either improving safety or increasing convenience.

Many local and state officials have begun to reconsider transportation projects in light of the broader issues of energy efficiency, impact on land use and development, and effects on air quality and other environmental concerns. Often, design requirements that accompany federal highway funding result in a roadway being built or rebuilt to accommodate traffic speed and/or volume exceeding local needs. If this design level also exceeds local growth and development plans, then the roadway improvement may thwart local efforts to guide land use and development by changing general traffic patterns and by encouraging settlement patterns that are not consistent with local plans and desires.

## **SCENIC ROADS AND VERMONT BYWAYS**

Scenic Roads are an important recreation and tourism resource and, as such, should be protected. Currently, only a few scenic roads have been officially designated in Vermont under the Scenic Highway Law (Public Act No. 58 of 1977) and none by towns in this Region. However, many town plans identify roadways that exhibit particular qualities and that occupy a special place in a community's landscape, history or culture. Attributes of a "scenic road" may typically include forest patterns or significant stands of trees, scenic terrain, and distant views, road surface or road layout characteristics, nearby surface waters, picturesque farms or villages, stone walls and cemeteries, or unique man-made and natural objects.

The Vermont Byways Program acknowledges that many varied attributes of a given road may deserve recognition and protection. A "Vermont Byway" is a highway or other public road that has special scenic, historic, recreational, cultural, archeological, and/or natural qualities and that is formally designated by the Vermont Scenery Preservation Council and Vermont Transportation Board in order to enable management practices and programs that focus on any or all of those qualities. In 1999, VT 142 and US 5, as part of the Connecticut River Scenic Byway (CRSB), was designated a Vermont Byway. The CRSB was developed working with the regional planning commissions and the states of Vermont, New Hampshire and Massachusetts. The Connecticut River Scenic Byway area stretches from the New Hampshire/Quebec Border to South Hadley, Massachusetts. Design and planning is currently underway for CRSB Waypoint Interpretive Centers in Bellows Falls and Brattleboro.

## **CORRIDOR STUDIES**

The Windham Regional Commission, working with the towns along VT 30 (Brattleboro to Winhall), completed a Corridor Management Study in September 1999. This was a collaborative study that involved all of the affected towns and allowed the communities to take a more integrated approach to transportation along the VT 30 corridor. The study identified solutions for the following areas of concern – villages/hamlets, access management, congestion, safety/road geometry, speed, bike/pedestrian safety, aesthetic considerations, and parking. A VT 30 Implementation Committee has been formed to assist with carrying out recommendations from the study. The Committee is currently working on the development of a systematic and thematic approach to traffic calming along VT 30.

In Fall 2000 the VT 100 Committee was formed to evaluate and work with the communities on VT 100 from Stamford to Jamaica. The VT 100 study will follow much the same approach as the VT 30 study. In the near future it is anticipated that the corridor study approach will be carried out all of the major travel routes in the Region.

## **AESTHETICS, PRESERVATION AND DESIGN OF THE HIGHWAY SYSTEM**

In response to the concern that the roadway and bridge designs need to be “sensitive to the social and environmental context of Vermont”<sup>1</sup> the State of Vermont adopted Vermont State Design Standards for roadway design. The State of Vermont also established a Historic Bridge program to protect historic transportation structures. To further address the issues of aesthetics and livability in the communities adjacent to the roadways, VTrans is currently in the process of developing guardrail and bridge rail guidelines and traffic calming standards. The Windham Region Commission has been active and supportive of these innovative programs and will continue to review transportation projects to assure compatibility with the Regional Plan.

## **FREIGHT TRANSPORTATION**

According to the U.S. Department of Transportation, trucking remains the dominant mode to transport freight. Intermodal shipments accounted for 13.6 percent of total value of shipments in 1997. This represents an increase of 43 percent over four years.<sup>2</sup> The total amount of freight carried on the nation's highways increased from 65.9 percent in 1993 to 69.4 percent in 1997. VTrans estimated that 31 percent of truck traffic is traffic that is passing through the State.

### **TRUCKS**

This increase in trucking can produce a marked qualitative change in some areas, as residents and motorists are forced to cope not only with more traffic but also with larger, heavier, and noisier vehicles. Resulting from a combination of development in formerly remote areas, an increase in overall commercial activity and related traffic, and a general trend toward "just-in-time" inventory and delivery systems (with reduced retail inventories and thus more frequent deliveries), increased truck traffic places roads and bridges under greater stress.

In the Region and statewide, truck traffic has increased significantly in recent years, both in absolute numbers and as a percent of total traffic volume. The state legislature passed legislation in 2000, establishing a state Truck Network. This legislation provided for changes in the rules governing truck lengths and permits in the state. Currently, 53-foot tractor-trailer trucks may travel unpermitted on VT 9 and VT 103. This has significant local impacts, perhaps most notably, in the village centers of Wilmington and West Brattleboro.

Brattleboro, located at the junction of a major east-west and north-south commercial routes, has seen significant growth related to interstate commercial transportation. Brattleboro and Bellows Falls could continue to grow as major trucking centers, which could have many positive economic effects, but the negative impacts of such growth should be anticipated and mitigated to the extent possible. Most of the negative impacts would be expected to stem from air and noise pollution and safety, especially in relation to travel through residential areas. When local roads become heavily used as arterial highways with high volumes of through-traffic and significant numbers of heavy vehicles, the two different functions of local traffic (town/village/rural) and inter-regional commerce must mix. In particular, the downtown centers of Brattleboro and Bellows Falls are impacted by heavy truck traffic that would use I-91 if the weight limits

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<sup>1</sup> Vermont State Design Standards, October 1997.

<sup>2</sup> 1997 Commodity Flow Survey, U. S. Department of Transportation.

for certain vehicles were not lower on the interstate highway than on other state routes.

## **RAIL**

Freight shipments by railroad have shifted significantly to America's highways. At mid-century, the U.S. had over 50 major national railroads; today, there are nine. Additionally, most local areas in the U.S. are served by "short lines," such as the Green Mountain Railroad and the New England Central Railroad in this area, which provide not only intra-regional service but also connecting service to the national railroads and to other short lines. While railroads obviously are limited in the extent to which they can serve freight transportation needs within the Region, they are an under utilized interstate transportation resource. A recent increase in railroad investment on a national level indicates that some of the extra-regional freight traffic may be shifting to rail.

There are eight railroad companies serving Vermont operating 601 miles of track. In this Region, the Boston and Maine Railroad and the New England Central Railroad operate sections of track along the Connecticut River, and the Green Mountain Railroad operates a line between Bellows Falls and Rutland. VTrans policies include acquiring abandoned railroad rights-of-way for potential future rail restoration, which is now an acceptable use of federal transportation funds.

## **BICYCLING AND WALKING**

The Windham Region Bike/Pedestrian Plan (WRBPP), July 2000, has three primary goals:

- To improve regional linkages through new and improved routes;
- To support and enhance the Region's villages with pedestrian improvements; and
- To provide a set of tools to help improve overall bicycling and pedestrian conditions.

Currently, no on or off-road bicycling facilities exist in the Region. Cyclists use the existing road shoulders, which have varying width and conditions. On roads with no shoulders, cyclists share the road with vehicular traffic. There are currently no roads in the Windham Region designated as bicycle routes.

Regionally, pedestrian travel corridors exist primarily in local disjointed segments. Pedestrians travel along the numerous paved and unpaved roads throughout the Windham Region. In addition to roads, pedestrians utilize sidewalks found in Windham Region villages, resort centers, regional centers, and growth centers. The regional centers of Brattleboro and Bellows Falls have extensive pedestrian facilities. The condition of these sidewalks varies.

Efforts to build multi-purpose trails in the Windham Region are underway. Segments already exist of the West River Trail at Jamaica State Park and between Londonderry and Ball Mountain Dam. A small section of the Valley Trail has been completed in Dover near Mount Snow. A detailed list of the proposed projects can be found in the WRBPP. One project being implemented in 2001 and 2002 involves the installation of bicycle racks in four town centers and on buses.

The WRBPP presents a series of recommendations and maps of improvement locations based on an analysis of a variety of data and field observations. The recommendations are organized according to a "4E approach" which includes the following categories: encouragement, education, enforcement, and effective design/engineering. Specific infrastructure improvements are incorporated into the proposed transportation system map.



## **PARKING**

Public parking facilities exist both officially and informally in the regional centers and villages. Outside of the Region's villages and towns, public parking often is available to recreational users on road shoulders. The Windham Region is rural and thus heavily dependent on the private automobile for transportation, more so than an area having a larger and more densely settled population. Public transit, therefore, is more difficult to support financially, while the relative need for automobile parking may be greater. Providing needed parking capacity in a way that supports and augments public transit, as well as supporting pedestrian and bicycle transportation where feasible, is a difficult challenge, but an important goal.

The system of "park & ride" lots that exists along the Interstate highways and other major routes—some lots established by the VTrans and others informally established by motorists at convenient locations—serve an important function. That role could be enhanced by more visible promotion of their use and by site improvements in some locations, such as security lighting. Currently, VTrans has no formal lots established in this Region; the WRC identified a large number of potential park & ride lot locations in the 1995 WRC Park & Ride Study.

## **PUBLIC TRANSPORTATION**

Public transit in the Windham Region is most essential to five groups in the Region as identified in the draft Southern Windsor/Windham Region Public Transit Plan (January 2001). These groups, over age 65, under age 18, persons with low incomes, visitors and commuters comprise the majority of the public transit riding population within the Region.

Current Federal and State policies promote “aging in place.” According to the Vermont Department of Aging and Disabilities, “lack of adequate transportation remains a major obstacle for older at-risk people remaining at home.” Although the under age 18 population is projected to drop slightly in the next decade, the increase in dual income families and single parent households may indicate a need for public transportation services for teens to after school events and their homes when transportation is not provided by the school system.

Over the last five years, public transportation in the Region has grown dramatically, but many communities are still not served. The existing settlement pattern in the Region of densely developed villages and regional centers may provide for a good location to link to public and other forms of transportation. Current use of the transportation infrastructure in resort centers exceeds capacity during peak times suggesting the need for alternate means of getting people to local attractions. The ability to develop cost effective and convenient links between transportation modes should be the primary goal for transportation improvements in the resort centers.

## **PUBLIC TRANSIT**

The Brattleboro Bee Line, Town and Village Transportation Services Inc. (TVTS), and the Deerfield Valley Transit Association (DVTA) provide public transit in the Windham Region. The Brattleboro Bee Line is an in-town service managed by the Town of Brattleboro. TVTS provides fixed-route, paratransit and elderly/disabled service to Windham and Southern Windsor counties including Bellows Falls, Ludlow, Springfield, and Windsor. The DVTA serves six towns in the Deerfield Valley for fixed-route, paratransit and elderly/disabled service, and also provides contract transit to two ski resorts and six resort villages.

Vermont S.5310 public transit grants provide coordinated public transportation for the elderly and disabled to go to medical appointments, shopping, and cultural or quality of life social outings. With this

shift away from human agency provided transportation throughout the state to human service agency sponsored transportation via public transit systems, there may be an increased need for expansion in the public transit systems in the Region.

## **INTERCITY BUS**

The Region is served by Vermont Transit, which has scheduled stops in Bellows Falls and Brattleboro. From the Windham Region direct routes on Vermont Transit go north to Burlington, Vermont; south to Springfield, Massachusetts; and east to Keene and Manchester, New Hampshire and Boston, Massachusetts. Private van services provide direct service to Bradley and Logan airports.

## **RAIL TRANSPORTATION**

Amtrak's *Vermont* stops in Brattleboro and Bellows Falls. Nearby stops are in Claremont, NH, and Amherst, MA. The *Vermont* serves the Region on a more convenient schedule than the previous service (*Montréal*) and ridership is significantly higher as a result, but this has required a significant and on-going financial commitment by the state. Additional rail access is available in Rutland (*Ethan Allen Express*) and Springfield, Massachusetts (*Northeast Direct*).

## **CARPOOLING**

DVTA and TVTS have funding through the Vermont Rideshare program to promote carpooling, volunteer driving and vanpooling. Ride-sharing and carpooling can play a significant role in making rural transportation more efficient although some of the same demographic and socioeconomic factors that make public transportation difficult and expensive may also work against effective ride-sharing.

## **AIRPORTS**

Access to the Windham Region by commercial and private air transportation is available through the following airports: Bradley International Airport, Hartford (Windsor Locks), Connecticut; Logan International Airport, Boston, Massachusetts; Albany International Airport, Albany, New York; Manchester Airport, Manchester, New Hampshire; Dillant-Hopkins Airport, Swanzey, New Hampshire; Hartness State Airport, Springfield, Vermont; and Worcester Airport, Worcester, Massachusetts. Use of airports varies and is dependent on fares and availability of flights, but Bradley International Airport is the most frequently used airport for people traveling into and out of the Windham Region. Albany and Manchester have recently experienced increased use.

There are two private-public use airports located in the Windham Region. They are Mount Snow Airport in West Dover and North Windham Airport in Londonderry. Additional airport landing strips are private.

Regional residents and visitors currently have no public transit options when traveling to and from airports easily and quickly accessed from the Windham Region. Currently, there are private transportation options in a range of rates. One solution may be a partnership with public and local private providers to schedule regular service from the Brattleboro Transportation Center and the Bellows Falls transportation centers once opened.

## **MULTIMODAL AND INTERMODAL TRANSPORTATION**

To enhance travel in the Windham Region, improvements need to be made for travel within and through the Region for all transportation modes (cars, trucks, public transit, pedestrians, cyclists, and rail). To improve access for all travelers, better connections need to be made between all transportation modes (intermodal). To better serve truck and rail freight, at least one strategically located and modern intermodal facility is needed to serve the Region. For passenger travel, intermodal passenger transportation facilities need to be located in the regional centers, which are currently in the planning phase for both Brattleboro and Bellows Falls. To serve the tourists visiting the Region, connections from the intermodal passenger transportation facilities to resorts centers need to be improved. DVTA is in the process of planning for a bus operations and maintenance facility which may serve this need.

## FUTURE TRANSPORTATION SYSTEM

The Region's future transportation system will be a more thoroughly integrated multi-modal system that provides residents, businesses, and visitors with varied transportation options. The future system will serve the overall regional needs, while minimizing negative impacts on communities. The map series in this element includes three that illustrate the existing system, projects that are currently proposed or underway to enhance the existing system, and a future system (that includes more multi-modal facilities, more public transit, etc.).

- o **Existing Transportation System:**
  - Includes highways in surrounding regions and states
- o **Projects To Enhance The Existing System:**
  - Main Street, Brattleboro reconstruction;
  - Putney Road (US 5), Brattleboro improvements;
  - VT 121 (Saxtons River to Cambridgeport) reconstruction;
  - Bellows Falls Railroad Tunnel reconstruction;
  - Vilas Bridge, Bellows Falls reconstruction;
  - VT 123, Westminster;
  - Chesterfield Bridge new construction;
  - Hinsdale Bridge new construction;
  - Tenney Bridge, Saxtons River reconstruction;
  - Brookline/Newfane Bridge reconstruction;
  - Pedestrian circulation at Hogback Mountain (VT 9) in Marlboro;
  - Exit 2 (I-91) intersection with VT 9;
  - Roadway improvements for Vermont 121, VT 30, VT 35 and Vermont 9;
  - Dunn's Corner (VT 100), Dover;
  - Traffic improvements for the Town of Wilmington;
  - Functional conflicts in several villages;
  - Improvements to accommodate bicycles and pedestrians; and
  - Bus and other transit system improvements.
- o **Future Transportation System**
  - Development of intermodal freight capacity in the Town of Rockingham;
  - Development of intermodal passenger facilities for Bellows Falls and Brattleboro;
  - Improve connections between U.S 5, VT 30 and I-91 in Brattleboro;
  - Completion of the Whetstone Brook Pathway, Brattleboro;
  - Completion of the Valley Trail, Dover;
  - Development of a comprehensive Park & Ride Lot system for the Region;
  - Development of a Connecticut River "Rail with Trail", between Brattleboro and Bellows Falls; and
  - Completion of the West River Trail

# HOUSING

*Stable, affordable housing keeps kids in school and adults in jobs. It helps the upwardly mobile save to buy homes, and it keeps the downwardly mobile out of foster care and shelters.*

New York Times, October 20, 1996

## REGIONAL HOUSING SUPPLY

An adequate supply of year-round housing that offers varieties of size, cost, and location is essential to the economic and social health of every town in the Region. Communities benefit when employees are able to live close to their workplace, young adults are able to buy or rent in their hometowns, and elderly residents are able to remain in the community where they have family, friends, and history.

In the second half of the 1980's a gap developed between what an average Windham Region household could afford to purchase and the average selling price of a home. At the turn of the century the gap had grown. Compounding this problem has been a shortage of newly created housing units, either for purchase or to rent, in a cost range affordable to average working families. In particular, this can be a problem for workers starting families. On the positive side, the Region does not appear to be facing the difficulties that can occur when there is an excessive rate of year round housing development. The primary housing challenge facing the Region in the coming decade appears to be the production of an adequate housing supply to meet the full range and variety of community needs. The particular challenge for our local communities is to envision and plan for growth, so that needed new housing can be created and will be developed in ways that fit the community and do not adversely detract from the traditional Vermont landscape. Meeting both these goals — adequate housing and preserving a traditional look and feel of our communities — will be important for the long-term economic and social health of our communities.

The Windham Region entered the twenty-first century riding a six-year national economic boom that has had a significant influence on housing for the Region. While the construction industry is typically a cyclical business, the recent economic expansion has not had the same effect on housing as the expansion of the previous decade. For one thing the expansion of the 90's, while it has made some individuals very wealthy, has not raised the average of low and moderate incomes by as high a percentage as in the expansions of the 80's and earlier. In addition, federal tax laws and other federal incentives in place in the 1980's favored the creation of new housing units. Many areas experienced a glut of new construction that ultimately depressed the housing market. While Vermont did not experience the same levels of overbuilding in the 80's that caused problems in many other parts of the country, in that decade the Region did experience a reasonably generous quantity of speculative construction, including multi-family units. This has not been the case in the 90's when the federal incentives for commercial housing development have been removed. Recent residential building in the Region has been almost exclusively single-family units. In the four years prior to 1998, virtually all 400 housing units added to the stock in Windham County have been single-family homes.<sup>1</sup> This may be contributing to a shortage of housing suitable for some working families, and has implications for development patterns in our communities. New single-family houses, in particular relatively high-priced homes, tend to be distributed outside the compact settlement areas, like traditional villages and downtowns. This contributes to spreading patterns of "sprawl development."

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<sup>1</sup> *Windham County Housing Demand Analysis*

### WINDHAM REGION HOUSING UNITS - 2000

Town	Year-Round		Seasonal		Total
	Number	Percent	Number	Percent	
Athens	170	81%	40	19%	210
Brattleboro	5,614	99%	72	1%	5,686
Brookline	198	72%	76	28%	274
Dover	705	26%	2,044	74%	2,749
Dummerston	820	92%	73	8%	893
Grafton	328	76%	106	24%	434
Guilford	869	93%	62	7%	931
Halifax	333	68%	160	32%	493
Jamaica	460	48%	507	52%	967
Londonderry	804	61%	513	39%	1,317
Marlboro	344	69%	153	31%	497
Newfane	722	74%	255	26%	977
Putney	998	95%	51	5%	1,049
Readsboro	357	77%	109	23%	466
Rockingham	2,341	97%	84	3%	2,425
Searsburg	48	55%	39	45%	87
Somerset	3	11%	25	89%	28
Stratton	65	6%	1,026	94%	1,091
Townshend	509	76%	159	24%	668
Vernon	768	98%	16	2%	784
Wardsboro	386	50%	380	50%	766
Westminster	1,304	92%	108	8%	1,412
Weston	301	56%	236	44%	537
Whitingham	543	68%	259	32%	802
Wilmington	1,064	48%	1,168	52%	2,232
Windham	172	49%	182	51%	354
Winhall	330	19%	1,387	81%	1,717
Region Total	20,556	69%	9,290	31%	29,846

*Source: 2000 U. S. Census*

Between 1990 and 1994, 461 new year-round housing units were constructed, resulting in a 2.5 percent growth rate. This annual increase of 115 units per year was just over a third of the 1980 - 1990 average of 337 units/year. In the four years from 1994 to 1998, 400 new units were created, an average of just one hundred per year (does not include 91 new mobile home park lots also added in this time period).<sup>2</sup> Housing prices are increasing. In 1998 they were 11 percent higher than in 1990. Logically, rents have also increased. Just in the period from 1995 to 1999 Fair Market Rents for Windham County increased by 11 percent from \$561 to \$625 a month. Household Median Incomes for Windham County increased from \$37,200 in Dec 1996 to \$40,100 in Jan 1999 — an increase of less than 8 percent.<sup>3</sup>

<sup>2</sup> 1998 Housing Demand Analysis for Windham County Planning Decisions Inc.

<sup>3</sup> U.S. Dept of Housing and Urban Development

According to population projections and the *1998 Housing Demand Analysis for Windham County*, over the next five years or longer, the demand for housing is expected to continue increasing at its recent moderate pace. From 1980 to 1994, the population increase was about 14.3 percent, an annual average of just over 1 percent. From 1990 to 2000 the population grew by 7 percent, or .7 percent per year. A more telling housing demand indicator than straight population growth may be the increase in numbers of households in the region. From 1990 to 1998 the number of households increased by 4.3 percent, or more than .5 percent per year, compared to annual population growth of .7 percent — one new household for each 1.4 additional persons. This ratio reflects the decline in average household size and is consistent with a national trend. Geographic patterns and age and financial characteristics of population change are also informative indicators of demand tendencies.

### **Population Growth, Geographic Distribution Patterns**

The 2000 census figures show most of the Region's growth to be outside the regional centers of Brattleboro and Bellows Falls, in adjacent towns. The population of Brattleboro actually declined 2 percent. Significant growth also occurred in or near major ski area towns. Both these patterns are consistent with the early stages of the sprawl development observed in other parts of the nation.

### **Population Growth, Age And Income Demographics**

Because incomes are rising and the number of households in the age group under 34 (which is prime renting age) is expected to decrease, rental demand in the Windham Region is expected to decline slightly — at least in the near term. At the same time, there has been an increase in the age 55-64 category, many of whom might be expected to start looking into downsizing their homes and reducing maintenance requirements and commuting distances. A projected increase in the over 75 group may increase the demand for a special category of rental housing — assisted living. In another ten years, the baby boom “echo” (children now 25 or under) will be the source of increased demand for new family housing — starter homes or apartments. As population increases, income distribution will be a factor in housing demand. The fastest growing age category is 35 to 54. Within that age group the bulk of the increase is in people of the higher income range of \$35,000 to \$75,000 or more.

This is consistent with a trend in all of Vermont and throughout the rest of the country — the numbers of people in upper and lower income levels have been growing, while the middle shrinks. Based on these trends in the population, the Region can expect a steady demand for low cost housing, an increased demand for more expensive homes and steady or declining demand for mid-cost housing.<sup>4</sup> As more of the boomers reach later middle age, their decreasing need for large homes may combine with an increased interest in being more conveniently located to services and social and cultural opportunities — village and town housing. These projections support the notion that there may be a developing market for a return to traditional village and downtown development patterns in lieu of sprawl. This also is reflected in growing national interest in “new urbanism” and “neo-traditionalist” development. That growing interest in a return to traditional village and town living styles may itself be an indicator of future growth pressures by immigration from areas outside the state that already have lost their traditional settlement patterns and attractive landscapes.

These are only projections, and are dependent on the accuracy of wage and population studies. They are also based on past trends, and the future will always be influenced by unforeseen variables. In addition, these kinds of projections measure latent demand. In order for development of any particular type to occur, the capacity to meet the need must be present, not just in terms of construction trades production rates, but particularly in community planning and infrastructure. Estimates of population growth and housing supply suggest that builders in the region do have the physical capacity to meet the projected demand for housing over the next decade, at least in terms of numbers of units. The challenge may be for communities to facilitate the development of housing types and locations that match community needs and desires. While demographic data and observed cultural trends suggest a growing demand for housing in

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<sup>4</sup> *1998 Housing Demand Analysis for Windham County* Planning Decisions Inc.

### WINDHAM REGION POPULATION AND AGE DISTRIBUTION

<b>Town</b>	<b>Total</b>	<b>&lt;5</b>	<b>6-18</b>	<b>18-24</b>	<b>25-44</b>	<b>45-64</b>	<b>&gt;65</b>
Athens	340	21	51	40	91	111	26
Brattleboro	12,005	612	2,063	795	3,500	3,038	1,997
Brookline	467	29	98	21	139	130	50
Dover	1,410	71	242	82	420	438	158
Dummerston	1,915	87	356	97	514	595	266
Grafton	649	32	86	36	160	217	118
Guilford	2,046	101	432	112	572	633	196
Halifax	782	42	158	42	206	222	98
Jamaica	946	64	147	57	300	253	125
Londonderry	1,709	90	284	103	490	459	283
Marlboro	978	30	166	228	197	269	98
Newfane	1,680	90	312	92	464	544	193
Putney	2,634	124	470	434	724	625	257
Readsboro	809	37	162	55	210	206	149
Rockingham	5,309	311	1,023	362	1,443	1,353	820
Searsburg	96	4	22	5	24	32	9
Somerset	5	1	1	0	2	1	0
Stratton	136	7	22	5	42	36	24
Townshend	1,149	73	200	49	331	307	172
Vernon	2,141	129	454	118	592	560	288
Wardsboro	854	48	154	56	243	257	96
Westminster	3,210	182	695	175	958	870	330
Weston	630	23	94	19	120	232	142
Whitingham	1,298	75	253	87	366	355	162
Wilmington	2,225	101	379	156	595	680	314
Windham	328	20	43	28	83	81	73
Winhall	702	31	90	41	184	217	139
Region total	46,453	2,435	8,457	3,295	12,970	12,721	6,583
Percent	100%	5%	18%	7%	28%	27%	14%

*Source: 2000 U. S. Census*

traditional villages and small downtowns near rural areas, the existence of a particular market is not the sole determinant of how a community develops. Other factors must be favorable -- among these, good opportunities for financing, appropriate community planning and zoning, and adequate provision for sewer, water, and other infrastructure.

### SEASONAL AND VACATION HOUSING

The towns that had experienced the highest growth in seasonal housing in the 1980's (Dover, Stratton and Wilmington) appear to have experienced a leveling off in the 1990's. This moderation of vacation unit growth is due in part to conversion of already existing seasonal housing to year-round use. While the rate of vacation housing development has declined from the high growth levels of the past, it continues to have an impact on housing throughout the Region. The economic boom of the 90's has amplified one of the trends for vacation home buying. Often vacation properties are purchased or constructed at prices out of scale to the local economy. This puts upward pressure on prices for local housing. When existing homes are purchased at high prices, and then rehabilitated at significant additional cost, it not only raises the home purchase prices, but subtracts from housing available to year-round residents.

While growth in vacation homes has slowed considerably in recent years, and most of the intensive growth of previous years occurred in a relatively small number of towns, vacation housing continues to be

an influence throughout the Region. Planning issues related to vacation housing cross town boundaries, and include the demand for improved highway access to resort areas, traffic volume, and speed issues in villages on vacationer routes, as well as inflated housing and land costs in areas around major recreation areas. At the same time, the Region's economy--especially service, tourism, and the building trades--often benefits from the business brought in by resort and vacation housing development.

#### **WINDHAM REGION - PERCENT SEASONAL HOUSING**

<b>Town</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>
Athens	36%	33%	19%
Brattleboro	1%	1%	1%
Brookline	37%	37%	28%
Dover	65%	84%	74%
Dummerston	15%	12%	8%
Grafton	30%	8%	24%
Guilford	8%	10%	7%
Halifax	52%	48%	32%
Jamaica	48%	59%	52%
Londonderry	43%	49%	39%
Marlboro	34%	32%	31%
Newfane	34%	39%	26%
Putney	10%	8%	5%
Readsboro	10%	32%	23%
Rockingham	4%	4%	3%
Searsburg	55%	47%	45%
Somerset	95%	95%	89%
Stratton	89%	92%	94%
Townshend	40%	42%	24%
Vernon	3%	1%	2%
Wardsboro	58%	61%	50%
Westminster	5%	11%	8%
Weston	41%	50%	44%
Whitingham	29%	37%	32%
Wilmington	50%	60%	52%
Windham	60%	62%	51%
Winhall	87%	88%	81%
Region total:	26%	35%	31%

*Source: 2000 U. S. Census*

## **AFFORDABLE HOUSING**

### **AFFORDABLE HOUSING DEFINED**

Housing is considered affordable when households are able to buy or rent adequate housing by spending 30 percent of their income. Housing costs for renters are defined as rent and utilities (including heat, hot water, trash disposal, and electricity). Housing costs for homeowners are defined as mortgage principal and interest, property taxes, and property insurance. This definition is widely used by banks as well as by the Vermont Department of Housing and Community Affairs. Historically, a community's housing has been considered affordable when households with incomes at the county median would spend no more than 30 percent of their gross income on housing that is at the median cost. It is important to keep in mind that fully half (50 percent) of the households in the Region earn *less* than the median income. Within that "below median" group, the terms low and moderate household income levels are used to describe a particular segments of the population -- segments that, since the mid 1980's have found it increasingly



difficult to afford adequate housing. The U.S. Department of Housing and Urban Development (HUD) defines Low and Moderate Income Levels (LMI) as below 50 percent and 80 percent of median income respectively.

Another tool for measuring the affordability gap is the Livable Wage. This is a calculation of the minimum earnings required to afford basic necessities for living, housing being perhaps the most critical in that everything else tends to get more difficult and expensive when a family lacks reliable housing. On the following four pages are tables that indicate the distribution age and income across Windham County households<sup>5</sup>, and that present estimated costs of basic needs and livable wages for single persons, single parent families, and two parent families. From these it is clear that there are a significant number of working families that find it difficult to afford suitable housing. The 1999 Vermont Legislative Housing Committee Study concluded:

Wages paid to employees at the lower end of the income spectrum are insufficient to pay for basic necessities of life, such as shelter, food, health care, and clothing. The increasing gap between wages and housing costs cannot be bridged by decreasing housing costs alone. Many families with two full-time working adults still cannot afford adequate safe housing....<sup>6</sup>

The study also pointed out that a “region’s ability to attract new employers or to encourage economic expansion is severely limited by a lack of affordable and market rate housing.”

With the economic expansion of the 90’s the concept of “affordable housing” has acquired new significance. The income gap for many families has been compounded by the absence of new housing units at prices affordable to working families — either as rentals or for purchase. The supply of affordably priced housing units simply has not kept pace with demand. Some of the factors contributing to this are economic. Because the recent demand for upscale single-family homes has been sufficient to keep builders busy, they have had little incentive to pursue riskier patterns of development. A number of area developers and landlords say that the HUD Fair Market Rents, which tend to establish maximum rates for Section 8 tenants, are simply not high enough to make a profit in at this time. Another contributing factor is the change in federal tax policies, particularly regarding depreciation, that have made speculative housing developments less attractive in any market. In turn, the shortage of new units being created for working families puts upward pressure on prices, as does the inflationary effect from the demand for second homes. The result has been that even families with incomes at or above median level, have increasingly found it difficult to obtain adequate housing.

A diverse housing stock with a wide range of housing costs is a necessary component of the economic and social health of individual towns and of the Region as a whole. Adequate and affordable housing for all economic groups is a current need in all communities and there is no evidence that this need will be adequately met without specific community effort. This is a regional issue requiring the participation and cooperation of all towns. Clearly the nature of that participation will vary from town to town, based on a town’s resources, and settlement and business patterns. Special planning efforts at all levels—including local, regional, state and federal—are required to stimulate the development of affordable housing.

Municipalities should

identify areas for compact development and facilitate the kinds of densities needed to reduce per unit costs. Locating these areas near services will improve affordability for residents and reduce municipal costs for services. Proper provision for adequate and safe water supply and sewage disposal will be key to this development. The financial capacities of our towns are limited. It is to be hoped there will be appropriate state and/or federal funding to support community infrastructure to meet these needs. Municipalities will need to take care that planning and zoning to encourage development that is consistent with traditional historic development patterns -- compact, mixed commercial/residential use, with a mix of all socio-economic groups. Models on these patterns have been demonstrated to work well for housing, and are consistent with the goal of discouraging sprawl.

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<sup>5</sup> As in some other sections of this Plan, some of these data are presented on a county basis and not for the Region because that is how the U. S. Census Bureau produces the statistics.

<sup>6</sup> Joint Housing Committee 1999 Report), prepared by Legislative Council

The relatively high cost of land and for some on-site sewer and water improvements sometimes make it difficult to build even modest housing at an affordable price. Developers, both for-profit and non-profit companies, say relatively high housing density is the only way to bring down per unit costs. This means enabling the kinds of development patterns that are a historic tradition in Vermont -- compact villages and downtowns. However, as noted in the 1999 Joint Committee Report, the affordability gap “cannot be bridged by decreasing housing costs alone.” The Committee makes several suggestions relevant to planning, including:

- Municipal allocation policies that reserve sewer and water capacity for affordable housing;
- Locating housing in proximity to services, including transportation; and
- Fair distribution of rental housing, and publicly assisted housing throughout a region.

In order for affordable housing to be available to every economic group, a portion of the housing will require some form of subsidy. Historically these subsidies come primarily from state and federal programs. The largest federal housing subsidy -- in terms of dollars -- is the mortgage interest deduction. Most of these dollars benefit the upper, middle, and higher income households. There also are state and federal programs specifically targeted at low and moderate income levels. These include the Section 8 vouchers, which subsidize rents and in some cases may now be used on mortgage payments, as well as the Community Development Program, Vermont Housing and Conservation Board, and USDA Rural Development programs. On the regional and local level, the capacity for subsidizing housing is limited. Municipalities can waive various fees and institute tax abatement policies similar to those used to encourage business development. Municipal policies and strategies that aid the creation of housing at lower private market rates, will also facilitate the development of subsidized housing by reducing per unit subsidy costs.

The National Fire Protection Association has established a residential standard to complement the commercial code for fire protection sprinkler systems. Experience has shown these systems save lives and property, and reduce a community's water usage for fire fighting. But fees assessed on fire protection sprinklers by local municipalities can be one of the factors contributing to costs of multi-unit housing, whether newly constructed or already existing. This is one example of an area where municipal policy could facilitate creation and continuation of housing affordable for working families. Encouraging these systems is also a way to save lives and structures, especially historic landmarks.









Mobile homes and mobile home parks continue to be one alternative to high costs of housing. While mobile homes tend not to be the best financial solution in the long run, they are one of very few choices for a lot of low and moderate-income households. In particular, mobile home parks, while not traditional village architecture, do achieve unit densities that reduce costs. On the other hand, community sewer and water, whether public or private, are essential for a park's viability. The costs involved in building and maintaining such infrastructure do not make mobile home park ownership an attractive business investment. Increasingly, private parks in the Windham region are becoming cooperatively owned. Often this is accomplished through the assistance of one of the areas housing land trusts. Putney, Dummerston and Westminster are home to Mobile Home Parks assisted by the Rockingham and Brattleboro area housing land trusts. This involvement assures that these parks and homes will be maintained at Federal and State standards for safe healthy housing that remains affordable.

Until about 1996, the emphasis of housing agencies was to improve substandard existing housing and redevelop underutilized existing structures. In the year 2000, there was a significant shift to focus on the need for constructing more units. In most areas, including most of this region, there are not that many underutilized structures available. Many of the remaining sites with unused or underutilized structures are Brownfields — abandoned industrial sites. Federal Brownfields programs offer opportunities for housing conversions, but with some cautionary lessons to be learned from programs in other places. The clean-up standards applied to Brownfield Recovery Programs for housing can be more stringent, hence costly, than would otherwise be needed. Since affordable housing is a difficult business venture under the best of circumstances, redeveloping Brownfields for housing requires community support and financial commitment.<sup>7</sup> This does not mean they should not be undertaken. Where Brownfield sites are appropriate locations for mixed housing and commercial services it may be well worth the investment. Especially where the alternative is a sprawling intrusion on the rural landscape. This is just one example of how the creation of adequate housing for our citizens will require community and government support at all levels, from federal, state, and local governments down to the people in the neighborhood. The WRC is operating a regional Brownfields Pilot Assessment Program, but no sites are focused on housing at the time this Plan is drafted.

### **Elder Housing**

*The 1998 Housing Demand Analysis for Windham County* identified elder housing as a source of growing demand in the coming years, based on population demographics. Analysis of the extent of that need is difficult with data currently available, although demand is not expected to be that significant until after 2005. Typically, elderly prefer to remain in their familiar homes as long as possible. This desire runs counter to the advantages of having elder housing concentrated in areas convenient to services and public transportation. The *Market Feasibility Assessment for Senior Housing* in five Windham County towns<sup>8</sup> referenced a study by Westminster Cares that found the majority of those interested in moving into elder housing favored independent living units that include a spare room so family might visit. Municipal planning that facilitates this type of elder housing in village centers and other compact development areas may be the best way to serve this segment of the population. In addition, planning that encourages the creation of “in-town” housing attractive to the younger elderly, the 55 to 65 year olds, may make it easier to provide service assisted housing as this group ages and a higher percentage have acute health related service needs. There is also evidence that mixed age communities tend to work to the benefit of elder residents.

### **Housing for Children**

Local tax burdens are a major concern for many towns, which sometimes contributes to a perception that any policies that might increase the school age population are to be avoided. Some of the impact on school costs is a product of state policy. Towns have a responsibility to assure that all children have safe, reliable housing to grow up in, and an opportunity when they reach adulthood to find housing of their own, so they may remain in the community. Studies by the WRC suggest that new housing that is

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<sup>7</sup> American Planning Association, Economic Development Division, *News & Views*, winter 2001

<sup>8</sup> John J. Ryan, *Development Cycles*, Amherst, MA

adjacent to existing services and compact development is less costly to towns than new housing in outlying areas.

### **Housing For Those With Acute Needs**

Providing safe, affordable, and convenient housing for senior citizens, very low income households, and disabled residents is a regional responsibility and a priority shared by every Windham Region town. The special needs population has a median income below the level of the general population, which means even under the best of circumstances they have difficulty affording adequate housing through the private market. Essentially, all of the problems discussed under affordable housing are compounded by medical and adaptive costs, and a shortage of housing units that do not have barriers to the disabled. As a group, disabled persons in Vermont have incomes less than two-thirds that of the non-disabled population. Over 25 percent of disabled persons live below the poverty level.

Windham Region residents with serious mental illnesses also have a critical need for affordable housing. Ninety percent of those individuals are not provided with a housing subsidy by the Department of Mental Health. Many live in substandard apartments, or pay 60 to 85% of their income on rent and utilities, or are homeless.

The Region's very low-income population also requires special planning efforts to meet its housing needs. Very low income households are defined as having incomes at or below 50 percent of the County median household income, estimated by HUD in 2000 to be no more than \$20,500 for a family of four. Homelessness continues to be a problem in the Region. Since 1987 the Morningside Emergency Shelter in Brattleboro has served an average of 310 persons per year. Between 1993 and 1996, an average of 75 persons per day were turned away from the shelter due to a lack of available space.

The population of physically disabled residents also requires special housing. Available information on the number of Region residents with physical disabilities is limited and it is difficult to determine the number of accessible housing units in demand.



# IMPLEMENTATION

*I am sure there is some sort of law of political science that says if you neglect an obvious need long enough, sooner or later the next higher government will step in and take the whole thing away from you.*

Dennis O'Harrow, 1956

## PUTTING THE REGIONAL PLAN INTO ACTION

This Plan outlines a direction for the Region's future and guides public and private actions affecting the Region's towns. To this end, goals and policies are presented on a multitude of subjects related to the Region's growth and development now and in years to come. This chapter describes the various methods available and recommended to implement those goals, policies, and programs.

To a limited extent, the Plan's very existence and distribution may result in actions to implement its recommendations. Primarily, however, the Plan is implemented as a result of further projects and studies of the WRC as it works with member towns, state agencies and other interests. The value of the Plan is its ideas, the soundness of the technical work of the WRC staff, and the forum the WRC provides for member towns to work cooperatively on common issues. These qualities may be of more value in the long run than the more traditional implementation techniques of regulation, public infrastructure construction, and taxation. Without a dedicated effort to implement the Plan by the WRC and its member towns, however, it will have limited effect.

The Plan is designed to give clear direction on actions to be undertaken to implement the Plan's goals and policies, which is done in part by recommending programs and actions for each topic. In most cases these program statements are directed to the WRC itself, but some are directed to state agencies, towns or the private sector. Where program statements are directed to the state, it is generally suggested that state agency programs are required for successful implementation and provide a basis for a given plan's compatibility finding pursuant to 3 V.S.A. Section 4020.

Implementation of the Plan requires consideration and coordinated action by public bodies--local, regional, state and federal--and private interests, including citizens who are concerned about the Region's future. Users of the Plan have something to gain from the Plan and something to contribute toward its implementation. The citizens of the Region have the greatest stake in the Region's future and, therefore, the greatest stake in plan implementation. Local governments also bear some of the responsibility of implementing the Plan, and the WRC shall join its member towns in working toward implementation.

The WRC has two basic avenues available for plan implementation, first by its own active efforts in the study and support of ideas and policies, and second by the decision and actions of others, either voluntarily or as a result of requirements of several provisions of state and federal laws. This Plan relies on the use of both avenues: active involvement of the WRC and its member towns and with support from the state.

General implementation strategies are discussed in this chapter. The Plan also functions as the basic foundation for the Commission's Annual Work Programs. Programs identified in this Plan and the implementation strategies will be reviewed each year in preparing the Commission's Annual Work Program. Consideration should be given to identifying the highest priority needs in formulation of the Annual Work Program.

## **WRC TECHNICAL ASSISTANCE TO TOWNS**

The planning programs of the WRC member towns are one of the most important vehicles available for furthering regional plan policies. Member towns may find information, policies and programs in this Plan that are appropriate for their town plans. The WRC technical assistance work with its member towns will also help implement this Plan. The WRC, within its limited resources, will continue to assist member towns with town plan preparation. This will include offering sample elements and information of other towns, and providing housing need guidelines. A town may use portions of this Plan as its town plan pursuant to 24 V.S.A. Section 4349a.

Implementation of town plans by member towns using bylaws and other tools will also further the implementation of this Plan. The WRC will maintain staff resources to assist towns to implement town plans by developing innovative zoning techniques, subdivision regulations, and impact fee ordinances when supported by work agreements. The WRC will advise towns on capital budgeting and infrastructure improvements when in keeping with this and the town's plans.

The WRC is charged with the preparation and maintenance of Implementation Guidelines to assist towns in achieving consistency with the Vermont Planning Goals. Since these goals are shared by the WRC, the work will also help to implement this Plan.

The WRC will maintain a Services Policy describing technical assistance available to member towns as part of the Commission's core activities and the opportunities for expanded service when funded as a special project. The Services Policy will include a priority for work that will result in compatible town plans and implementation of approved town plans.

The WRC maintains a Town Plan Review and Approval peer process that is designed to support member towns as they prepare their town plans and seek WRC action to have an Approved Plan. This process has as one of its standards the compatibility of the town plan with this Plan. Compatibility, by state definition, is intended to ensure that the plan of a given town, region or state agency does not reduce the implementation or desired effect of another.

The WRC will develop strategies designed to assist member towns in defining and managing growth and development that have cumulative impacts as required by 24 V.S.A. Section 4345a.

The WRC assists member towns with inter-town coordination in a variety of ways. These efforts help towns cooperatively address regional issues including those covered in this Plan. The WRC will use this Plan in undertaking coordination projects.

The WRC will consider the policies and programs included in this Plan when assisting towns with special projects, and when appropriate, will set priorities for special project assistance based on compatibility with this Plan.

Besides assisting selectboard members and planning commissioners to develop and implement town plans, the WRC will also work with town managers, listers, auditors, road commissioners, and others on issues and projects related to providing effective local government. The WRC will continue to increase involvement of selectboard members in guiding the Commission's Work Program and support to member towns.

## **REGIONAL ISSUES AND PROJECTS**

The WRC works cooperatively with its member towns to address regional issues. This work can include studies of special problems and it can lead to detailed plans and designs that further the goals and policies

of this Plan. It can result in the Commission sponsoring programs that meet regional needs. Most importantly, it includes regular review and maintenance of this Plan so that it provides timely guidance.

During the term of this Plan the WRC will undertake, complete or continue the work discussed in this section. Other regional work that implements the Plan, not presently anticipated, will also be undertaken during this period. This work will require the assistance of, and coordination with member towns, state agencies, community organizations, and the private sector.

The list of WRC Programs/Actions contained in this Plan includes regional projects and studies to be undertaken by the WRC during the life of the Plan. These require the support and participation of member towns and technical support and funding of state agencies. Specific recommendations for towns and the state are included where there is a clear need. This cooperative approach and use of the WRC's resources will assist towns and the state to carry out their objectives and responsibilities. State support is critical to the implementation of the policies of this Plan.

To be effective in addressing regional transportation needs, the WRC must further develop this part of its program. Continued work is needed in the Deerfield Valley as all parties inch closer to a long-term solution to the VT 9 and 100 highway congestion. Regional work is also needed to support the Brattleboro growth center, specifically Putney Road, Marlboro Road, I-91 interchanges, Connecticut River bridges and ride-sharing. Reconstruction of Route 121 from Saxtons River to Cambridgeport and VT9 between Wilmington and Searsburg also are priorities that will be entering construction as this Plan is adopted. Each of these needs will require involvement by towns and both administrative and funding support from the state. The issues must be addressed at the state level to insure compatibility with this Plan.

Growth center planning deserves coordinated attention. The WRC, in cooperation with member towns, should continue to examine the issues related to growth centers, such as growth and development, employment, transportation, affordable housing, education, utilities, and financing local and regional services and it should assist interested towns to explore growth center designation and policy issues.

Water quality issues and watershed-based planning are increasing in importance in this Region and across Vermont. To an appropriate extent, the WRC should adjust its work programs in future years to increase its focus on watershed planning and to cooperate with towns, local watershed groups, state and federal agencies, and others to maximize the benefits for member towns from this approach.

The WRC has a long-standing commitment to planning for housing and community development. During the next several years this continued effort can lead to projects through the combined efforts of the state, private development and financial interests, and community non-profit groups. Projects may include natural resource based business development, existing business assistance, tourism planning, as well as new housing and housing rehabilitation projects. State support through the Community Development Program and the several state agencies with housing related responsibilities is needed to help the WRC and its member towns continue this effort.

Regional land conservation efforts should continue in cooperation with the Vermont Land Trust, other non-profit conservation organizations and interested member towns. The purpose of the program is to assist towns and landowners in the protection of important lands that give the Region and its communities their distinctive rural character. Recreational areas, scenic resources, farmlands and productive forests should be the focus of such programs. Multi-town projects might include farmland protection, implementation of the recommendations of the three-state Connecticut River Scenic Byway Study, and protection of contiguous wildlife corridors and mountain resource lands. Town projects would likely be focused on lands identified as being worthy of conservation in town plans. Work would be accomplished through land trust efforts including such techniques as purchase of land and easements for conservation, recreation, and scenic preservation.

## **INFORMATION AND TRAINING**

One of the most successful ways the WRC can work for implementation of this Plan is through continuation and expansion of its information and training programs. Newsletters, public forums, workshops and the WRC Resource Center help to inform town officials and citizens of the issues and opportunities presented in this Plan. Basic in approach and difficult to measure in effectiveness, the value of this implementation tool can be easily underestimated.

The WRC has established and maintains a Geographic Information System (GIS) Service Center. The center is designed to offer data and mapping analysis support services to member towns, the WRC's own programs and other compatible projects. To be successful, the center needs accurate and up-to-date data to be available in a coordinated state system. Development and maintenance of these databases should be a priority for the WRC and the state. The state's twelve regional commissions should continue to work cooperatively together and with state agencies to support data development efforts that are mutually beneficial

## **PLANNING COORDINATION**

The following guidelines are established to assist the WRC in its major role in planning coordination.

- 1) The WRC will participate in reviews of state agency plans, giving particular attention to their compatibility with this Plan and the approved town plans of member towns.
- 2) The WRC will participate in state review processes such as Public Service Board Section 248 hearings, Waste Facilities Review Board, Water Resources Board and others, giving particular attention to the policies of this Plan and the approved town plans of member towns.
- 3) The WRC shall review federal projects and participate in environmental impact reviews under the National Environmental Policy Act. The WRC shall consider and point out the short and long-range impacts of federally supported public investment projects and programs on the Region's economy, settlement pattern, human and natural resources, and public facilities and utilities, giving particular attention to their compatibility with this Plan and the approved town plans of member towns.
- 4) The WRC shall work for an effective state public investment planning and review process that provides meaningful participation in the review of state projects and the review of development activities supported by state funds.
- 5) The WRC shall continue its Public Policy and Legislative Committee to address legislation and other important public policy issues. Selectboards are invited to take an active role in the committee and regionally important public policy issues will be identified at the start of each year so that the committee may be proactive in its work.
- 6) The WRC supports the coordination value of periodic meetings of select board members from throughout the Region. The WRC will assist such meetings and offer to sponsor similar regional meetings of planning commissioners, treasurers, town clerks, listers, etc.
- 7) The WRC supports state improvements to the Act 250 development review process by the following:
  - a) Coordinate State agency reviews of Act 250 applications with the WRC and member towns when there are common issues.

- b) Work with the Environmental Board and District Environmental Commission to ensure that applications completely address all criteria including town and regional plan conformity. When all criteria have been addressed, development review should occur in a timely and efficient fashion without protracted reviews. It has been demonstrated that large and complex applications, properly conceived and prepared, can be reviewed efficiently with savings to all parties.
  - c) Work with towns and other regional planning commissions to propose and review new legislation that would improve permit processes to increase permitting reliability and encourage appropriate development in designated growth centers.
- 8) The WRC shall maintain its peer review process to assist member towns seeking regional approval of town plans.

## **DEVELOPMENT REVIEW**

Town and regional plans include provisions that address major projects, new development and land development issues. Usually, as one of the criteria for the issuance of a permit decision, proposed developments must conform town and regional plans. In the process of development review, the WRC will assist decision-makers regarding regional issues addressed in this Plan.

The State of Vermont and various federal agencies have a number of proceedings where town plans and the regional plan are used in making land use and resource decisions. State law provides that regional plans are relevant to permit applications as provided below (24 V.S.A. Section 4348):

- 1) "The provisions of the regional plan shall be given effect to the extent that they are not in conflict with the provisions of a duly adopted town plan; and
- 2) To the extent that such a conflict exists, the regional plan shall be given effect if it is demonstrated that the project under consideration in the proceedings would have a substantial regional impact."

The WRC's development review process will be conducted in accordance with the following guidelines:

- 1) The WRC shall review projects of regional importance and will consider the provisions of town plans and the regional plan in this review.
- 2) The WRC will upon request assist towns in their determinations on local permits for projects which have regional issues.
- 3) A WRC Project Review Committee shall be made up of a core group of Regional Commissioners and shall seek the assistance of the Regional Commissioners from the town where the development is being proposed and any other involved town. The Committee will review projects that may have regional importance, that might contribute to cumulative impacts, that are precedent setting, and others referred to the Committee for review by staff or a member town. The Committee will prepare testimony on major projects and development review issues and may refer recommendations to the full Commission for approval.
- 4) A primary focus of the review will be to consider the provisions of town plans and the Regional Plan. The Committee will identify information needs, issues and areas of non-conformance with the Regional Plan and town plans as necessary.
- 5) The Committee will also consider the cumulative impacts that may occur. The WRC may initiate cumulative impact review by requesting, coordinating and reviewing cumulative impact studies.

The scope of each cumulative impact study should address impacts to both the natural and human environment and offer measures to avoid and/or mitigate adverse impacts. The costs of such studies shall be borne by the applicant.

- 6) If, in its review, the Committee determines that a conflict exists between the provisions of town plans and the Regional Plan, the WRC will work with town officials to alleviate or minimize the conflict. If a conflict between a town plan and the Regional Plan cannot be resolved, the town plan will prevail except as provided in 7) below.
- 7) If the Committee believes that a conflict exists between the provisions of the Regional Plan and any applicable town plan with respect to the development proposal under consideration, then the Committee, with the assistance of WRC staff, shall prepare a report that assesses Substantial Regional Impact and gives consideration to the following:
  - a) Is the alleged conflict clear and distinct? Is the conflict significant? What are the issues raised by the development proposal under consideration that are alleged to conflict with the provisions of one or more applicable plan(s)? Do the provisions of both the Regional Plan and the town plan(s) clearly and specifically address the issue(s) in question?
  - b) Will the development proposal, if constructed, cause the implementation of one plan to significantly reduce the desired effect of the implementation of the other plan?
  - c) Will the issues upon which the plans are alleged to conflict have a significant positive or negative impact on more than one town? Will these issues have a significant positive or negative effect on regionally important resources, facilities, infrastructure, services or other factors?
  - d) Have reasonable efforts been exhausted to resolve the conflicting issues, such as, but not limited to, amendment of the development proposal?
  - e) Will implementation of the town plan, as proposed by the development under consideration, have such substantial negative effect on the implementation of the Regional Plan that the provisions of the Regional Plan ought to be given precedence?
  - f) Are there any other factors or information which the Committee deems relevant to the determination of whether or not "substantial regional impact" exists?

The Committee report shall be considered by the WRC, with interim action by the Executive Board if necessary as provided for in of the WRC Bylaws<sup>1</sup>. The Committee report may be amended. Following such consideration and amendment, the Board or Commission shall vote on the question of whether or not the provisions of the Regional Plan should be given effect over the provisions of the town plan. The results of this vote, together with a copy of the Committee report and any amendments made to it shall be transmitted to the regulatory body that is conducting the review. This action and the accompanying report shall be the basis for determining whether "substantial regional impact" exists as required by 24 V.S.A., Section 4345a(17), and shall be given "due consideration, where relevant, in state regulatory proceedings" as provided therein.

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<sup>1</sup> Article VI.H.3

# **WINDHAM REGIONAL PLAN POLICIES**

## **GROWTH-RELATED GOALS**

1. The rate of growth for any town should not exceed its ability to provide services necessary to support that growth.
2. New development should be required to pay its own way, that is, to either provide or contribute fairly toward the provision of facilities and services needed to support that development.
3. Public and private investments should be coordinated to manage the rate of growth and to direct new development to appropriate locations.
4. Population growth and economic development should not damage the natural environment or the rural character of the Region's towns, villages, and countryside.
5. Economic growth should enhance the Region's cultural strengths and provide a diversity of employment opportunities.
6. Development should be based on the capacity of the natural environment, infrastructure, and services and the vision each town has concerning the kind of place it wants to become.

## **A. LAND USE POLICIES**

### **Regional Centers**

1. With consideration of type and scale of development, direct appropriate new commercial growth in the form of jobs, housing, commerce, utilities, industry, community facilities, recreational facilities, and cultural activities to regional centers.
2. Promote the economic and community vitality of the central business districts in Brattleboro and Bellows Falls. Support revitalization efforts that strengthen and improve viability of the downtown areas. Use and maintain existing historic structures whenever possible.
3. Target federal, state, and private funding to support public transit, bridge and highway repair, and other transportation needs, water and sewer, community development, housing, recreation, and any other identified regional center needs.
4. Support the rehabilitation of existing housing, and commercial/industrial buildings and areas.
5. Promote the attractiveness of regional centers through quality building and landscape design and by maintaining public open spaces for scenic and recreation pleasure.

### **Resort Centers**

1. Direct new growth and development in the form of resort jobs, housing, commerce, recreation, and cultural activities to the existing resort centers.
2. Concentrate growth at resort centers to minimize the trend towards dispersed housing and commercial growth.

3. Support appropriate management of resource lands that are valued for water quality, trails, open space, wildlife habitat, and scenic enjoyment.
4. Support incorporation of public transportation in any plan for transportation improvements in the resort centers.

### **Regional Growth Centers**

1. Establish regional services, institutions, and recreational and cultural resources in designated growth centers.
2. Support increases in capacity and extension of infrastructure, if necessary, to serve designated growth center needs.
3. Support the establishment of designated growth center boundaries and related development patterns.
4. Support the rehabilitation and use of under-utilized land and buildings in growth centers.
5. Encourage cooperation between designated growth centers and neighboring towns on issues related to growth center development, related impacts, and financial issues.
6. Encourage consolidation of regional and town services where it will avoid unnecessary service duplication.

### **Villages**

1. Direct residential, commercial and industrial development, appropriate recreational facilities and cultural activities, and community buildings and uses to villages in order to keep these centers culturally, socially, and economically viable.
2. Support preservation of village character through appropriate design and scale of commercial, industrial, residential, transportation infrastructure and community structures and uses.
3. Encourage revitalization efforts that strengthen and improve the viability of villages. Use existing historic structures in the villages whenever possible.
4. Encourage the construction or expansion of utilities when needed to protect health and ground water resources, and to allow appropriate in-fill and development of lands within villages.
5. Target federal, state or private funding to support infrastructure improvements, bridge and highway repairs, installation of sidewalks and lighting, housing, recreation, or any other identified village need.
6. Encourage towns to adopt clear land use plans and related implementation policies that will maintain village boundaries, preserve historic settlement patterns, and prevent rural sprawl.

### **Hamlets**

1. Develop hamlets at the density of, and in the settlement pattern of, existing historic hamlets and villages.



2. Direct new residential development and services in rural areas to hamlets in order to prevent rural sprawl.
3. Support the development of, and protect the character of, hamlets through appropriate zoning, site planning, and building design.
4. Direct new hamlet developments away from areas that provide critical access to wildlife habitat and ensure that wildlife habitat does not become fragmented by the elimination of connections between wildlife areas.

### **Rural Residential Lands**

1. Ensure that any development of rural residential lands will be at densities that will serve to contain rural sprawl, and that are compatible with existing land uses and sensitive to the limitations of the land.
2. Encourage a mix of rural land uses including: housing; home businesses; small-scale agricultural, commercial and industrial uses; and outdoor recreation, so long as these uses are compatible with one another and do not cause excessive noise, pollution, or disturbance.
3. Ensure that new development is sensitive to the limitations of the land and avoids important natural resource areas located within the rural residential lands.
4. Direct new rural residential development away from areas that provide critical access to wildlife habitat and ensure, through planning, that wildlife habitat does not become fragmented by the elimination of connections between wildlife areas.

### **Productive Rural Lands**

1. Ensure that new development reflects existing settlement patterns, is low in intensity, and does not conflict with the use and management of forest, agricultural and mineral resource lands, but rather sustains these natural resource commodities.
2. Support a mix of rural land uses including agriculture, housing, home businesses, small-scale commercial and industrial uses, commercial forestry and outdoor recreation, so long as these uses are compatible with one another and do not cause excessive noise, pollution, or disturbance.
3. Support long-term management of agricultural and forest lands for uses that promote a sustained yield of crops and timber products.
4. Encourage the use of innovative land saving techniques such as cluster development and fixed area density allocation to protect agriculture, forest, and mineral resource lands from development and fragmentation.
5. Support protection of green space, particularly along streams and rivers, and other important lands that are valued for trails, open space, wildlife habitat and scenic enjoyment.

### **Resource Lands**

1. Ensure that new development reflects existing settlement patterns, is low impact and low intensity, and does not conflict with the resources, but rather sustains these natural resources.
2. Ensure protection of fish and wildlife habitats, areas hosting state or federally identified endangered and threatened species, unique and fragile natural areas, wetlands, shore lands,

floodplains, aquifer recharge areas, steep slopes, lands over 2500 foot elevation, ridgelines, essentially undeveloped forest lands which have limited access to an improved public road, and regionally significant scenic corridors and areas.

3. Support protection of green space, particularly along streams and rivers, and other important lands that are valued for trails, open space, wildlife habitat and scenic enjoyment.
4. Avoid extension of roads, energy transmission facilities, and other services into and through Resource Lands.
5. Construct corridors for new energy transmission facilities only when needed, and then adjacent to and parallel to existing operational energy transmission facility corridors. Minimize their visual impact on ridgelines, slopes and open areas, and avoid important natural and historic resources.
6. Oppose the fragmentation of wildlife habitat by protecting wildlife corridors that join large tracts of resource land.

## **B. ECONOMY POLICIES**

1. Promote activities and development that contribute to a strong and diverse economy, providing satisfying and rewarding job opportunities for all citizens in all parts of the Region and supporting a strong municipal tax base, while maintaining environmental standards and promoting environmental justice.
2. Encourage activities that expand opportunities in areas with high unemployment or high numbers of workers earning less than a livable wage.
3. Develop Vermont-based industry and commerce that utilizes renewable natural resources and Vermont agricultural products.
4. Generate a variety of stable year-round jobs with wages and other compensation that provide a livable income, and that include skills training programs and other benefits that contribute to the personal development and quality of life for all workers.
5. Develop and assist the growth of small businesses, including home businesses, and entrepreneurial ventures that preserve and revitalize communities.
6. Utilize existing resources (e.g. financial, physical, and technical) to facilitate economic development, including the creative use and revitalization of suitable existing space for manufacturing and industrial activities, commerce, housing, and the arts.
7. Improve and expand markets, production, processing, and distribution of land-based industry products, in particular, value-added products.
8. Support a broad range of agricultural programs such as agri-tourism, agricultural demonstration, test projects, community supported agriculture, consumer or producer cooperatives, and farmers' markets.
8. Utilize waste and surplus products, such as low-grade timber, wood chips and cordwood, and other recycled or post-consumer products as available and feasible.
9. In addition to specific job re-training that teach technical and trade skills, provide educational programs in basic skills, such as math and communication, in order to improve value and opportunity for the Region workforce, both entry-level and advanced.

10. Support opportunities for towns to work together in pursuit of economic development programs, in order to minimize competition between towns for the overall benefit of the area work force.
11. Promote the economy through tourism activities that emphasize the character of the Region itself: its beauty, culture, history, wildlife, and outdoor recreation.
12. Support the activities such as the arts, which enhance year-round tourism, stabilize the level of use of community resources, and improve cultural opportunities for all residents.
13. Focus appropriate economic development activities in designated downtowns, and in regional growth centers designated by this Plan, and local growth centers designated by town plans.
14. Consider current and future housing requirements in evaluating business development expansion projects. Encourage measures that will establish and maintain an adequate and diverse housing stock for area workers, including expansion of infrastructure, in particular water and sewer, for housing and business development in growth areas and villages.
15. Expand and establish new commercial development that conforms to traditional historic development patterns, with compact mixed-use residential and commercial centers separated by rural countryside.

## **C. NATURAL RESOURCES POLICIES**

### **Surface Waters**

1. Maintain undisturbed buffers of vegetation along watercourses, lakes, ponds, wetlands, and vernal pools in order to protect shorelines, provide shading to prevent undue increase in stream temperatures, minimize effects of erosion, sedimentation and other sources of pollution, and maintain scenic, recreational, and habitat values.
2. Maintain or enhance existing chemical, physical, and biological quality of the Region's surface waters.
3. Evaluate the licensing or re-licensing of hydroelectric power generating facilities on a case-by-case basis and endorse only those where all beneficial values and uses of the affected waters are maintained.
4. Maintain Class I wetlands in their natural condition. Ensure that any permitted alterations to Class II and Class III wetlands do not significantly diminish their functional, ecological, or aesthetic values. Wetland mapping prepared by the National Wetlands Inventory, showing Class I and II wetlands, available in digital GIS format for each town, should be field-checked and verified.
5. Evaluate inter-basin transfers of water on a case-by-case basis and endorse only those proposals where it can be demonstrated that the water quality in either the sending or receiving basin will not be significantly lowered, the water table and stream flow in the sending basin will not be detrimentally lowered, and peak flows in the receiving basin will not be significantly increased. For purposes of this policy, a basin is the drainage area of a watercourse that is at least 1,000 acres in area.

6. Support identification, recognition, and appropriate management of waters with exceptional natural, ecological, recreational, cultural, or scenic values.
7. Support surface water classification and management strategies which are consistent with the municipal and regional land use planning objectives for the affected watershed, and which will effectively maintain existing water quality.
8. Maintain water flows in streams at levels that support a full range of in-stream uses and values.
9. Identify and address any adverse environmental impacts of development proposals that could impede the flow of flood waters, alter the stream channel or its floodplain, or otherwise endanger the health, safety, and welfare of the public.
10. Protect surface waters from run-off and sedimentation caused by agriculture, forestry, recreation, and development activities through the use of:
  - Acceptable Agricultural Practices (AAP's);
  - Acceptable Management Practices (AMPS) for forestry; and
  - Best Management Practices (BMP's), for erosion control.

## **Groundwater**

1. Maintain or enhance existing chemical, physical and biological quality of the Region's groundwater.
2. Support the design and construction of on-site sewage disposal systems in consultation with a qualified professional in accordance with applicable state and local regulations.
3. Support uniform design and administration of on-site sewage disposal systems and encourage the development of alternative systems.
4. Avoid contamination of groundwater from the drilling of wells through the use of proper well-drilling technology and appropriate well placement.
5. Require small-quantity generators of hazardous waste to have storage and disposal plans demonstrating that water contamination risks have been minimized.
6. Water withdrawal from underground sources should be carefully monitored to ensure that aquifers and surface waters are not significantly depleted and that water is properly allocated. Promulgation of specific laws and regulations to control water withdrawal and to ensure minimum flows is encouraged.

## **Air Quality**

1. Prohibit any development or activity that significantly degrades air quality.
2. Support efforts to reduce regionally generated air pollutants from vehicles, two-stroke engines, and wood and coal burning stoves.
3. Encourage all new development to follow the energy conservation guidelines developed by the Vermont Public Service Department for Act 250 permits.
4. Support economic activities that attract clean industries.

## **Forest Resources**

### Resource Protection

1. Support productive forestry in large parcels, contiguous blocks of parcels, and forested corridors linking blocks and maintain accessibility to those parcels. Doing so will contribute to the long-term ecological health and economic vitality of the Region's forestlands.
2. Discourage the fragmentation of large parcels of forestland for development or other conversion to non-forest uses.
3. Support the work of land trusts in placing and encouraging sustainable management of forested parcels under conservation easements, of governmental organizations designating forested lands as resource and conservation lands, and of other organizations whose purpose it is to enhance and conserve forestlands and their resources.

### Economic Contribution

4. Promote the development of markets for locally produced forest products and encourage local artisans and the growth of a value-added forest-products industry so that complete timber processing, from timber cutting to finished product, can remain in the Region.
5. Support the development of industrial use of lower grade timber to allow forestland owners to undertake timber stand improvements profitably.

### Appropriate Management

6. Encourage public, industrial, and private landowners to maintain and enhance forest resources on their lands and to follow sustainable forest management practices that provide habitat for diverse natural species, avoid high grading of timberlands, and follow Acceptable Management Practices.
7. Support the eradication of exotic invasive plants that impede natural forest regeneration in the Region, especially glossy buckthorn, Japanese barberry, and oriental bittersweet.
8. Encourage access to forest lands (with permission of the landowner) for responsible hunting in order to control the deer population, and for recreational hiking.
9. Encourage landowner participation in Vermont's Use Value Appraisal (Current Use) Program and support the Vermont legislature's continuation of this program on a fully funded basis.

### Landowner and Public Education

10. Support landowner and forest-worker educational programs and organizations that teach or demonstrate sustainable forestry and Acceptable Management Practices or that provide educational opportunities to the general public to understand and appreciate the environmental, economic, and recreational benefits offered by the Region's forest resource.
11. Encourage employment by private landowners of professional forest managers.

## **Scenic Resources**

1. Improve sites that diminish a scenic view, particularly along state and federal highways and within scenic corridors.
2. Encourage scenic easements and implement appraisal practices that encourage donation of scenic easements to public and private natural resource/conservation agencies and organizations.

3. The scale, siting, design, and management of new development shall maintain or enhance the landscape and shall protect high quality scenic landscapes and scenic corridors.
4. Minimize visual impacts of communication towers and other high-elevation or ridgeline structures through co-location, design, siting, and color choice. Design and site communication and other high-elevation towers so that they do not require nighttime illumination.
5. Illuminate structures and exterior areas only at levels necessary to ensure safety and security of persons and property.
6. Arrange all exterior lighting so that the light source (lamp) is not directly visible from public roads, adjacent residences or distant vantage points. Shield exterior lighting so that the light does not project above the lamp.
7. Discourage exterior area illumination of regionally prominent physical features and landscapes. Ensure that any such illumination will not significantly reduce the natural appearance of the nighttime landscape, will not be obtrusive in the viewshed, and will not distract unduly from the night-time horizon or night sky.
8. Plan new or improved roads to maintain or enhance scenic resources.
9. Screen new development from I-91 and other scenic roads to the greatest extent practicable using vernacular perimeter plantings of hedges, hedgerows, and street trees.

### **Natural Areas, Fragile Areas and Wildlife Resources**

1. Protect Natural Areas, Fragile Areas, and critical plant and animal habitats. If necessary, protect these areas from indiscriminate publicity by mapping them only in very general terms.
2. Protect important ecosystems and maintain or enhance the habitat needs and travel corridors required by the Region's larger mammals.
3. Protect Natural and Fragile Areas from development. When development is proposed near a natural or fragile area, a buffer strip designed in consultation with the appropriate state agency, must be designated and maintained between the development and natural or fragile area.
4. Support state, federal, and conservation group acquisition of land and/or conservation easements to protect critical wildlife habitats and encourage designation of State Natural and Fragile Areas for significant features and resources.
5. Support community, regional, and state programs and incentives that encourage private and public landowners to recognize the economic importance of protecting, maintaining and enhancing fish and wildlife habitats and ecosystems.

### **Soils and Topography**

1. Take special precautions on slopes to avoid environmental damage, including negative consequences associated with erosion and landslides.
  - Minimize areas of earth disturbance, grading, and vegetation clearing on slopes over 15 percent;
  - Avoid intensive development (other than recreational trails and ski lifts) in areas predominated by slopes exceeding 25 percent or above 2,500 feet in elevation; and

- Design developments on slopes over 15 percent so as to minimize the potential impacts of slides and earthquakes.
- 2. Use detailed site studies to determine suitability for development where steep slopes occur with shallow soils. Ensure that all development proposals on such soils provide and conform to an erosion control plan for construction phases of the development and a site drainage plan.
- 3. Avoid development on wet soils.
- 4. Avoid development on mucks, clays, silts, and other unstable soils that offer poor support for foundations or footings and are subject to slippage. Conduct extensive site investigation to determine suitability for any development on unstable soils.

## **Mineral Resources**

- 1. Land with high potential for the extraction of mineral and earth resources shall be developed so as to not interfere with the subsequent extraction or processing of the resource.
- 2. Extraction of mineral resources shall not interfere with or have negative impacts on groundwater, air quality (dust and noise), and special community resources (historic sites, recreation areas, or scenic areas). Extraction sites must handle truck traffic without creating unsafe conditions for adjoining landowners.
- 3. Ensure that effective site rehabilitation plans are provided and implemented.

## **D. COMMUNITY RESOURCES POLICIES**

### **Public Water Supplies**

- 1. Extend municipal water mains to only those areas where future development is being encouraged, as identified by growth center and growth area designations in approved town plans and this Plan or in areas where extension is required for public health purposes.
- 2. Maximize water conservation when planning for development in order to limit demands on public water supplies.
- 3. Discourage activities and land uses that may degrade the watersheds of public water supply sources.
- 4. Minimize erosion and runoff to protect public water supplies. Follow the state's Acceptable Management Practices as standards for silvicultural practices in public water supply watersheds.
- 5. Limit land uses within source protection areas to those uses that pose no threat of contamination to public water supplies.

### **Private On-Site Water Supplies**

- 1. Locate and install wells using proper isolation distances and drilling techniques.
- 2. Ensure that new development does not impact existing private on-site water supplies.

## **Wastewater Treatment**

1. Promote environmentally sound and affordable wastewater treatment, including research regarding the viability of alternative on-site management systems such as composting toilets and gray water recycling.
2. Ensure long-term reliability of the Region's wastewater management systems and facilities, including the long-term ability to properly treat septage.
3. Plan development so as to manage wastewater effectively and maintain surface and groundwater quality.
4. Plan development so as to minimize water consumption, in order to lengthen the life and improve the efficiency of wastewater treatment facilities.
5. Support proposals to upgrade and improve existing wastewater treatment facilities. Extend sewer systems to only those areas where future development is being encouraged, as identified by growth area and center designations in approved town plans and this Plan.
6. Assist towns to work cooperatively to ensure long-term access to reliable and affordable disposal systems.
7. Encourage installation of community treatment systems in villages, in clustered housing developments, and in remote areas where individual on-site septic systems are not adequate.
8. Assist towns and the Agency of Natural Resources, as feasible, to develop and disseminate educational material related to reducing hazardous elements and compounds in wastewater.
9. Reduce the use of hazardous materials. Improve collection and recovery systems of such materials in order to decrease their presence in the Region's wastewater.

## **Privately Owned On-Site Wastewater Treatment**

1. Encourage on-site sewage disposal system owners and operator to properly maintain their systems.
2. Ensure that new development has properly designed, constructed and inspected on-site sewage disposal systems.
3. Support uniform design and administration of on-site sewage disposal systems and encourage the development of alternative systems in order to further protect ground and surface waters.
4. Support programs to assist with the replacement of failed on-site sewage disposal systems.

## **Solid Waste Management**

1. Ensure that planning for waste management and disposal addresses public health, environmental quality, and impacts on adjacent and nearby land uses.
2. Reduce the amount of solid waste generated in the Region, to the maximum extent feasible.
3. Reduce the use of hazardous materials. Improve collection and recovery systems of such materials in order to decrease their presence in the Region's solid waste.



4. Develop recycling, composting, waste reduction and reuse, and general waste management programs that will be flexible and reliable amidst rapidly changing economic and regulatory environments.
5. Support the assessment of waste disposal fees that accurately and fairly charge disposal costs to the waste generators.
6. Support the inclusion of recycling programs in all solid waste management programs, and work with the District Environmental Commission to address waste management in Act 250 land use permit applications, as appropriate.
7. Encourage the financial support of recycling programs at the town and solid waste district level.
8. Assist in the planning, designing, and building of permanent collection facilities for household hazardous wastes and for small quantity generator hazardous wastes, in order to help protect the Region's public health and environment.
9. Assist towns and solid waste districts to establish and enforce regulations governing the safe disposal of all wastes, including hazardous wastes. Encourage non-district towns to support and participate in regional or state-sponsored household hazardous waste collection programs.
10. Support federal, state, and local actions that will reduce the volume and toxicity of municipal solid waste in the Windham Region.
11. Assist towns and the Agency of Natural resources, as feasible, to develop and disseminate educational materials that promote public awareness regarding the use of hazardous materials and their environmental impacts.

### **Low Level Radioactive Waste**

1. Ensure the safe and effective storage, transportation, and disposal of low level radioactive waste (LLRW).
2. Work to assure that standards at least as stringent as those proposed for a LLRW storage site in Vermont are applied to any alternative site.
3. Minimize the generation of LLRW.

### **High Level Radioactive Waste**

1. Encourage a requirement that permanent spent nuclear fuel (SNF) storage be resolved prior to any consideration of extending or reviewing the operating license of Vermont Yankee.
2. Support increased local and regional public involvement regarding all SNF permitting and licensing decisions.
3. Support the development of renewable energy as an alternative to nuclear power.

### **Emergency Response**

1. Provide timely and effective emergency services to all persons regardless of their ability to pay for these services.

2. Provide fire hydrants or other water sources in proposed developments so that fire-fighting personnel can adequately serve all structures.
3. Design and build new roads so that emergency vehicles can readily maneuver and access all proposed structures.
4. Ensure that the emergency service personnel, facilities, and equipment needed to effectively service new development are available to avoid placing undue demands on existing personnel, equipment, and facilities.
5. Support the installation of an additional or improved repeater to upgrade the quality of the Southwest Mutual Aid system's radio broadcasts.

### **Educational System**

1. Help to secure greater assistance from the state (financial and facilities assessment) to local and union school districts to provide quality education services and resources, as well as to meet state educational facility and program requirements.
2. Help to ensure that developments that will place a significant financial and qualitative impact on local and regional educational systems address and mitigate those impacts.
3. Increase opportunities for public and private cooperation in offering vocational and basic competency training to employees of area business and industry.
4. Revise current state aid formula to place less emphasis on property wealth. Explore broad based, more equitable funding sources to make education less dependent on local property tax revenues.
5. Support efforts of local and regional libraries to provide materials and facilities for independent learning and development of life-long education.

### **Communications**

1. Promote universal access to broadband telecommunications and information services that are competitive in availability and cost.
2. Encourage reduced rates on advanced telecommunications services, equipment, and user training for education, libraries, and health care. Support local access to diverse life-long distance learning opportunities and to low-cost public-use computers connected to electronic information.
3. Support greater penetration of public access, educational and government programming (PEG) through new PEG group formation and regional agreements. Encourage cable companies and other video programming service providers to support PEG operating and capital budgets. Encourage cable television companies to provide coverage of regular town meetings and other important local events as part of their cable franchise agreements.
4. Encourage expansion of transmission and receiving equipment at existing transmission and receiving stations, including co-location of carriers.
5. Encourage siting, design, and access of towers and structures in all cases to provide quality transmission and minimize negative impacts on natural and scenic resources.
6. Ensure that new and existing telecommunication facilities comply with FCC emission standards in order to protect public health in the Windham Region.

7. Support increased access to public information, and information about local events in user-friendly electronic formats.
8. Encourage increased access for residents to state and local public meetings and hearings through Vermont Interactive Television and PEG channels.

### **Human Services**

1. Promote economic development opportunities that will contribute toward meeting the Region's social service needs.
2. Address the childcare, eldercare, and care for persons with disabilities needs of families by encouraging the location of appropriate facilities near places of employment or home.
3. Avoid duplication of human service efforts by assisting the coordination of community service organizations, as feasible and appropriate.

### **Outdoor Recreation**

1. Provide varied and accessible opportunities for outdoor recreation.
2. Facilitate the orderly development of needed public and private recreational facilities.
3. Encourage public opportunities for multiple use recreation and public access to recreation lands and waters, where they do not compete.
4. Maintain high environmental quality in the development of outdoor recreation facilities.
5. Recognize the recreational potential of watercourses and shorelines and provide facilities for water-oriented day use.
6. Provide sidewalks, separate paved pathways or paved shoulders adequate for safe bicycle and pedestrian travel on Vermont Routes 5, 9, and 100, and parts of Route 30 in all road improvement projects where feasible.
7. Develop multi-purpose trail corridors using abandoned railroad beds, Class 4 roads and other public rights-of-way. Protect existing trail corridors.
8. Encourage federal, state, and local acquisition of land and facilities well-suited for outdoor recreation, provided that adequate financial and management arrangements are made with the involved local governments.
9. Support United States Forest Service acquisition, other than by eminent domain, of private in-holdings within and selected lands adjacent to the Green Mountain National Forest, provided that adequate payments in lieu of taxes are made to the affected local governments.
10. Plan and provide recreational opportunities for the disabled and elderly.
11. Provide separate areas or facilities for conflicting uses of recreational resources. For example, swimmers and motorboats should not compete for the use of the same resource when such conflicts create safety hazards or significantly impair the use or enjoyment of the resource.

## **Cultural and Historic Resources**

1. Strengthen the role of cultural and artistic disciplines in public education.
2. Encourage community-based facilities and organizations which will support cultural needs, along with improvements in marketing and distribution of the arts.
3. Support organizational and communication networks serving the Region to promote the enhancement of cultural opportunities.
4. Protect places of outstanding educational, aesthetic, archeological, or historical value from development that unreasonably impairs their character and quality.
5. Discourage development that would adversely affect cultural resources, including their destruction or alteration, alteration of surroundings, or the introduction of non-harmonious visual, audible, or atmospheric elements.
6. Encourage rehabilitation of significant historic sites and structures. Emphasize adaptive use of historic resources whenever it is economically viable.
7. Encourage development that preserves the historic and architectural character of town and village centers and the rural landscape.
8. Seek public uses and/or ownership to preserve significant historic sites or structures.
9. Support local, regional, and state non-profit historic preservation trusts.

## **Emergency Planning**

1. Build disaster resistant communities by promoting sound land use planning that accounts for known hazards.
2. Help towns adopt effective building codes and standards.
3. Encourage all towns to improve existing roads and design culverts and bridges to carry a 25-year flood event without damage.
4. Encourage all towns to require that all new public and private roads and driveways are properly constructed so that they do not contribute to the damage of town roads from runoff.
5. Support a regional effort to develop an all-hazards plan that stresses disaster mitigation.
6. Encourage towns to adopt a model flood hazard area regulation.
7. Encourage the development and improvement of emergency evacuation plans.
8. Encourage towns to include adequate provisions for pets and livestock in their disaster plans.
9. Explore efforts to develop a regional emergency response plan that includes surrounding areas in VT, NH, and MA.

## **E. ENERGY POLICIES**

1. Reuse and recycle goods and materials to save energy and protect the environment.

2. Educate towns and communities about energy efficiency services available in the Region.
3. Support programs such as Efficiency Vermont in its goals to reduce energy costs with cost-effective energy efficiency measures, using conservation as a source.
4. Educate homeowners and contractors on the use of high standards of insulation (increased R-values) for new buildings and the improvement of the efficiency of existing structures.
5. Balance improved conservation measures and the development of new generation and transmission to ensure adequate future energy supplies, requiring utilities to improve the efficiency of procedures and assist customers in conservation.
6. Ensure that the state monitors the effects of restructuring of electric utilities. Protect the interests of rural communities and their residents in the proposed restructuring of electric utilities.
7. Support the designing of all new landfills to capture gasses generated during decomposition and to convert the methane to useful energy.
8. Encourage the incorporation of co-generation as an energy source into proposed utility, industrial and commercial projects wherever feasible.
9. Use alternative fuels, such as ethanol, methanol, and methane where reasonable.
10. Promote the reduction of vehicle miles traveled in Vermont.
11. Ensure public participation as part of the decision making process for siting, evaluating, and relicensing energy generation and transmission facilities and for electric utility deregulation.
12. Any future hydroelectric power development should be reviewed within the following guidelines:
  - (a) run-of-the-river projects are preferred over projects which require impoundments with low or minimum flows;
  - (b) recreation and fisheries are top priorities for river uses and should not be significantly diminished by hydropower development, so provisions should be made for fish passage and canoe portages, and, recreational opportunities at hydropower facilities should be explored and developed where appropriate; and
  - (c) water quality and minimum flows should be maintained.

## **F. TRANSPORTATION POLICIES**

1. Use existing transportation corridors, to the extent feasible, to accommodate new transportation services, facilities, and utilities.
2. Consider the secondary growth that can result from transportation infrastructure improvements and their effects on land use in all transportation system decisions.
3. Minimize functional conflicts and require that developers be responsible for relieving new traffic problems generated by their developments.
4. Avoid new areas of strip development and minimize the negative effects of existing strip development through good transportation and land use planning.
5. Review and evaluate proposed development which generates unsafe traffic conditions, especially along sections of highway with low sufficiency ratings.

6. Promote non-motorized means of transportation, such as bicycle lanes or paths and sidewalks, in road construction and encourage the use of energy efficient non-motorized alternatives to the automobile such as cycling and walking by providing paths, particularly near and within employment centers. Add sidewalks and bike paths to existing infrastructure whenever feasible and appropriate.
7. Encourage and support the use of energy efficient and/or alternative fuel modes of transportation such as public transit, ride-sharing, van pools, bicycling, and walking, whenever possible.
8. Enhance public transit services to meet the challenges of consumers with special needs.
9. Maintain, improve, and expand passenger and freight rail services and intercity and interstate bus service, including continued state support of Amtrak service to the Windham Region.
10. Maintain and improve existing airfields.
11. Prioritize and encourage maintenance the Region's transportation system over building new infrastructure.
12. Support the creation, designation and effective marketing of park & ride lots to encourage ride-sharing.
13. Encourage the development and use of innovative transportation design programs that provide for access, mobility, and safety of users and protection of communities and natural and historical resources.
14. Encourage the development of an integrated multi-modal regional transportation system.
15. Support local and regional efforts to designate Vermont Byways or to otherwise protect travel corridors that exhibit special scenic, historic, recreational, cultural, archeological and/or natural qualities.
16. Encourage the United States Forest Service (USFS) to work with WRC and towns on decisions regarding maintenance and operations of USFS forest highways or roads.

## **G. HOUSING POLICIES**

1. Develop housing so as to maintain the historic settlement pattern of compact village and urban centers separated by rural countryside, and that has minimal impact on natural resources, open space, and important agricultural and forestlands.
2. Employ innovative planning, design, and construction techniques that minimize the long-term cost and energy consumption of housing, including locating housing convenient to community centers and employing energy efficient construction.
3. Create new housing units, in both new construction and existing buildings, that employ suitable means of sewage disposal and ensure the availability of an adequate safe water supply.
4. Concentrate new development in areas with essential services, and include multi-unit housing that is compatible with existing architecture and development density for that area.

5. Develop seasonal and year-round housing that contributes to the health of the local and regional economy while preserving existing community character and natural resources.
6. Apply the same standards and considerations in the review of seasonal housing proposals, as those applied in reviews of year-round housing.
7. Promote and facilitate the installation and maintenance of code conforming fire protection sprinkler systems.
8. Meet the needs of the growing population of elders and people with disabilities for sufficient and suitable housing that has easy access to services and public transportation and that offers a mix of housing types, including low and moderate income units, independent living units, service enriched units, and subsidized and unsubsidized units.
9. Assist the coordination between public and private agencies involved with planning for and financing of affordable housing, including alternative mechanisms such as land trusts, cooperative housing, limited equity cooperatives, and others.
10. Promote the planning and implementation of strategies that would ensure perpetual affordability.
11. Maintain affordable housing at levels adequate to meet community need, including, except where inappropriate, retaining existing housing stock for continued residential purposes rather than conversion to other uses.
12. Rehabilitate and maintain existing affordable housing stock to meet or exceed minimum Federal standards for housing.
13. Recognize that adequate and affordable housing is a need in all communities and a regional issue requiring the participation and cooperation of all towns, in accordance with their capacity.
14. Support affordable housing projects initiated by towns, by nonprofit organizations such as community land trusts and housing authorities, as well as by for-profit organizations; and encourage waiving of fees, timely and fair development review, tax credits and land tax abatement, and assistance with public grants and other sources of funding to enhance the financial feasibility of affordable development.
15. Improve infrastructure, including enhancement of sewer and water systems, that promotes and enables greater housing densities in areas related to community centers and in a manner consistent with traditional growth patterns of compact villages and downtowns.
16. Consider the impact proposed development would have on maintaining an adequate and diverse housing stock, and encourage measures that will achieve and maintain a housing stock in a range of prices that proportionately matches the range of incomes in the Region.
17. Support policies and regulations that enable multi-unit and manufactured housing to be sited in the same locations generally used for single-family conventional buildings.
18. Support the development and preservation of housing that serves to eradicate homelessness.

# WINDHAM REGIONAL PLAN PROGRAMS/ACTIONS

The following program and action statements recommend specific steps for the WRC, governmental agencies and other organizations to take in order to support implementation of the Windham Regional Plan policies.

## A. LAND USE

### WRC Land Use Programs/Actions

1. Assist communities in determining carrying capacity of land, appropriate land use patterns and categories, and land use densities in order to implement desired town goals.
2. Work with communities to identify and plan for regional growth centers addressing a balance of land use, employment, transportation, community facilities, and resource protection, and establish growth center boundaries and implementation programs. Support member towns in similar planning for local growth areas.
3. Assist communities to develop more effective bylaws, including zoning and subdivision regulations, consistent with the purpose and intent of their town plans and that consider the plans of adjacent towns and the Regional Plan.
4. Work with communities to reassess existing zoning and subdivision regulations and to prepare adequate and effective standards that will:
  - a. Implement the town plan;
  - b. Site new uses and structures to maintain traditional settlement patterns and protect valuable natural resource and scenic lands;
  - c. Site proposed buildings and facilities to minimize their visual impact on ridgelines, slopes, and open areas; and
  - d. Avoid establishing new areas of strip development and minimize the negative effects of existing strip development along highways.
5. Work with interested communities on assessing fiscal impacts related to development and help to develop model impact fee programs applicable to all development, not just development subject to Act 250 review.
6. Actively support towns and public and private agencies and organizations in achieving mutual goals for protection of farmland, forest land, shorelines, and other natural resources in the Region.
7. Assist towns and other interested groups in establishing greenways along roads, streams, rivers, and other open space areas.
8. Assist interested resort towns and adjoining towns in assessing secondary growth impacts of resort center expansion.
9. Work with interested towns that want to explore village issues such as determining village boundaries and the feasibility of expanding facilities within villages.



10. Help Regional Centers to examine with their neighbors the responsibilities, benefits, costs, and impacts of being a Regional Center. Involve all adjoining towns and regions.
11. Work with subregions to explore common interests and planning concerns and to encourage cooperation on issues that are regional in nature.
12. Cooperate with all surrounding towns and Regional Planning Commissions including Bennington, Southern Windsor, Rutland, Southwestern New Hampshire, and Franklin County, Massachusetts on land use matters and issues of mutual interest.
13. On a regional scale, identify and map lands with respect to soils, topography, slope, wetness, significant natural features, and fish and wildlife habitats.
14. Establish multi-town planning process to address Resort Center land use, growth, facilities, services, transportation and housing. Define Resort Center boundaries through this planning process.

#### **State/Federal Land Use Programs/Actions**

1. Implement regional center land use policies by locating government services and facilities, e.g. regional libraries, liquor stores, state offices, federal courts, in regional centers.

### **B. ECONOMY**

#### **WRC Economic Programs/Actions**

1. Work in cooperation with towns, state agencies, area Chambers of Commerce, development corporations, and other interests to identify and further cooperate on projects that will serve to enhance the Region's economic climate consistent with policies in this Plan.
2. Work with towns to facilitate development that is convenient to existing services and transportation and that conforms to traditional landscape patterns, in order to sustain our communities' appeal as places for business, tourism, and workers and to discourage sprawl and strip development.
3. Support and participate in a Workforce Investment Board (WIB) appropriate for the Windham Region, so Board members can represent multiple interests and report to involved organizations on WIB activities and initiatives.
4. Work with member towns to develop and implement comprehensive town/region economic development planning.
5. Update the *Strategic Plan for the Economy of the Windham Region*.

#### **State Economic Programs/Actions**

1. Assist in implementing this Plan by incorporating its policies, programs and actions and the *Strategic Plan for the Windham Region Economy* in state policies and plans.
2. Increase state funding for infrastructure especially sewer and water to communities that actively promote development that conforms to traditional patterns of compact, mixed use, town and village centers.

## **C. NATURAL RESOURCES**

### **WRC Surface Water Programs/Actions**

1. Advocate that agriculture, forestry, recreation, and development activities be conducted in accordance with respective "Acceptable Management Practices," in order to reduce erosion, sedimentation, chemical pollution, storm water volumes and rates of runoff, and other disturbance to surface waters.
2. Work cooperatively with towns and other groups on watershed planning initiatives such as the Silvio Conte National Fish and Wildlife Refuge, stream habitat restoration projects, and water monitoring; and take remedial action to improve water quality for waters that have been determined to be threatened or impaired.
3. Determine whether existing or proposed water classification of the Region's surface waters adequately protects surface water values and uses.
4. Work with Region towns to reduce sedimentation from gravel roads through involvement in the Better Backroads Program and use of Better Backroads techniques.

### **State Surface Water Programs/Actions**

1. Support regional review of water bodies to determine appropriate classification of waters.
2. Implement monitoring and management actions that will best maintain water quality, special designations and/or classifications.
3. Support the federal and state programs for development of watershed plans.

### **WRC Groundwater Programs/Actions**

1. Identify and map the Region's most important groundwater resources including areas of recharge, storage, and transmission, particularly in the Region's most densely populated areas. This requires the assistance of, and coordination and cooperation with, the Agency of Natural Resources.
2. Provide educational materials in cooperation with other interested parties on septic system design, operation, and maintenance.
3. Assist towns to identify areas for future public water supplies and Source Protection Areas.
4. Work with state agencies and towns to develop educational programs to reduce the use of household hazardous products and to increase public awareness of such products' effects on groundwater.

### **State Groundwater Programs/Actions**

1. Cooperate with federal agencies, WRC, and towns to best coordinate the management planning of Source Protection Areas.

### **WRC Air Quality Programs/Actions**

1. Work to reduce vehicular emissions and other gas engine emissions through sound land use and transportation planning and implementation.

2. Track reports on air quality level and pollutant source substitutions.
3. Work with towns, state agencies, and the Windham Solid Waste Management District to develop and implement an education program about the hazards of open trash burning.

### **State Air Quality Programs/Actions**

1. Air quality should be monitored in the Region as part of a broader statewide effort to determine current and potential threats to air quality. Potential impact areas include village centers or other areas of traffic congestion and high elevations where pollutants and acidic levels are potentially greater and more harmful to fragile environments. Continue to monitor air quality for hazardous pollutants at the air quality monitoring site next to Agway in Brattleboro.
2. Work with other states and the federal government to address external situations that result in imported pollution.

### **WRC Forest Resource Programs/Actions**

1. Work with the timber industry, non-governmental organizations and public agencies to develop and promote sustainable forestry programs, including public education on their behalf.
2. Work with the timber industry, business and the economic development community to develop value-added products and uses for lower grade wood.
3. Work with towns to develop forest and resource protection plans.
4. Review and comment on USDA-NFS Green Mountain National Forest Management Plans and proposed actions.
5. Support cooperation between towns in maintaining large tracts of undeveloped forest.
6. Work with appropriate stakeholders to develop guidelines to minimize detrimental impacts on forest resources.

### **WRC Scenic Resource Programs/Actions**

1. Work with towns to identify locally and regionally significant scenic resources, evaluate and rank identified scenic resources based on their need for immediate protection, and develop methods for protection of these resources.
2. Work with towns to adopt local telecommunication tower ordinances that protect scenic resources.
3. Coordinate with the state, towns, and private development along Interstate 91 and recommend future needs for landscaping in developed areas and at interchanges and for tree cutting to enhance certain views of the Connecticut River in rural areas.
4. Foster greater appreciation of scenic resources as a significant environmental and economic resource for the Region.

### **WRC Natural Area, Fragile Area and Wildlife Resource Programs/Actions**

1. Work with towns, the Natural Resources Conservation District (NRCD), and state officials to identify and map information related to fish and wildlife habitats, Natural Heritage Areas, and Natural and Fragile Areas.

2. Work with state and federal agencies to coordinate the development of fish and wildlife management plans with Region towns.

### **WRC Mineral Resource Programs/Actions**

1. Work with towns to identify sites with potential for extraction of sand and gravel. Once towns have identified these areas assist them to ensure that:
  - Zoning regulations and review procedures provide performance standards for noise, traffic, and any adverse impacts on aesthetics, surface waters, air quality, adjacent properties, character of the surrounding area;
  - Zoning regulations and review procedures adequately provide for rehabilitation of the extraction site; and
  - Truck transport of sand and gravel resources minimizes damage to roads and bridges.
2. Work with towns to develop and utilize their own sources of gravel rather than requiring this resource to come from elsewhere. In towns that lack adequate sand and gravel reserves, help to establish inter-municipal agreements with neighboring towns for public projects.

## **D. COMMUNITY RESOURCES**

### **WRC Public Water Supply Programs/Actions**

1. Assist towns to map potential sources of public water supplies and source protection areas and prepare management plans, as feasible and appropriate.

### **Town Public Water Supply Programs/Actions**

1. Establish leak detection and repair programs as needed and appropriate.

### **WRC Waste Water Treatment Programs/Actions**

1. Work with and encourage member towns and citizens to address wastewater treatment problems.
2. Work with member towns, as feasible and appropriate, to provide educational programs regarding hazardous materials in septic and sewer systems, especially as related to the use of cleaners and solvents in the home and the household hazardous wastes that they produce.

### **WRC Privately Owned On-Site Waste Water Treatment Actions**

1. Work with towns to develop effective administrative procedures for on-site sewage disposal system permits and maintenance programs.

### **State Privately Owned On-Site Waste Water Treatment Actions**

1. Adopt uniform design and administration of on-site sewage disposal systems and encourage the development of alternative systems in order to further protect ground and surface waters.

### **WRC Solid Waste Management Programs/Actions**

1. Assist solid waste management districts, towns, schools and other organizations in developing and implementing educational programs designed to encourage source reduction, recycling, and consumer awareness.
2. Work actively with towns and waste management districts to develop needed waste management and disposal facilities.
3. Continue to assist those towns that choose not to join a waste management district in developing needed solid waste management plans and systems.
4. Work with federal and state agencies and local government to identify old landfills, illegal dumps, and similar existing sources of groundwater pollution for future clean up efforts.

### **WRC Low Level Radioactive Waste Programs/Actions**

1. Assist the public review and discussion of low level radioactive waste management issues, as feasible and appropriate.

### **WRC High Level Radioactive Waste Programs/Actions**

1. Assist the public review and discussion of spent nuclear fuel management issues, as feasible and appropriate.

### **WRC Emergency Response Programs/Actions**

1. Work with local emergency response organizations to help improve systems as needed.
2. Assist towns to maintain and improve E911-related databases and maps.

### **WRC Educational System Programs/Actions**

1. Work with towns and the state to ensure continued provision of regional library services.
2. Work with the Department of Education, educators, legislators, parents, and others to assess the quality of education in this region and to assure that the best education is possible in the most cost effective manner.

### **WRC Health Care Facility Programs/Actions**

1. Help local health care providers to plan strategically to accommodate anticipated changes at the federal and state levels, as feasible and appropriate.

### **WRC Communications Programs/Actions**

1. Work with the Region's schools, libraries, colleges, town governments, health care facilities, and other appropriate locations to support additional sites and expanded hours for free or low-cost public access to the Internet and other electronic information sources.
2. Help to identify and promote the development of additional clusters, campuses, or centers throughout the Region where multiple users can share access to new or high-end telecommunications services.

3. Work with towns and businesses to:
  - Facilitate the inter-connection of computer networks, video systems, and other telecommunications systems within the Region;
  - Facilitate public-private collaboration in developing new telecommunications capabilities; and
  - Promote collaborative efforts to develop and link the telecommunications capabilities of schools, libraries, local governments, and medical facilities.
4. Encourage and provide input and comment to any telecommunication facility plans to minimize scenic, natural, and aesthetic impacts and to provide for quality transmission.
5. Work with schools and school districts to develop regional initiatives for increasing the advanced telecommunications capabilities of the schools, increasing the technology's effectiveness in education, and maximizing its use as a community resource.
6. Assist towns with development of zoning bylaws and/or ordinances that provide standards and requirements for the operation, siting, design, appearance, construction, monitoring, modification, and removal of wireless telecommunication facilities and towers, consistent with the federal Telecommunications Act of 1996.

#### **WRC Outdoor Recreation Programs/Actions**

1. Continue involvement with the Connecticut River Commissions in promoting the best use of the river and its shorelines.
2. Help towns to identify and meet their outdoor recreation resource needs.
3. Coordinate activities with appropriate federal and state agencies involved in providing outdoor recreation facilities and suggest improvements where needed.
4. Work with organizations that are involved in developing regional trail and greenway systems.
5. Develop public education materials and host workshops on landowner liability and public recreation on private land in cooperation with the Vermont Trails and Greenways Council.
6. Host workshops on the relationship between protecting the quality of the Region's recreational resources and the viability of the Region's tourism economy.

#### **WRC Cultural and Historic Resource Programs/Actions**

1. Maintain and update the Windham Region Historic Sites GIS database.
2. Work cooperatively with the state DHP to identify and map significant archeological sites and areas in the Region.

#### **WRC Emergency Planning Programs/Actions**

1. Work with towns to identify at-risk populations.
2. Work with towns to protect their historic assets from disasters.
3. Work with towns to adopt Rapid Response Plans and appropriate updates.

## **E. ENERGY**

### **WRC Energy Programs/Actions**

1. Assist in a full community and technical review of proposals for new energy sources or facilities in order to evaluate their positive and negative economic, social, aesthetic, and environmental impacts.
2. Work with the state to determine the potential for sustainable biomass production from Vermont's forest lands, as an alternative large-scale fuel source.
3. Continue the development of a model energy element designed for town plans that meets the needs, issues, and concerns of rural towns.

## **F. TRANSPORTATION**

### **WRC Transportation Programs/Actions**

1. Maintain the ongoing multi-modal transportation-planning program with support of the Region, towns, and the state.
2. Continue development of the regional transportation database to allow the WRC and towns to more effectively plan for and manage transportation systems and improvements.
3. Work with towns and other interested parties in the development and optimal use of an improved public transit system, particularly as it relates to new development.
4. Continue work to reduce speeding and truck traffic in village centers through the development of corridor studies and implementation of traffic calming solutions, where appropriate.
5. Work with towns to identify and inventory scenic corridors and significant viewsheds that can be included in future town and regional plans.
6. Assist in the planning of transportation services to more effectively meet the needs of the Region's consumers with special needs.
7. Update the Windham Regional Transportation Plan, April 1995.

### **State Transportation Programs/Actions**

1. Ensure that the State Transportation Plan is amended as needed to comply with approved town plans, in order to make needed roadway improvements, and to participate effectively in local traffic management and mitigation efforts.
2. Review and assess, in cooperation with towns and neighboring regions, the secondary effects of roadway improvements, bridge repairs, intersection changes, granting of state highway access permits, and any other pertinent transportation issues.

## **G. HOUSING**

### **WRC Housing Programs/Actions**

1. Develop and preserve an adequate and appropriate supply of housing for the Region's very low-income, elderly, and handicapped residents in locations which enhance the quality of life of the residents and make use of existing infrastructure.
2. Develop and disseminate model language and explanatory guidelines for use by Region towns in drafting municipal plan housing elements and related zoning components.
3. Advocate for the elimination of fees and other disincentives to the installation and maintenance of fire protection sprinkler systems, and in favor of incentives.
4. Promote municipal planning and zoning that encourage increased housing unit densities and mixed residential and commercial development in areas such as village centers, downtowns, and other designated growth areas.
5. Collaborate with various state and regional housing and health service organizations and with Region towns to collect data and provide information to towns for use as a guide to the housing and assistance needs of the elderly population.
6. Involve towns, housing developers, and employers in planning public and private partnerships to ensure that affordable housing is available throughout the Region, and that all towns contribute, relative to their capacity, in meeting the housing needs of the Region.
7. Take special efforts at the local, regional, and state levels to preserve and where appropriate, expand the Region's existing publicly subsidized housing.
8. Through the WRC Community Development Committee work to provide education on regional housing needs to towns and citizens, and help towns to develop and implement policies and programs that contribute to affordable housing.
9. Advocate for state and federal programs and incentives for Region towns to promote the creation of affordable housing development that is compatible with "smart growth policies" and conforms with the existing scale and pattern of the Region's traditional village and downtown settlements.

### **State and Federal Housing Programs/Actions**

1. Provide incentives to developers to meet local and regional affordable housing needs that are otherwise unsatisfied by the private housing market.
2. Streamline state agency reviews and state permitting processes as much as possible to reduce housing development costs, to improve interagency coordination, and to be consistent with local and regional review procedures.
3. Consider a town's efforts to provide affordable housing when awarding state grants for special projects.

### **Town Housing Programs/Actions**

1. Identify and eliminate policies and regulations that might unfairly act as barriers to development or siting of affordable housing.



2. Include provisions in local regulations for the development of a variety of residential opportunities, including multifamily housing, mobile home parks, rental housing, clustered housing, and assisted living for elders and persons with disabilities, serving multiple income levels.
3. Consider implementing community home improvement programs and property tax deferrals that help lower income households to make home improvements and to remain in their homes.
4. Extend municipal water and sewer services to affordable housing developments in the community or within neighboring communities, when feasible.

### **Private Sector Housing Programs/Actions**

1. Employers are encouraged to implement programs that contribute to meeting their employees' affordable housing needs, such as mortgage assistance plans, mortgage guarantee programs and assistance with down payments and closing costs.
2. Lending institutions are encouraged to make special provisions that are supportive of affordable housing projects and that help to meet the financing needs of low income households.

## **APPENDIX A – GEOGRAPHIC INFORMATION SYSTEM DATA SOURCES**

1. Town boundaries are taken from the VGIS coverage TBHASH. This data set was developed from the best available town boundary sources. These sources generally include town parcel maps and USGS topographic maps.
2. Surface waters (rivers, streams, lakes, and ponds) data were derived from 1:100,000 US Geological Survey Digital Line Graph data. These source data were edited and annotated by Windham Regional Commission.
3. Roads displayed on these maps were extracted from the VGIS coverage RDSnnnnn. These data originate at the Vermont Agency of Transportation (VTrans) and are based on data digitized from 1989 1:5000 orthophotos by Greenhorne & O'Mara Inc. under contract with OGIS. Updates to these data were performed by VTrans, Regional Planning Commissions, and by information provided by microDATA, Inc. using GPS during data collection for Enhanced 911.
4. Soils data were derived from the VGIS coverage SONnnnn. This data layer was developed by digitizing 1:20000-scale soil maps that were ultimately incorporated into the USDA Soil Conservation Service's (now the Natural Resource Conservation Service) Windham County Soil Survey.
5. Sand and gravel resources are from the VGIS data layer AGGRES. This data layer was derived from the series "Geology for Environmental Planning," published by the Vermont Geological Survey.
6. Surface water source protection area data are from the VGIS data layer SPA\SWSPA, which was developed by VT ANR Water Supply Division and generally based on areas delineated on 1:24000-scale topographic maps. These data are current to 2001.
7. Well head protection area data are from the VGIS data layer SPA\WHPA, which was developed by VT ANR Water Supply Division and generally based on areas delineated on 1:24000-scale topographic maps. These data are current to 2001.
8. Public water supply source locations are from the VGIS data layer SPA\SOURCE, which was developed by VT ANR Water Supply Division and generally based on areas delineated on 1:24000-scale topographic maps. These data are current to 2001.
9. Electric transmission line locations were developed from the VGIS data layer ELTRN. These data were digitized from 1:5000 orthophotos by Greenhorne & O'Mara, Inc. under contract with OGIS. This data layer was updated by Windham Regional Commission to include a transmission line from Rawsonville to Winhall. This transmission line was also digitized from 1:5000 orthophotos.
10. Electric generation facility locations are from a GIS data layer provided by Vermont Electric Power Company (VELCO). These data were updated by Windham Regional Commission to include the Searsburg Wind generation facility.
11. Electric utility franchise areas are from a GIS data layer provided by Vermont Electric Power Company (VELCO). Franchise area boundaries are approximate and were developed for mapping at a state-wide level.
12. Data on transfer stations were developed by Windham Regional Commission. Locations were developed by using 1:5000 VGIS base data.

13. Data on closed landfills were developed by Windham Regional Commission. Locations were developed by using 1:5000 VGIS base data.
14. Data on municipal water and sewer service were developed by Windham Regional Commission. Symbols on the map are meant to identify that municipal water and sewer service exists in the area, but the symbols do not specifically locate the service areas.
15. Telecommunication tower locations are from the VGIS data layer TOWERS. This data layer was developed by IVS, Burlington, VT for the Vermont Environmental Board in 1999 and 2000. Data sources included the Federal Communications Commission's Tower and Antenna Databases and Master Frequency Database. Data from these sources was verified by only eight of the 27 towns in the Region. Errors in tower locations are known to exist.
16. Dam locations are from a Vermont Agency of Natural Resources GIS database that was obtained by the Windham Regional Commission in 2001.
17. Impaired waters are those that are listed in the State of Vermont Year 2000 List of Waters. They were mapped by Windham Regional Commission using 1:100,000 U.S. Geological Survey Digital Line Graph data.
18. Year 1996 sufficiency ratings data for federal and state highways were obtained from the Vermont Agency of Transportation. These data were mapped into a GIS data layer by Windham Regional Commission.
19. Year 1998 sufficiency ratings for major collector town highways are from the VGIS data layer SUFF98MC.
20. Year 2000 bridge sufficiency ratings are from the VGIS data layer LONGSTAT.
21. Structure locations for the towns of Brattleboro and Vernon, and for the Village of Bellows Falls were digitized from 1989 1:5000 orthophotos by the University of Maryland under contract with Windham Regional Commission. All significant structures were digitized. These data have not been verified.
22. Structure locations for the town of Dover were provided by GrassRoots GIS, Underhill, VT. These data were developed for Dover's Enhanced 911 implementation.
23. Structure locations for all municipalities other than Dover, Vernon, Brattleboro, and Bellows Falls are from the VGIS data layer ESITE. The locations were captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 911 program, and were last updated in 2000. All residential, commercial, industrial, and public buildings are included.
24. Base data for this land cover map is taken from the Windham Regional Commission's GIS data layer REGION\LANDCOV. This data layer is a composite of several existing data layer and newly created data. Data on wetlands are from U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) maps. These maps show approximate locations of wetlands that are generally three acres or larger in size. Data on open lands have their origin in the VGIS data layer LCLU coverage. This coverage was produced by Mount Holyoke College using Landsat Thematic Mapper satellite data. Additional spatial operations were performed by WRC to refine these data. Locations of urban/built-up lands depict those areas where structure density is generally greater than one structure every two acres or those areas covered by public highways or railroads. Structure locations were derived from 1:5000 orthophotos but have not

been verified. This delineation is intended to show areas of denser development on a regional scale only. Roads and railroads were digitized from 1989 1:5000 orthophotos.

25. Dam locations were obtained in 2001 from a Vermont Agency of Natural Resources GIS database.
26. Impaired waters are those that are listed in the State of Vermont Year 2000 List of Waters. They were mapped by Windham Regional Commission using 1:100,000 U.S. Geological Survey Digital Line Graph data.
27. The public and independent schools and colleges shown on this map are those that are listed with the State of Vermont, Department of Education. The facilities were located by the Windham Regional Commission using 1:5000 Vermont orthophotos or from the VGIS data layer ESITE (which includes building locations captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 911 program).
28. The libraries shown on this map are those listed with the State of Vermont, Department of Libraries. The facilities were located by the Windham Regional Commission using 1:5000 Vermont orthophotos or from the VGIS data layer ESITE (which includes building locations captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 911 program).
29. Recreation sites are from the VGIS data layer RECSITES. This data layer was developed throughout the 1990's by the Vermont Agency of Natural Resources.
30. Trails data are based on the VGIS data layer TRAILS. The data have received limited editing by Windham Regional Commission, but for the most part the trails shown are representative of the trail system as of the late 1980's.
31. Public and private conservation lands data were obtained from the Vermont Conservation Lands Database developed by UVM Spatial Analysis Laboratory. These data are now part of the VGIS data layer CONSPUB and CONSPRI, and are current to 1999.
32. Waste management zones were mapped by Windham Regional Commission by using information provided by Agency of Natural Resources in 2001.
33. Areas dominated by floodplains were delineated by Windham Regional Commission. These areas are generalized representations of 100-year flood areas found on FEMA's Flood Hazard Area Maps and Flood Insurance Rate Maps.
34. Areas dominated by wetlands were delineated by Windham Regional Commission. These are areas generally greater than 25 acres that are predominantly wetland. This data layer was produced by processing National Wetlands Inventory GIS data in Spatial Analyst software, and is intended only to show a regional depiction of larger wetland complexes.
35. Watersheds of Class A(1) waters were delineated on 1:24,000 U.S.G.S. topographic maps and digitized by Windham Regional Commission using Class A(1) waters descriptions from the Vermont Environmental Board.
36. Watersheds of Class A(1) waters are from the VGIS data layer SPA\SWSPA, which was developed by VT ANR Water Supply Division and generally based on areas delineated on 1:24,000-scale topographic maps.

37. Boundaries for lands over 2500 feet in elevation are from the VGIS data layer CON2500. These data were digitized by Vermont Agency of Natural Resources from 1:24,000 U.S.G.S. topographic maps.
38. Locations of rare, threatened, and endangered species and significant natural communities are from the VGIS data layer ENDANGLER. These data were derived from VT Agency of Natural Resources, Department of Fish and Wildlife, Nongame and Natural Heritage Program's Rare, Threatened and Endangered Species and Significant Natural Communities database. The database is current to February 1997. Locations are approximate, but generally within 200 meters. The actual area represented by the species or community may be a few square feet or many hundreds of acres. For further information, contact the Nongame and Natural Heritage Program.
39. Deer wintering areas are taken from the VGIS data layer DEERWN. These were delineated by Vermont Agency of Natural Resources, Department of Fish and Wildlife onto 1:24,000-1:25,000 scale topographic maps. Digital data released in April 1997 were used.
40. Bear habitat and corridor data are from a GIS data layer provided the University of Vermont's UVM Spatial Analysis Laboratory. This data layer was developed from Vermont Agency of Natural Resources, Department of Fish and Wildlife habitat boundary maps, which are based on photocopies of 1:63,360 scale General Highway Maps. The corridor locations are approximate.
41. The two regionally significant bear travel corridors were identified by Vermont Agency of Natural Resources personnel on topographic maps and then digitized by Windham Regional Commission in December of 1992 and updated in October 2000. Black bear travel corridors, according to Forrest Hammond, biologist with the Vermont Department of Fish and Wildlife, are forested habitats that are regionally important and are used by large numbers of bears to access critical seasonal foods or to link bear ranges and sub-populations. Travel corridors are comprised of bear travel routes and may include one or more road crossing areas.
42. Commercial and industrial buildings data are from an inventory conducted by the Windham Regional Commission. Determinations were made using town records and supplemented by field visits. Building locations were taken from 1:5,000 orthophotos or field visits.
43. Major employers are those businesses who employ the largest numbers of people in the Windham Region. Data were taken from Vermont Business Magazine and were located by Windham Regional Commission using 1:5000 Vermont orthophotos or from the VGIS data layer ESITE (which includes building locations captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 911 program).
44. Commercial centers were delineated by Windham Regional Commission. These areas are fairly compact clusters of commercial activity and usually include a number of day-to-day commercial businesses and often governmental services.
45. Railroad data were taken from VGIS data layer RR. These data were developed by digitizing railroad centerlines from 1:5,000 orthophotos.
46. Locations of public transit stations were developed by Windham Regional Commission from digitized 1:1,250-scale Vermont Base Maps.
47. Data on local and intercity bus routes were developed by Windham Regional Commission using information provided by the bus route operators.
48. Airstrip locations were digitized by Windham Regional Commission.

49. Data on proposed transportation system improvements were developed by the Windham Regional Commission.
50. Slope categories and shaded relief data were developed by Windham Regional Commission using 1:24,000-scale U.S.G.S. Digital Elevation Models. Data processing was performed using Spatial Analyst software.
51. Watershed boundaries are based on data in the VGIS data layer WATSHED. This coverage contains data derived from 1:24,000 USGS maps of NRCS hydrologic unit boundaries. The data were edited by Windham Regional Commission and attributed to match the watershed delineations and coding schemes of Vermont Agency of Natural Resource's river basins and surface water bodies.
52. Proposed land use district boundaries were developed by Windham Regional Commission.
53. The Brattleboro Growth Center boundary was delineated by the Town of Brattleboro, and was updated in 1999. GIS data depicting the boundary were developed by Windham Regional Commission based on 1:5,000 digital parcel map data.
54. Locations of governmental services are tied to the building in which these service originate. Building locations were determined by Windham Regional Commission using 1:5000 Vermont orthophotos or from the VGIS data layer ESITE (which includes building locations captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 911 program).
55. The pre-schools and day care centers shown on this map are those listed with Windham Child Care Association. These facilities were located by the Windham Regional Commission using 1:5000 Vermont orthophotos or from the VGIS data layer ESITE (which includes building locations captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 911 program).
56. The facilities for the care of the aged and disabled shown on this map are those nursing or residential care facilities listed with the Division of Licensing and Protection, Vermont Department of Aging and Disabilities. The facilities were located by the Windham Regional Commission using 1:5000 Vermont orthophotos or from the VGIS data layer ESITE (which includes building locations captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 911 program).
57. Health care facilities include general hospitals, mental health hospitals, and certified rural health clinics. The facilities were located by the Windham Regional Commission using 1:5,000 Vermont orthophotos or from the VGIS data layer ESITE (which includes building locations captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 911 program).
58. Information on the teen centers, adult day care centers, and senior centers shown on this map were provided by the Council on Aging for Southeastern Vermont. The facilities were located by the Windham Regional Commission using 1:5000 Vermont orthophotos or from the VGIS data layer ESITE (which includes building locations captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 911 program).
59. The historic sites shown on this map are those listed on the state or national register of historic places. The sites were located by the WRC using 1:5000 Vermont orthophotos or from the VGIS data layer ESITE (which includes building locations captured using Global Positioning System technology by microDATA, St. Johnsbury, VT for Vermont's Enhanced 911 program).

## APPENDIX B – WATER QUALITY

Under section 303(d) of the Federal Clean Water Act, states are required to monitor the quality of surface waters and to publish the results periodically. The most recent report for Vermont is dated July 6, 2000, and shows the great majority of surface waters in the Windham Region to be in good condition. There are a number of exceptions, however. Their locations are shown on the accompanying map of “Impaired Surface Waters” and the causes of their impairment are identified in the following list.

Water Body	Town(s)	Water Quality Problem(s)
1. Sunset Lake	Marlboro	Extremely sensitive to acidification, episodic.
2. West River, below Ball Mtn. Dam to Townshend Dam	Jamaica Townshend	Aquatic habitat degraded from sediment releases in 1993 and 1995.
3. Ball Mtn. Brook above North Branch Confluence	Stratton Jamaica	Fisheries critically impacted from acidification.
4. No. Branch, Ball Mtn. Brook, Golf Course Pond to Kidder Brook	Winhall Stratton Jamaica	Contributions/releases of reduced manganese from pond sediment coating stream substrate (“Black Rocks”)
5. Styles Brook	Stratton	Land development, hydrologic modification.
6. Tributary #1, North Branch, Ball Mtn. Brook, above Golf Course Pond	Winhall Stratton	Urban runoff, land development in steep area, erosion.
7. Forester Pond	Jamaica	Critically acidified, chronic.
8. Little Pond	Winhall	Extremely sensitive to acidification, episodic.
9. Stratton Pond	Stratton	Extremely sensitive to acidification, episodic.
10. Moses Pond	Weston	Critically acidified, chronic
11. Harriman Reservoir	Whitingham Wilmington	Elevated level of mercury in all fish except Brown Bullhead. Critically acidified, chronic.
12. Sherman Reservoir	Whitingham	Elevated level of mercury in all fish except Brown Bullhead.
13. Howe Pond	Readsboro	Extremely sensitive to acidification; episodic.
14. Upper Deerfield River below Somerset Dam and Searsburg Dam	Somerset Searsburg Wilmington	Poor buffering capacity; susceptibility to acid rain; elevated levels of mercury in all fish.
15. Grout Pond	Stratton	Elevated level of Mercury in all fish except Brown Bullhead; extremely sensitive to acidification; episodic.
16. Searsburg Reservoir	Searsburg	Elevated level of mercury in all fish except Brown Bullhead.
17. Somerset Reservoir	Stratton Somerset	Extremely sensitive to acidification; episodic; elevated level of mercury in all fish except Brown Bullhead.
18. North Branch Deerfield River 0.4 miles above Snow Lake to Tanney Brook Road	Dover	Land development and construction related erosion.
19. North Branch Deerfield River vicinity of West Dover	Dover Wilmington	High E Coli levels; cause(s) and source(s) unknown; needs assessment.
20. Haystack Pond	Wilmington	Critically acidified; chronic.
21. South Pond	Marlboro	Extremely sensitive to acidification; episodic.
22. Conn. River, below Bellows Falls Dam (2 miles)	Rockingham Westminster	Streambank erosion; physical habitat impairment.
23. Sacketts Brook	Putney	Periodic spills at paper company.
24. Whetstone Brook	Brattleboro	Encroaching urbanization; riparian development; potentially faulty sewer line/septic system; hazardous waste spill.





## **APPENDIX C – DEFINITIONS**

**AFFORDABLE HOUSING:** Housing is considered affordable when households with incomes below the County median pay no more than 30 percent of their gross income on housing.

**APPROVED TOWN PLAN:** A town plan which in the judgment of the regional planning commission is 1) consistent with goals established in 24 V.S.A. Section 4302; 2) compatible with this regional plan; 3) compatible with approved plans of other municipalities in the Region; and 4) contains all the elements included in Sections 4382a (1)-(10).

**CLUSTER DEVELOPMENT:** Site planning that provides for locating residential or commercial units on the most appropriate portions of a site in return for permanent protection of open space and resource lands on the balance of the site.

**COMPATIBILITY BETWEEN PLANS:** A judgment made whereby the plan in question, whether a town plan, regional plan, or state agency plan, as implemented, will not significantly reduce the desired effect of the implementation of the other plan.

**CONSERVATION EASEMENT:** A recorded land use agreement in which the property owner conveys to a governmental unit or charitable organization certain rights to be enforced by the holder for public benefit.

**CONSISTENT WITH GOALS:** The substantial progress on the part of a town, region or state agency toward attainment of the goals established in 24 V.S.A. Section 4302.

**CUMULATIVE IMPACTS:** Effects that may occur as the combined result of developments that, although proposed through separate applications, are associated by ownership, geography, timing, or issue.

**DEVELOPMENT:** The division of a parcel into two or more parcels; the construction, reconstruction, conversion, structural alteration, relocation, or enlargement of any building or other structure; any mining, excavation, or landfill; and any change in the use of any building or other structure, or land, or extension of use of land.

**FOREST AND SECONDARY AGRICULTURAL SOILS:** Soils which are not primary agricultural soils but which have reasonable potential for commercial forestry or commercial agriculture, and which have not yet been developed. In order to qualify as forest or secondary agricultural soils the land containing such soils shall be characterized by location, natural conditions, and ownership patterns capable of supporting or contributing to present or potential commercial forestry or commercial agriculture.

**LAND TRUST:** A private non-profit organization that acquires and holds land and easements for conservation and/or affordable housing purposes. A land trust may also transfer land rights to public agencies or sell land that has restrictions placed on it.

**LEVEL OF SERVICE:** A qualitative measure describing operational conditions within a traffic stream, generally described in terms of factors such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

**LOCAL GROWTH AREA:** Designated portions of a town that are identified in an approved town plan for growth, establishing proposed use, infrastructure, and specific boundaries, and which have little or no impact on adjacent towns or the Region.

**MOBILITY LIMITATION:** In the U.S. Census, persons 15 years old and over are identified as having a mobility limitation if they have a health condition that has lasted for six or more months and which makes it difficult to go outside the home alone.

**PERSONAL COMMUNICATIONS SERVICES or PCS:** Digital wireless telephone technology using higher frequency spectrum than cellular.

**PERSONAL WIRELESS SERVICE FACILITIES or PWSF:** Commercial mobile services, unlicensed wireless exchange access services. These services include: cellular services, personal communication services, specialized mobile radio services, and paging services.

**PRIMARY AGRICULTURAL SOILS:** Soils which have a potential for growing food and forage crops, are sufficiently well drained to allow sowing and harvesting with mechanized equipment, are well supplied with plant nutrients or highly responsive to the use of fertilizer, and have few limitations for cultivation or limitations which may be easily overcome. In order to qualify as primary agricultural soils, the average slope of the land containing such soils does not exceed 15 percent and such land is of a size capable of supporting or contributing to an economic agricultural operation.

**PROJECTS OF REGIONAL IMPORTANCE:** Those projects that require the use of regional resources, services or facilities and because of their size, location, or type will:

- ◆ benefit the Region as a whole;
- ◆ be necessary to the well being of the Region;
- ◆ be responsible for negative impacts to regional resources, service or facilities; and/or
- ◆ affect more than one town.

**REGIONAL GROWTH CENTER:** Designated portions of a town, or adjacent portions of two or more towns, appropriate for future growth and development, where various land use, services, facilities, and utilities are available, or comprehensively planned; and which has been designated through adopted local and regional plans that forecasted and considered the effects of growth and the required programs, systems, and facilities to support anticipated development.

**REGIONAL ROAD OR ROUTE:** Roadways that function as arterial routes (routes that provide thru-travel between towns or through the Region) and major collectors (roads that provide essential or immediate access to arterials). Arterial roadways are Interstate 91, most numbered U.S. and VT highways, and Class I town highways, which form the extension of a state highway and which carry a state highway number. Major collectors include some numbered state and U.S. highways and all Class 2 town highways, which are designated by the towns as the most important highways and which usually form major transportation links from town to town or to other special places.

**SCENIC CORRIDOR:** The area adjacent to a road that traverses landscapes of high quality or provides access to significant scenic views.

**STRIP DEVELOPMENT:** A linear pattern of commercial, residential, or mixed-use development along a roadway.

**SEASONAL HOUSING:** Any housing units including cottages, apartments, single family homes, multi-family homes, and mobile homes that are not principal residences.

**SOURCE PROTECTION AREA:** The surface or subsurface area from or through which contaminants are reasonably likely to reach a public water source, including both surface and ground water supplies.

**TELECOMMUNICATIONS FACILITY:** All equipment (including repeaters) and locations of equipment with which a telecommunications provider transmits and receives the waves which carry their services. This facility may be sited on one or more towers or structure(s) owned and permitted by the provider or another owner or entity.

## APPENDIX D – REFERENCES

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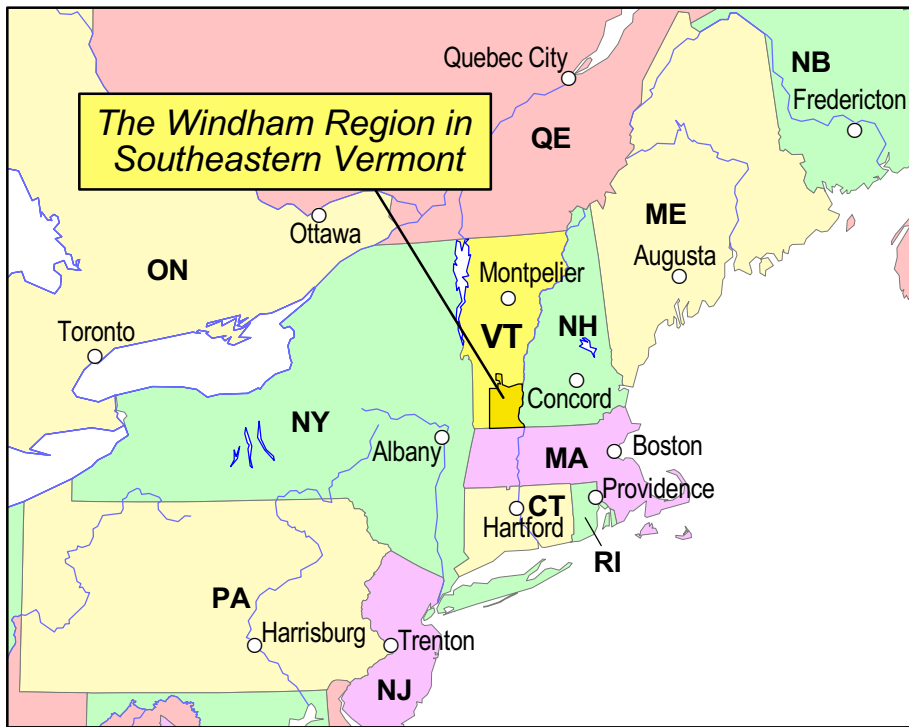
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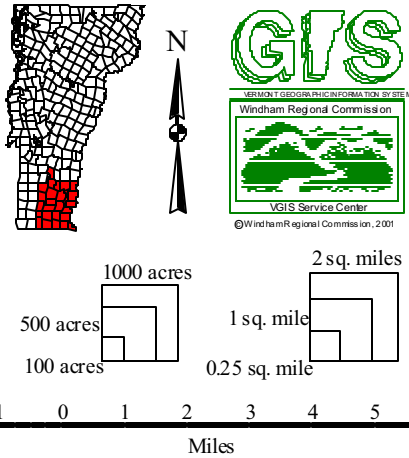
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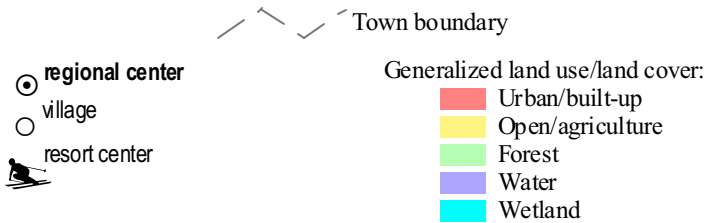




2001 Windham  
Regional Plan



Existing Land Use/Land Cover



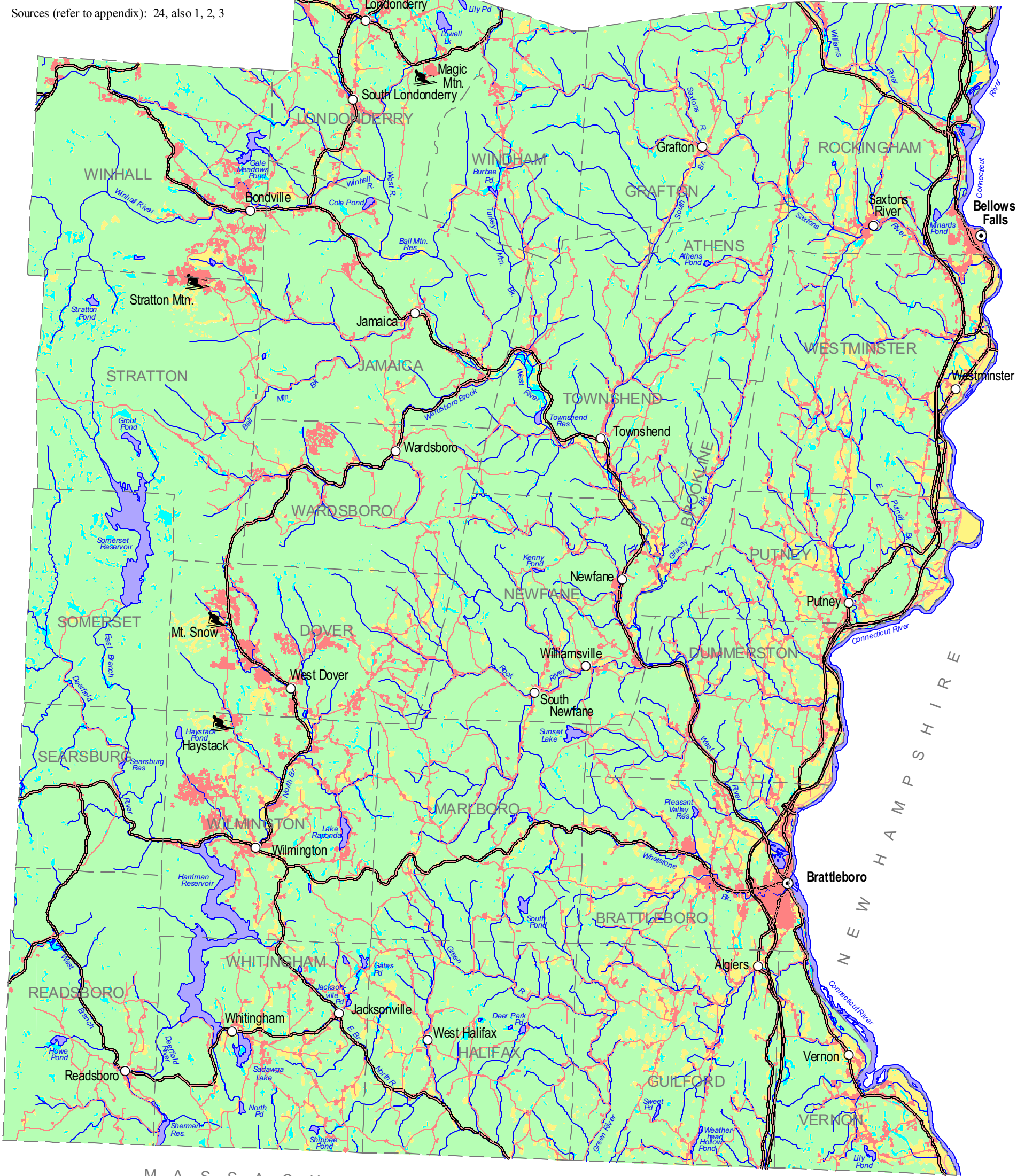
This map attempts to show generalized land use and land cover patterns across the Region. The land use/land cover areas identified on this map are not exact delineations of where these uses or coverages occur, but are instead generalized delineations of where each of these uses or coverages is predominate.

For example, where an individual house is located in a forested area, the predominate use and cover is forest. Likewise, in a residential area where a one acre woodland is located, the predominate use and cover is urban/built-up.

The map, taken in a regional context, should give the viewer a general idea of where in the Windham Region major built-up, forested, open, wetland, and water areas are located.

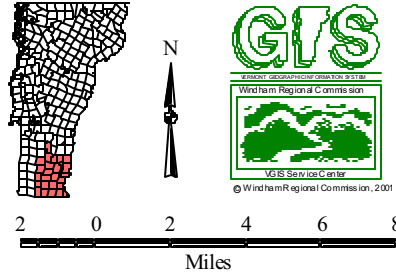
Note: This map should be used for general reference and planning purposes only.

Sources (refer to appendix): 24, also 1, 2, 3



M A S S A C H U S E T T S

# 2001 Windham Regional Plan



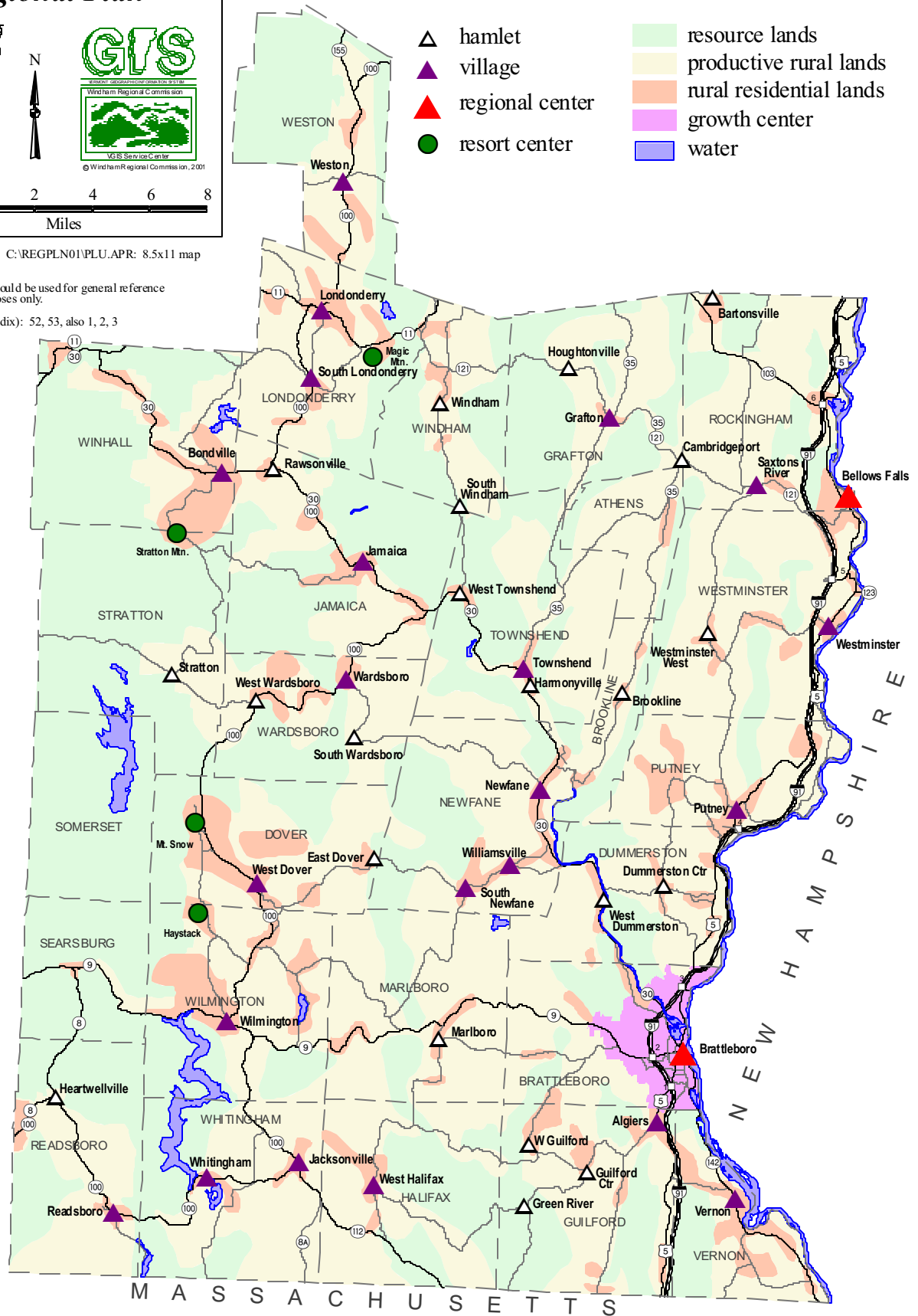
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Note: This map should be used for general reference and planning purposes only.

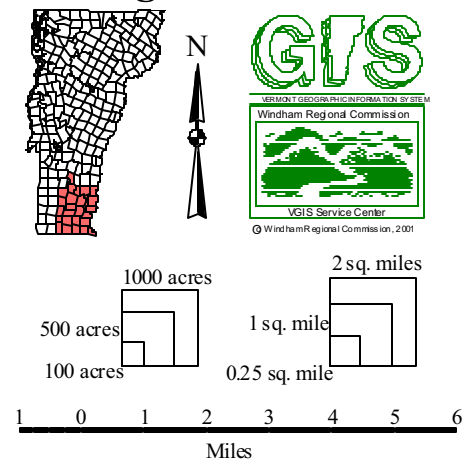
Sources (see appendix): 52, 53, also 1, 2, 3

## Proposed Land Use

- |                   |                         |
|-------------------|-------------------------|
| △ hamlet          | resource lands          |
| ▲ village         | productive rural lands  |
| ▲ regional center | rural residential lands |
| ● resort center   | growth center           |
|                   | water                   |



2001 Windham  
Regional Plan



September 2001; C:\REGPLN01\CONSLAND.APR: 11x17 B&W map

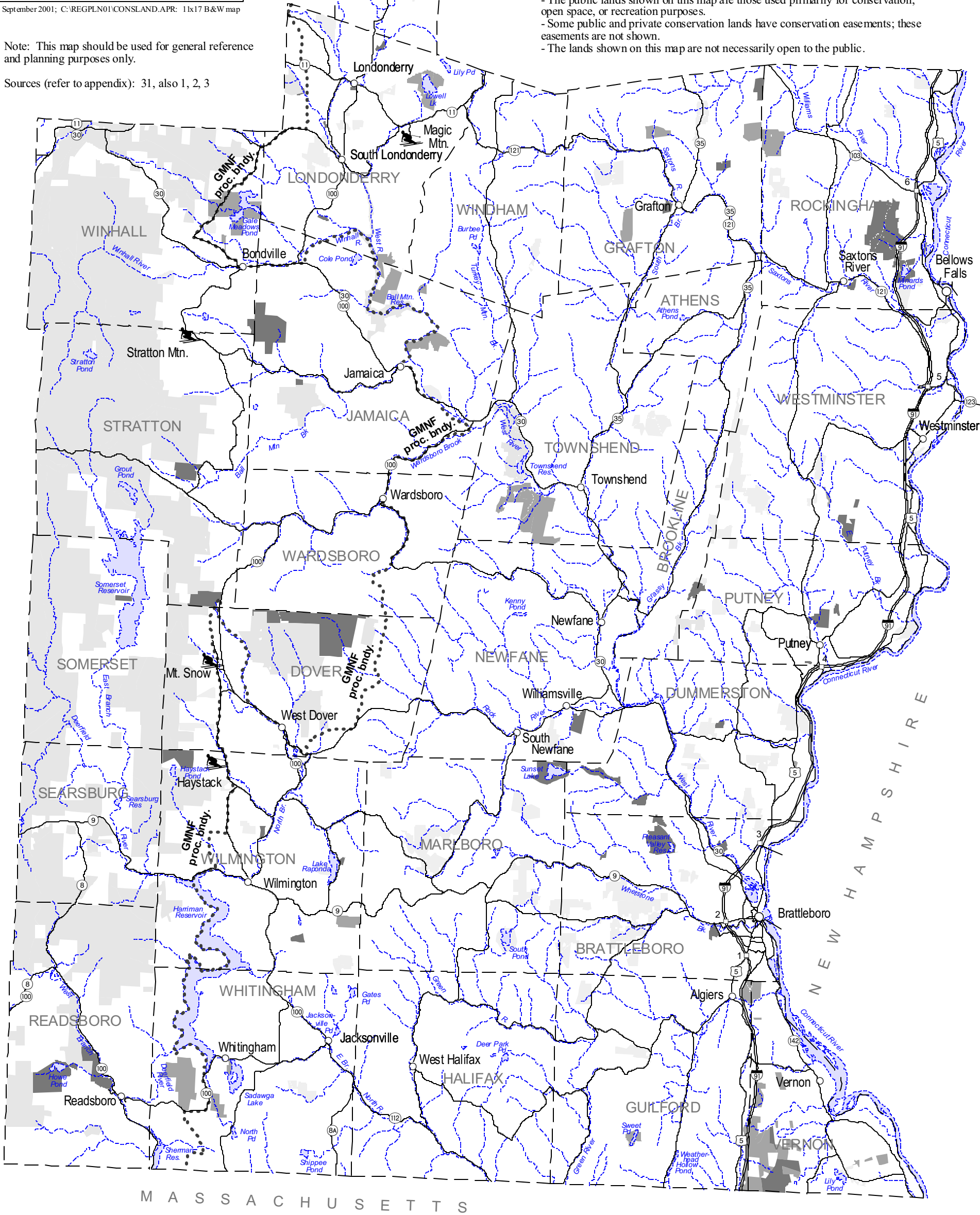
Note: This map should be used for general reference and planning purposes only.

Sources (refer to appendix): 31, also 1, 2, 3

Public and Conserved Lands

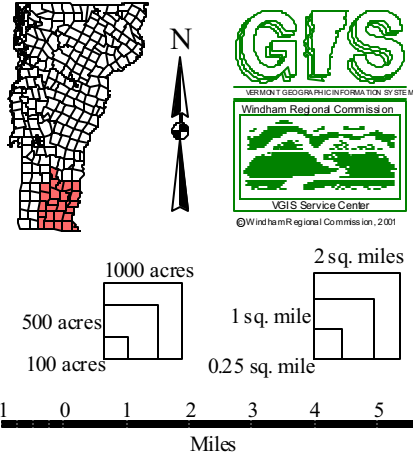
- Federal land
- State land
- Town land
- Private conservation organization land
- Private land with conservation easement
- Water
- Green Mountain National Forest proclamation area boundary

Notes:  
- The public lands shown on this map are those used primarily for conservation, open space, or recreation purposes.  
- Some public and private conservation lands have conservation easements; these easements are not shown.  
- The lands shown on this map are not necessarily open to the public.





2001 Windham  
Regional Plan



September 2001; C:\REGLN01\STRUCT.APR: 11x17 map

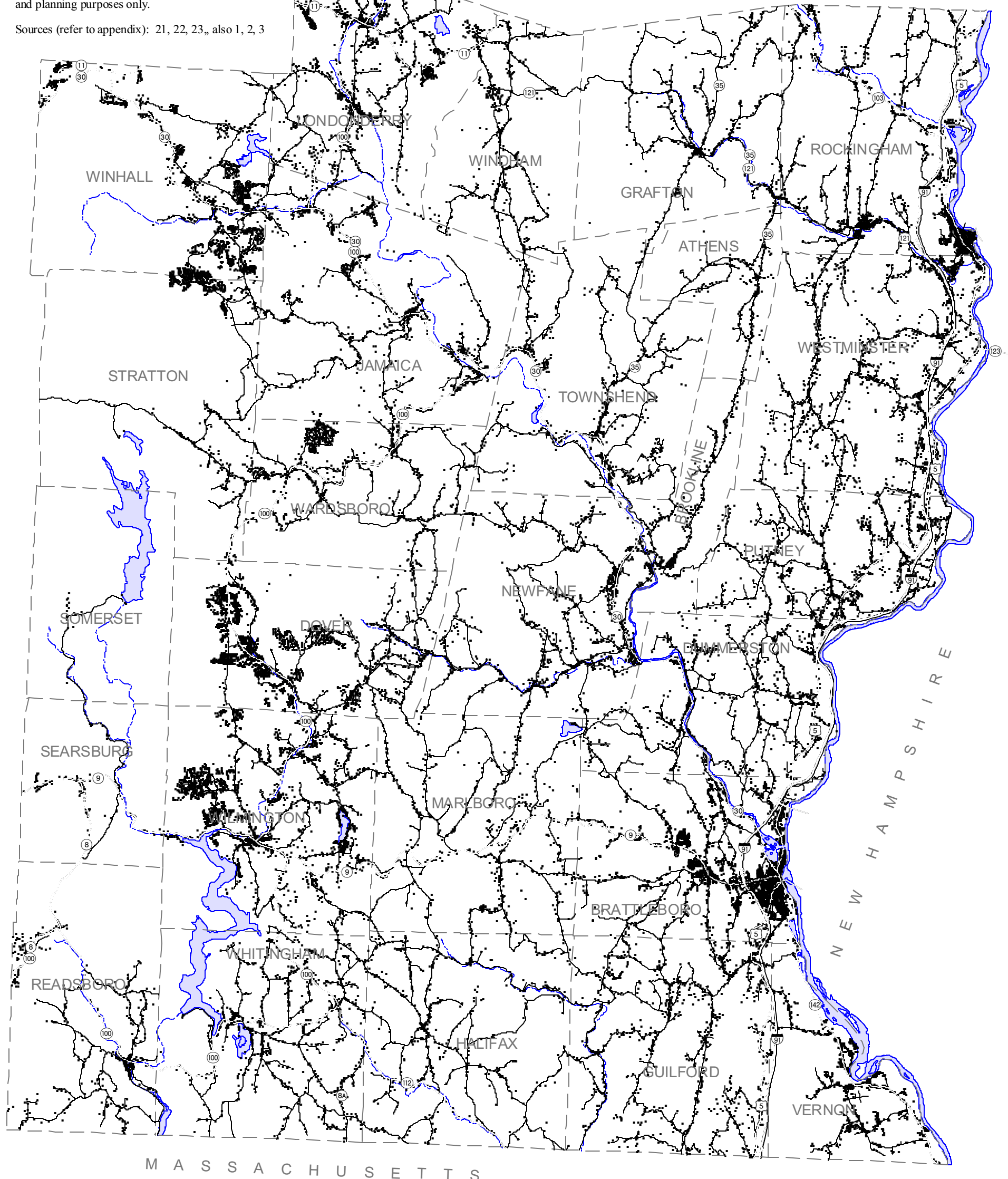
Note: This map should be used for general reference and planning purposes only.

Sources (refer to appendix): 21, 22, 23,, also 1, 2, 3

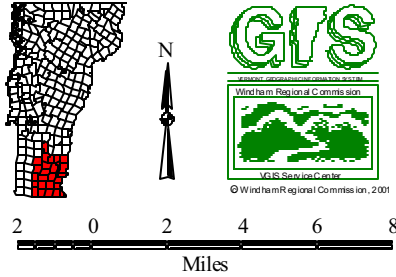
Regional Development Pattern

- Federal, state, or town highway (excluding Class 4 town highways)
- Structures
- Town boundary
- Major river or stream
- Major lake or pond

This map attempts to show the pattern of development across the Region by displaying structures and major roads. While features other than the structures and roads displayed here can constitute development, defining these other feature and then mapping them would be difficult. By showing roads and structures, the map, taken in a regional context, should give the viewer a general ideal of where in the Windham Region the majority of human activity and land modifications are located.



# 2001 Windham Regional Plan



September 2001; C:\REGPLN01\ECONOMY.APR: 8.5x11 map

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

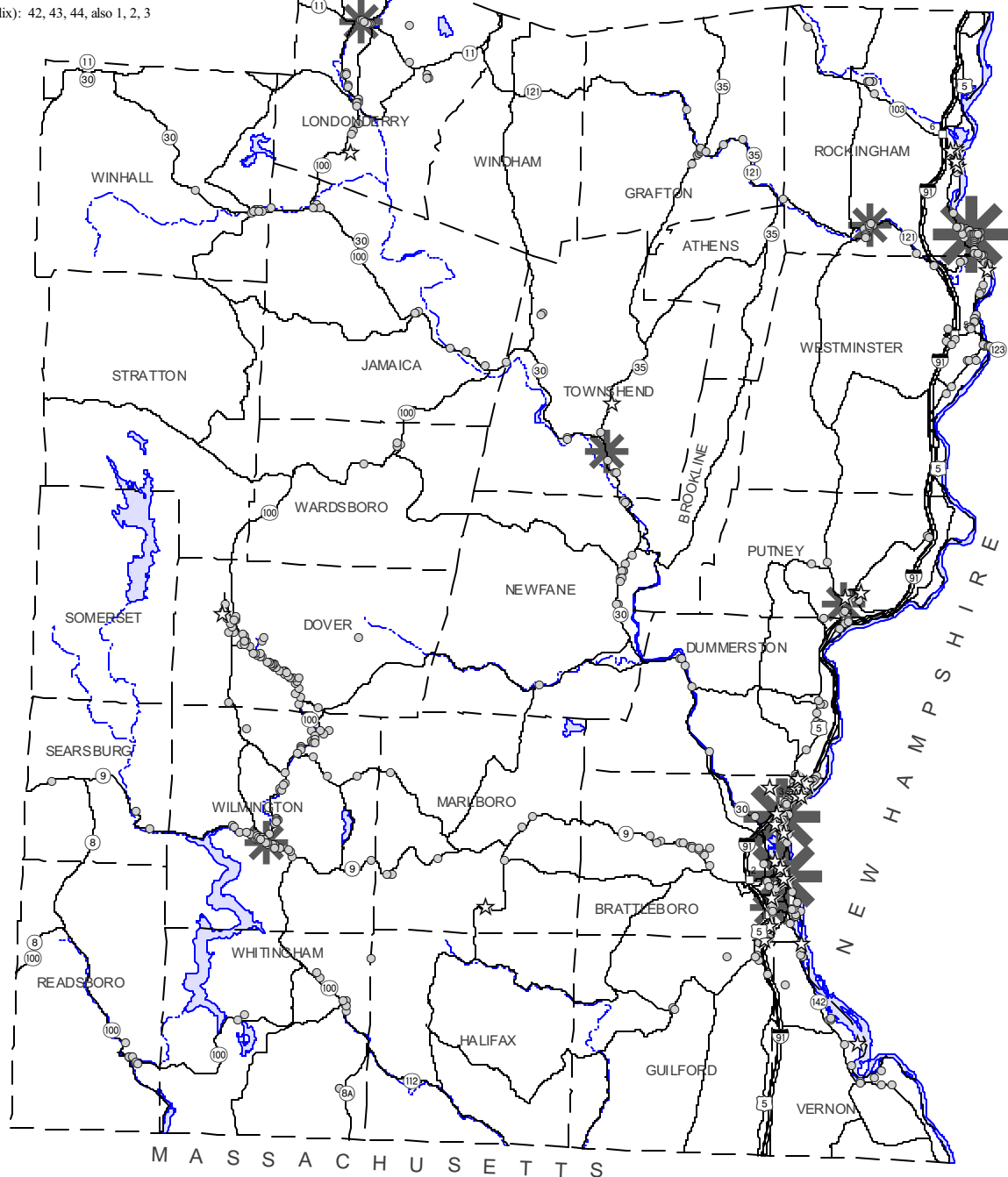
Sources (see appendix): 42, 43, 44, also 1, 2, 3

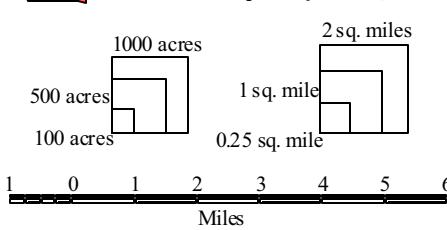
## Economic Centers

- ☆ Major employer
- Large commercial or industrial building
- ✱ Commercial center - regional
- ✱ Commercial center - sub-regional

Note:

The commercial and industrial buildings shown on this map have a building footprint of 2000 square feet or greater. No data are available for the Town of Stratton.





September 2001; C:\REGPLN01\IMPAIR.APR: 11x17 map

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

Sources (refer to appendix): 25, 26, also 1, 2

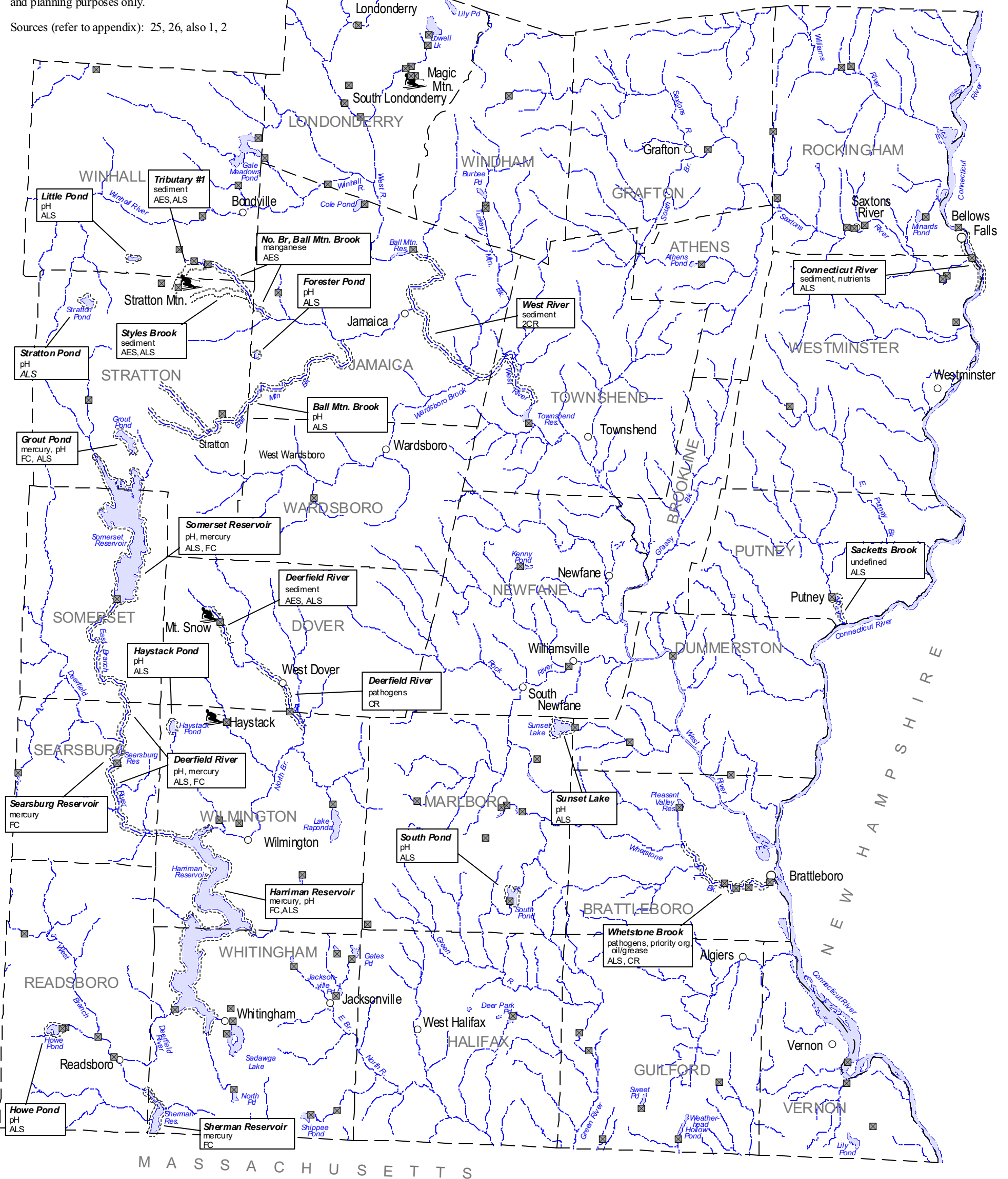
■ Dam  
 Lake, pond, or river  
 River or stream  
 Impaired water

**Connecticut River**  
 sediment, nutrients  
 ALS

water body name  
 pollutant(s)  
 use(s) impaired

Uses impaired:  
 AES - aesthetics  
 ALS - aquatic life support  
 FC - fish consumption  
 CR - contact recreation (i.e. swimming)  
 2CR - secondary contact recreation (fishing, boating)

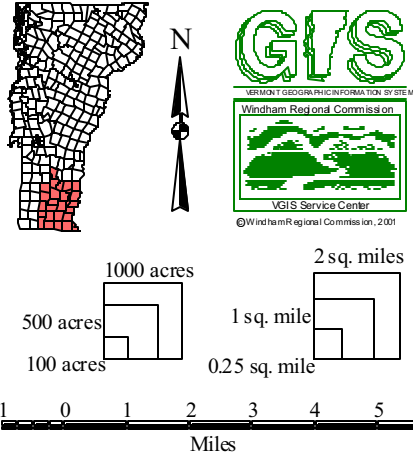
Impaired waters are those that are listed in the State of Vermont Year 2000 List of Waters. In that document, the term impaired "means a documented violation of one or more criteria of the Vermont Water Quality Standards."



M A S S A C H U S E T T S



2001 Windham  
Regional Plan



September 2001; C:\REGPLN01\NATAREAS.APR: 11x17 map

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

Sources (refer to appendix): 37, 38, 39, 40, 41, also 1, 2, 3

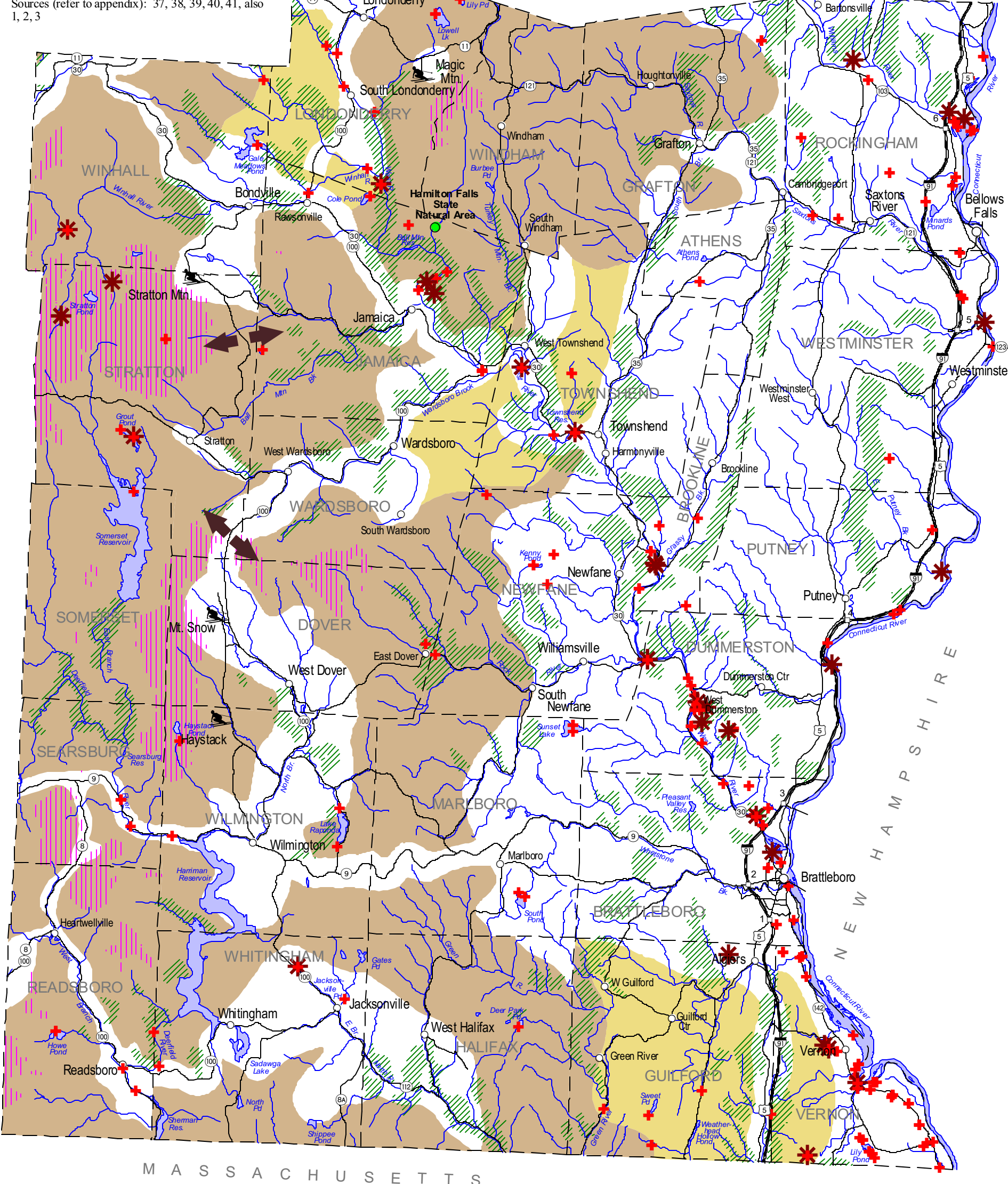
Ecological Resources

- + Rare, threatened, or endangered species occurrence
- \* Significant natural community
- Deer wintering area
- Land over 2500 feet
- Bear production habitat
- Seasonal bear habitat
- Regionally significant bear travel corridor

Notes:

- The locations of rare, threatened, or endangered species occurrences or significant natural communities are approximate, but generally within 200 meters. The actual area represented by the species or community may be a few square feet or many hundreds of acres.

- Black bear travel corridors, according to Forrest Hammond, biologist with the Vermont Department of Fish and Wildlife, are forested habitats that are regionally important and are used by large numbers of bears to access critical seasonal foods or to link bear ranges and sub-populations. Travel corridors are comprised of bear travel routes and may include one or more road crossing areas.

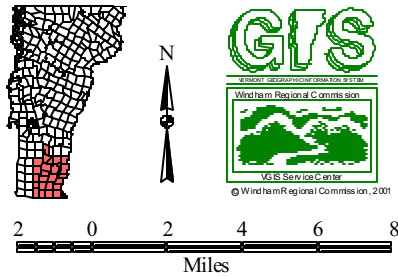


M A S S A C H U S E T T S





# 2001 Windham Regional Plan






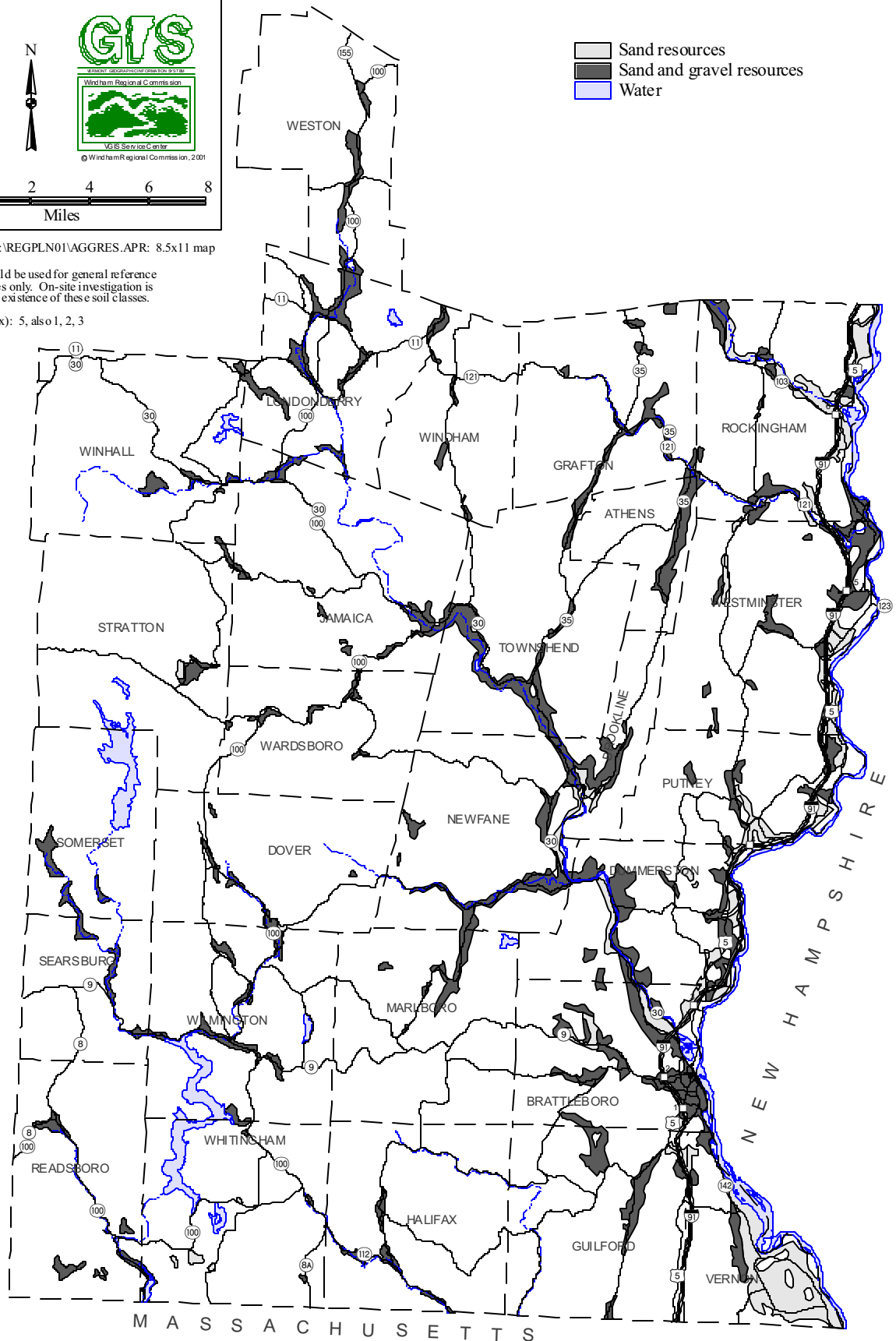
September 2001; C:\REGPLN01\AGGRES.APR: 8.5x11 map

Note: This map should be used for general reference and planning purposes only. On-site investigation is required to verify the existence of these soil classes.

Sources (see appendix): 5, also 1, 2, 3

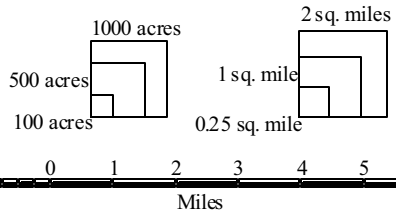
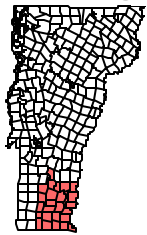
## Sand and Gravel Resources

-  Sand resources
-  Sand and gravel resources
-  Water





2001 Windham  
Regional Plan

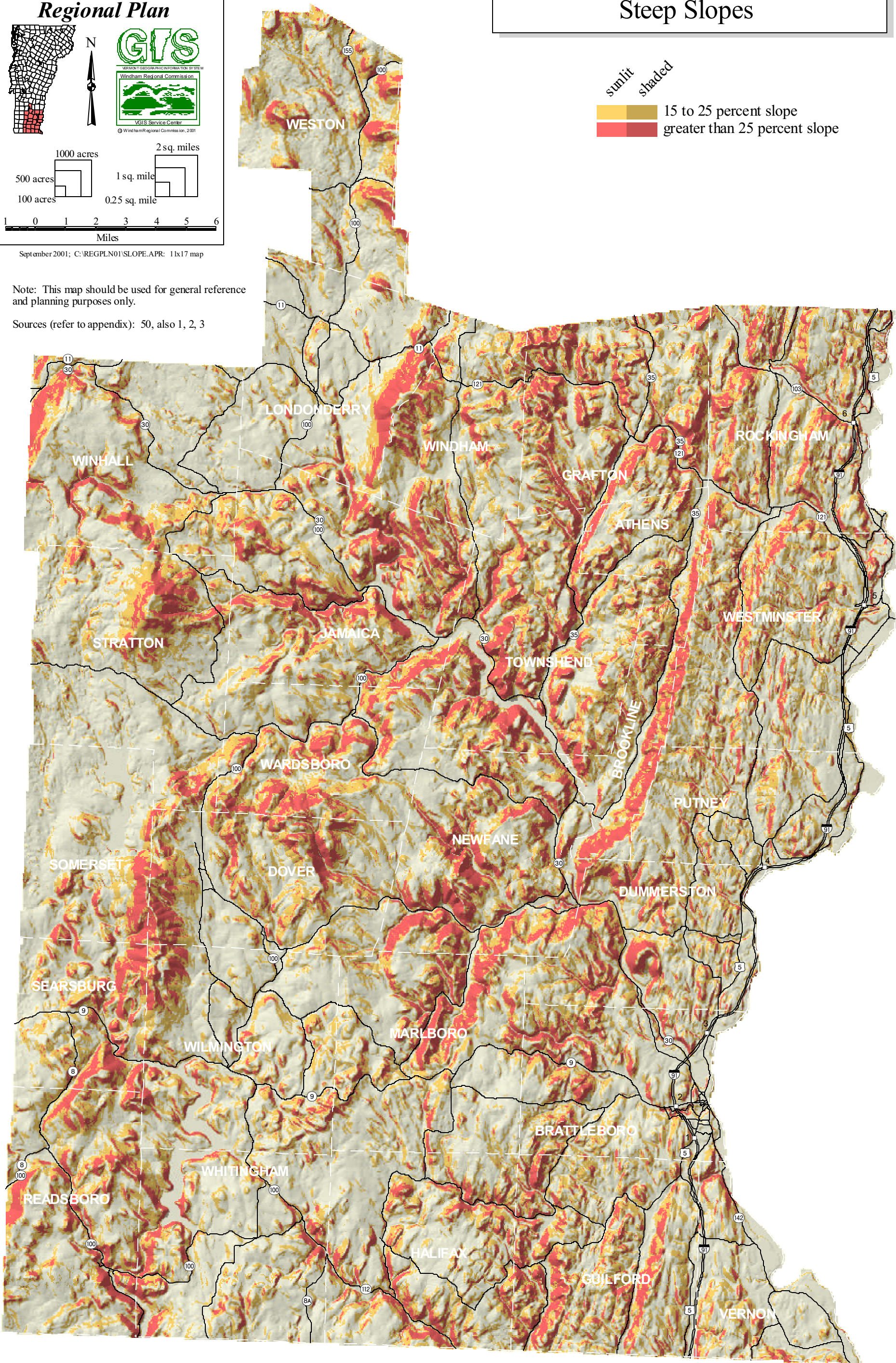
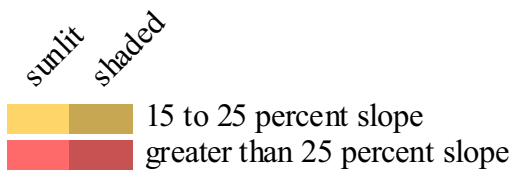


September 2001; C:\REG\PLN01\SLOPE.APR: 11x17 map

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

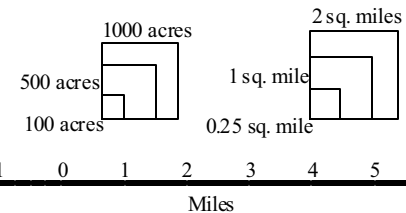
Sources (refer to appendix): 50, also 1, 2, 3

Steep Slopes





2001 Windham  
Regional Plan



September 2001; C:\REGPLN01\WATERRES.APR: 11x17 map

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

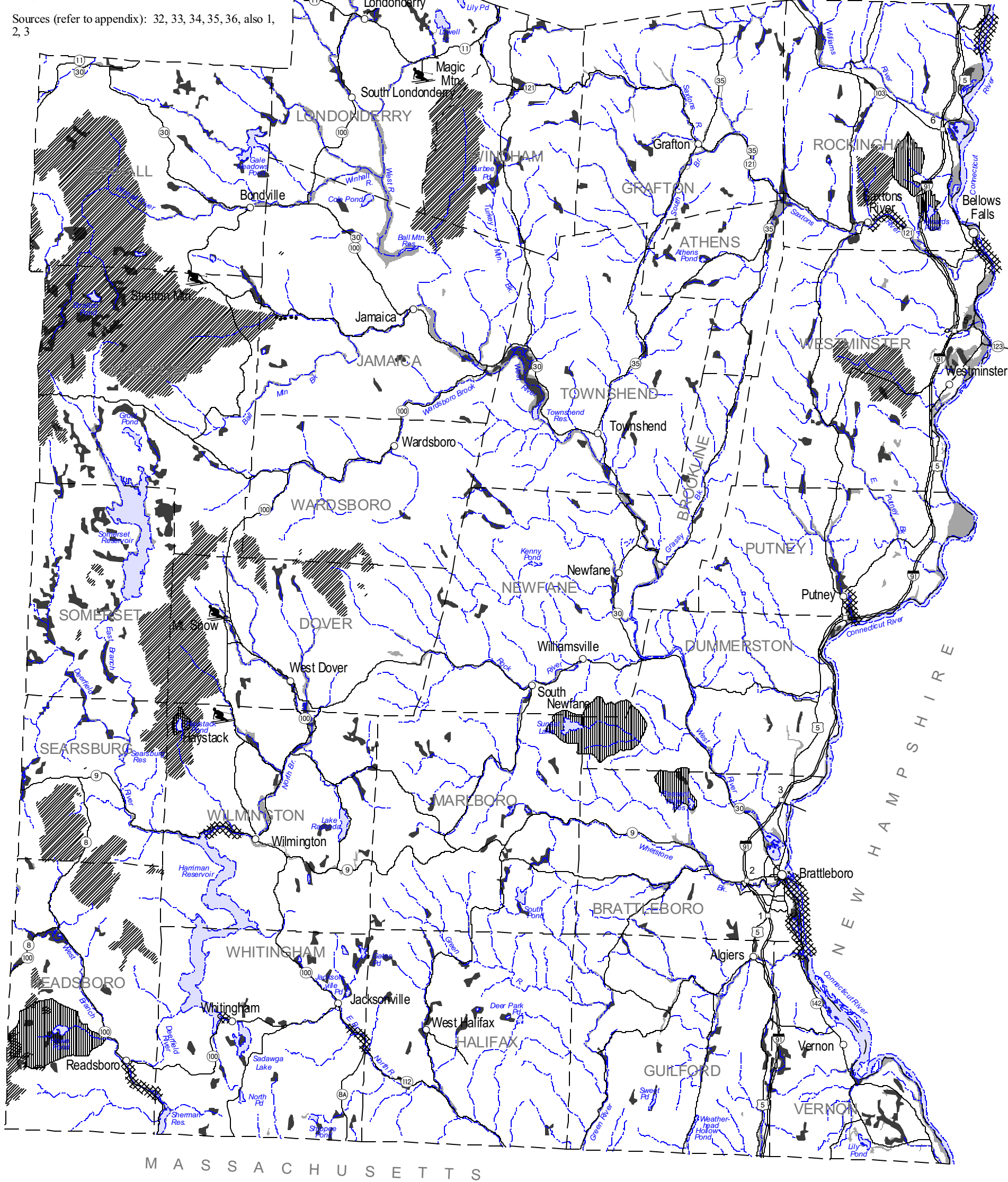
Sources (refer to appendix): 32, 33, 34, 35, 36, also 1, 2, 3

Water Resources

- Outstanding resource water
- Watershed of Class A(1) waters
- Watershed of Class A(2) waters
- Areas dominated by wetlands
- Areas dominated by floodplains
- Waste management zone
- Water

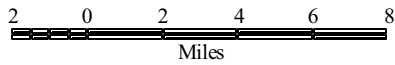
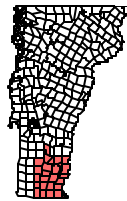
Notes:

- Class A(1) waters, or "ecological waters," include those watersheds designated as such by VT Water Resources Board, and by default, all waters above 2500 feet.
- Class A(2) waters, or "public waters supply waters" are waters that contribute to a community's water system.
- Waste management zones have been enlarged slightly to improve visibility.



M A S S A C H U S E T T S

# 2001 Windham Regional Plan

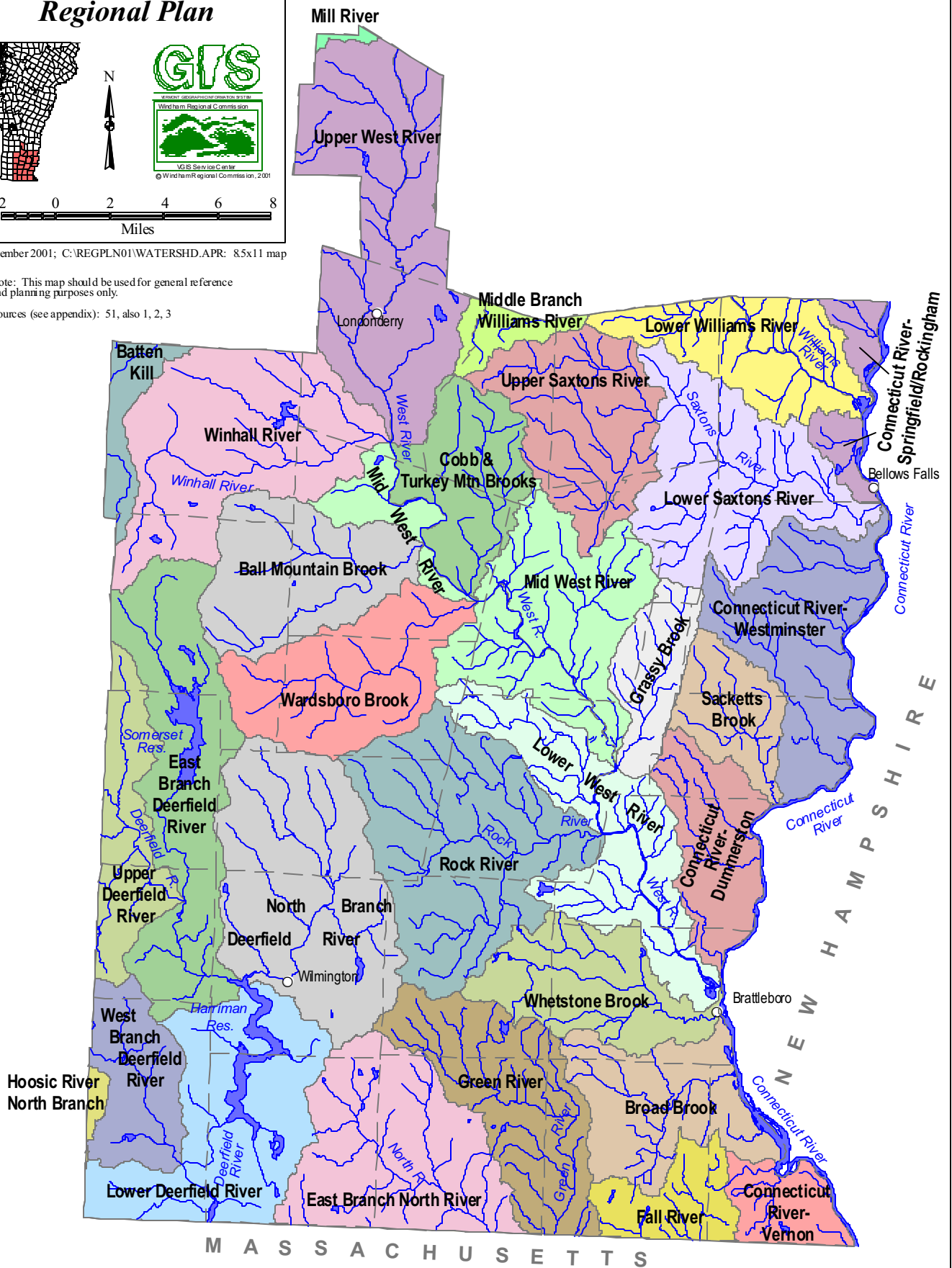


September 2001; C:\REGPLN01\WATERSHD.APR: 8.5x11 map

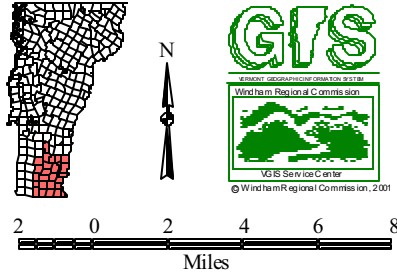
Note: This map should be used for general reference and planning purposes only.

Sources (see appendix): 51, also 1, 2, 3

## Watersheds



# 2001 Windham Regional Plan



September 2001; C:\REGPLN01\EDUCATN.APR: 8.5x11 map

Note: This map should be used for general reference and planning purposes only. On-site investigation is required to verify the existence of these soil classes.

Sources (see appendix): 27, 28, also 1, 2, 3

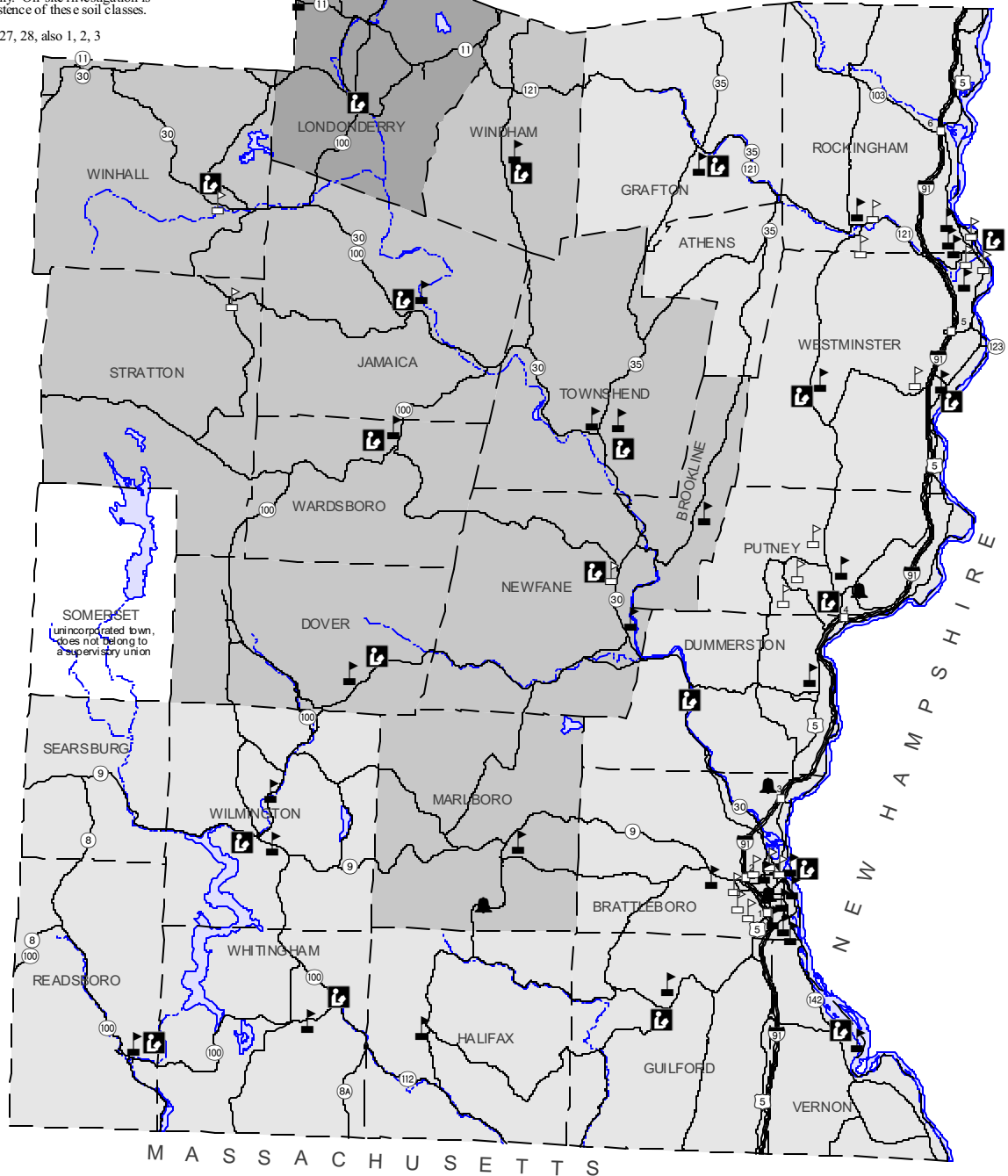
## Educational Facilities

- Public school
- Independent school
- College
- Library

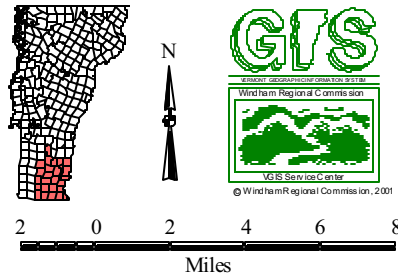
### Supervisory Unions:

- Windham Central
- Windham Northeast
- Windham Southeast
- Windham Southwest
- Windsor Southwest

The educational facilities on this map may not be positioned at their actual location. For clarity, symbols have been moved slightly. All known facilities, however, are represented on this map and shown within one mile of their actual location.



## 2001 Windham Regional Plan



September 2001; C:\REGLN01\COMMBLDGAPR: 8.5x11 map

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

Sources (see appendix): 54, also 1, 2, 3

## Governmental Services

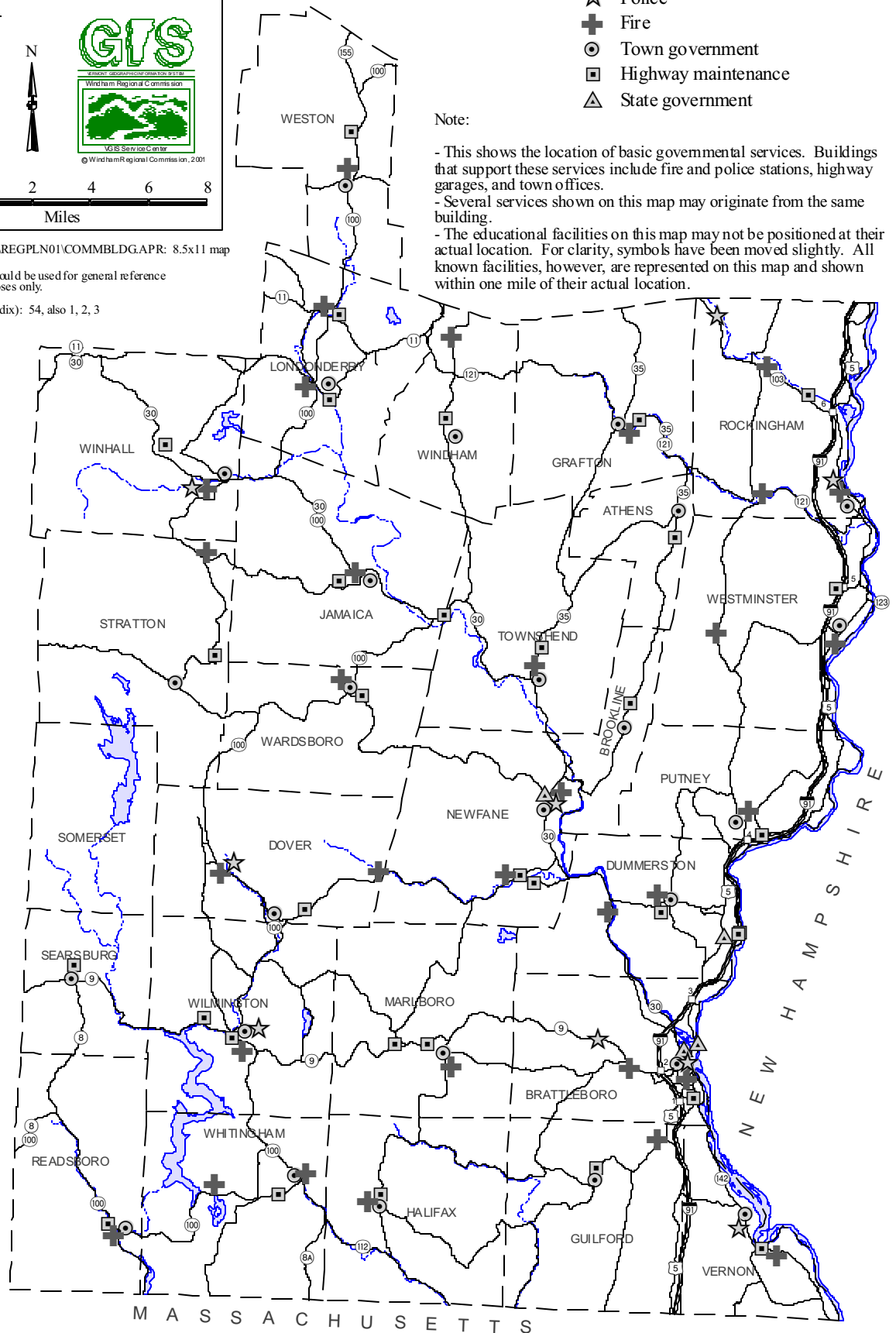
- ★ Police
- ✚ Fire
- ⊙ Town government
- ▣ Highway maintenance
- △ State government

Note:

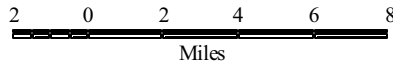
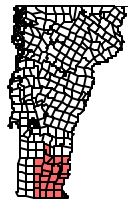
- This shows the location of basic governmental services. Buildings that support these services include fire and police stations, highway garages, and town offices.

- Several services shown on this map may originate from the same building.

- The educational facilities on this map may not be positioned at their actual location. For clarity, symbols have been moved slightly. All known facilities, however, are represented on this map and shown within one mile of their actual location.



# 2001 Windham Regional Plan



September 2001; C:\REGPLN01\HEALTHCR.APR: 8.5x11 map

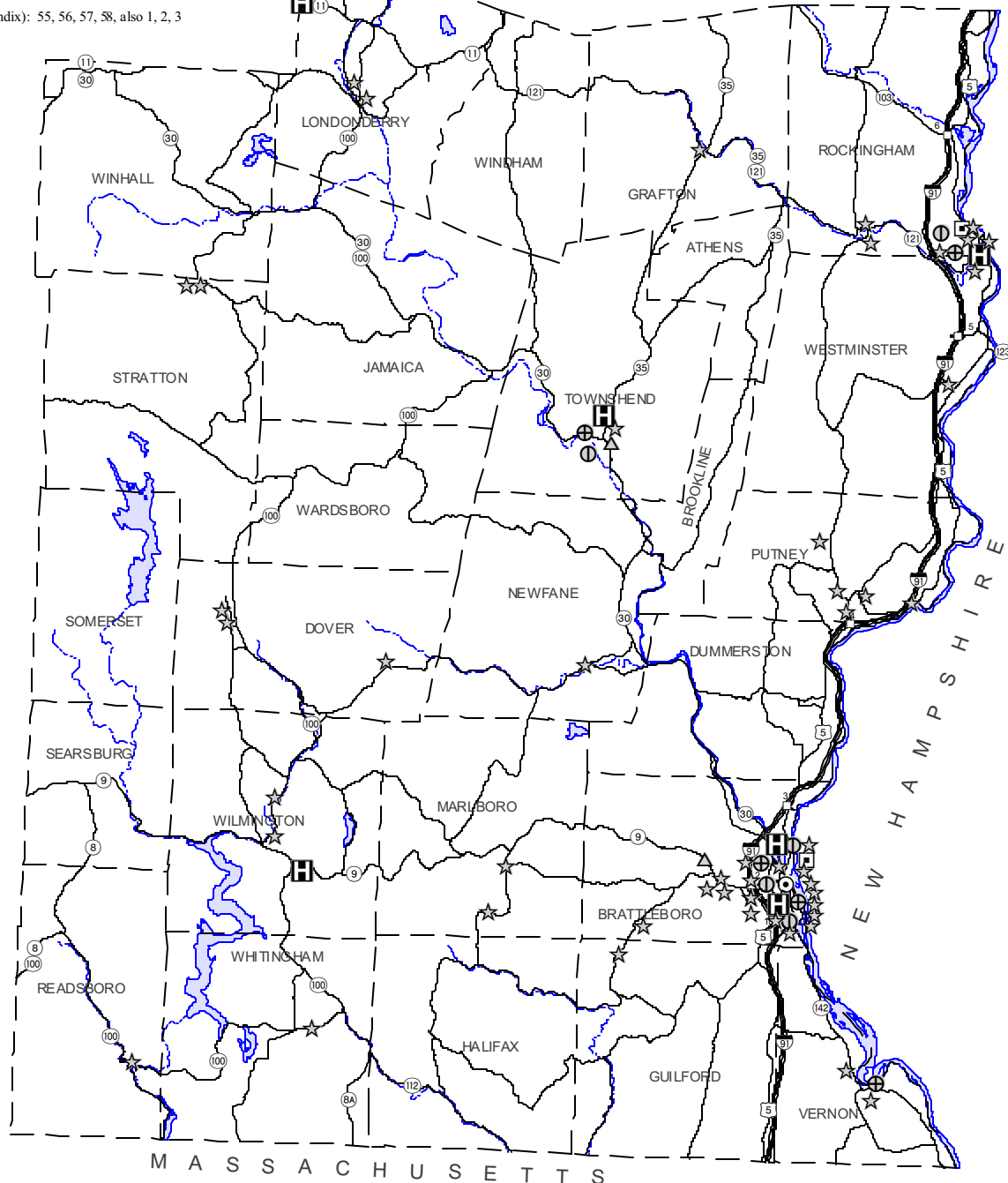
Note: This map should be used for general reference and planning purposes only.

Sources (see appendix): 55, 56, 57, 58, also 1, 2, 3

## Health and Social Service Facilities

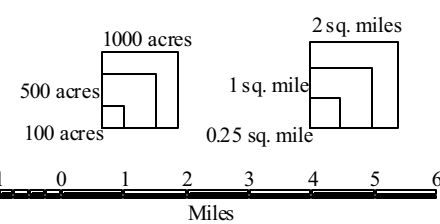
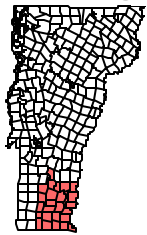
- ⊙ Teen center
- ▲ Adult day care center
- ▣ Senior center
- ⌘ Health care facility
- ⊕ Facility for care of aged or disabled, level 1 or 2
- ⓪ Facility for care of aged or disabled, level 3 or 4
- ★ Pre-school or day care center

The facilities on this map may not be positioned at their actual location. For clarity, symbols have been moved slightly. All known facilities, however, are represented on this map and shown within one mile of their actual location.





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Regional Plan



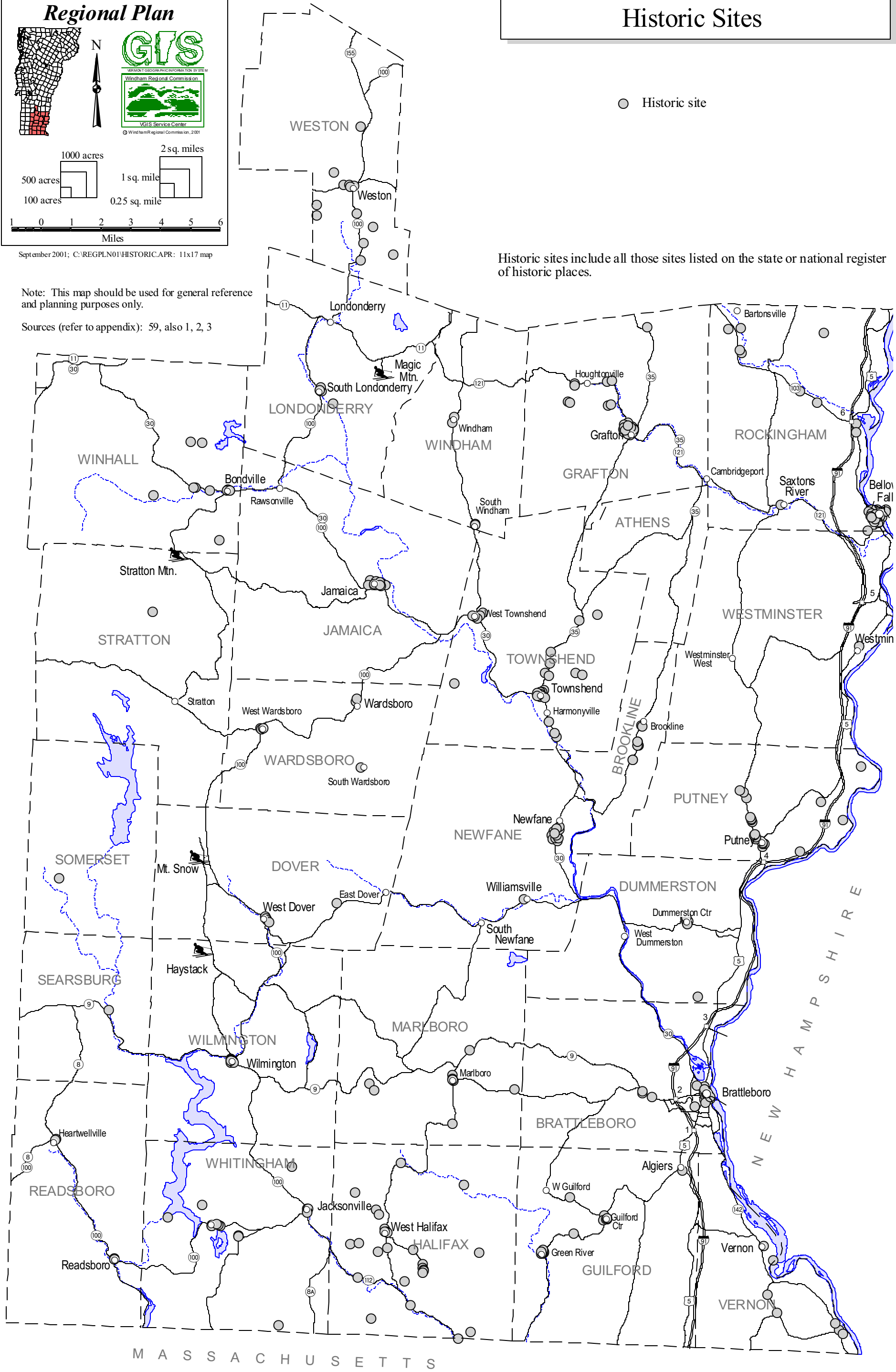
September 2001; C:\REGPLN01\HISTORIC.APR: 11x17 map

Note: This map should be used for general reference and planning purposes only.  
Sources (refer to appendix): 59, also 1, 2, 3





Historic Sites



○ Historic site



Historic sites include all those sites listed on the state or national register of historic places.





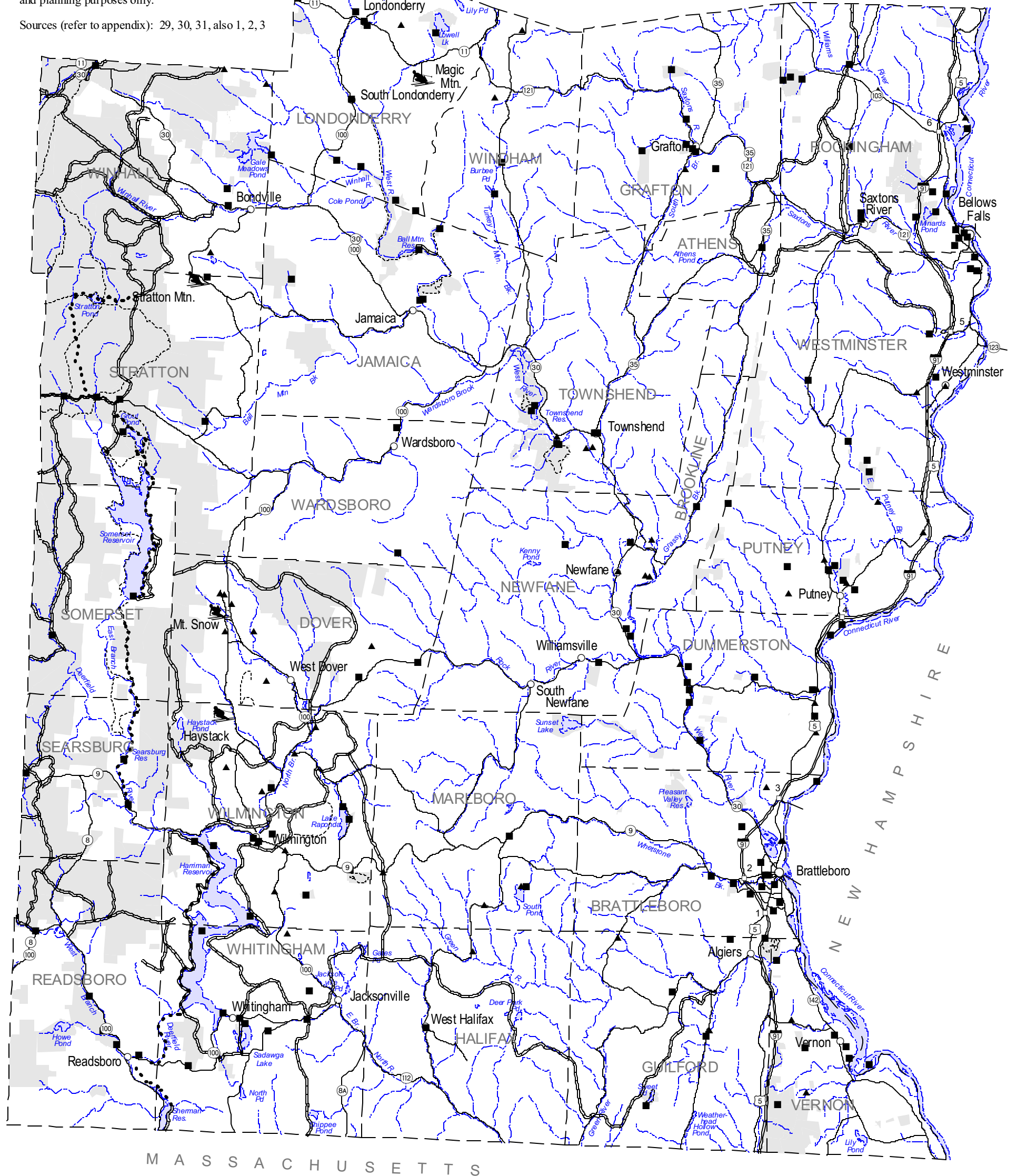
 Long/Appalachian Trail system  
 Catamount Trail system (cross-country skiing)  
 VAST trail system (snowmobiling)  
 Other trail (primarily hiking or biking)

 Public land  
 Land owned by private conservation organization

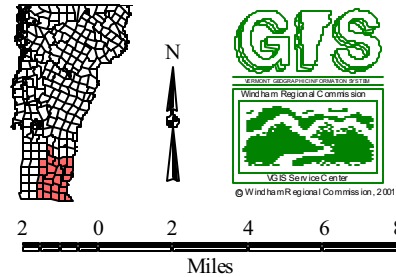
 Developed recreation site or facility - publicly-owned  
 Developed recreation site or facility - privately-owned

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

Sources (refer to appendix): 29, 30, 31, also 1, 2, 3



# 2001 Windham Regional Plan



September 2001; C:\REGPLN01\AGOILS.APR: 8.5x11 map

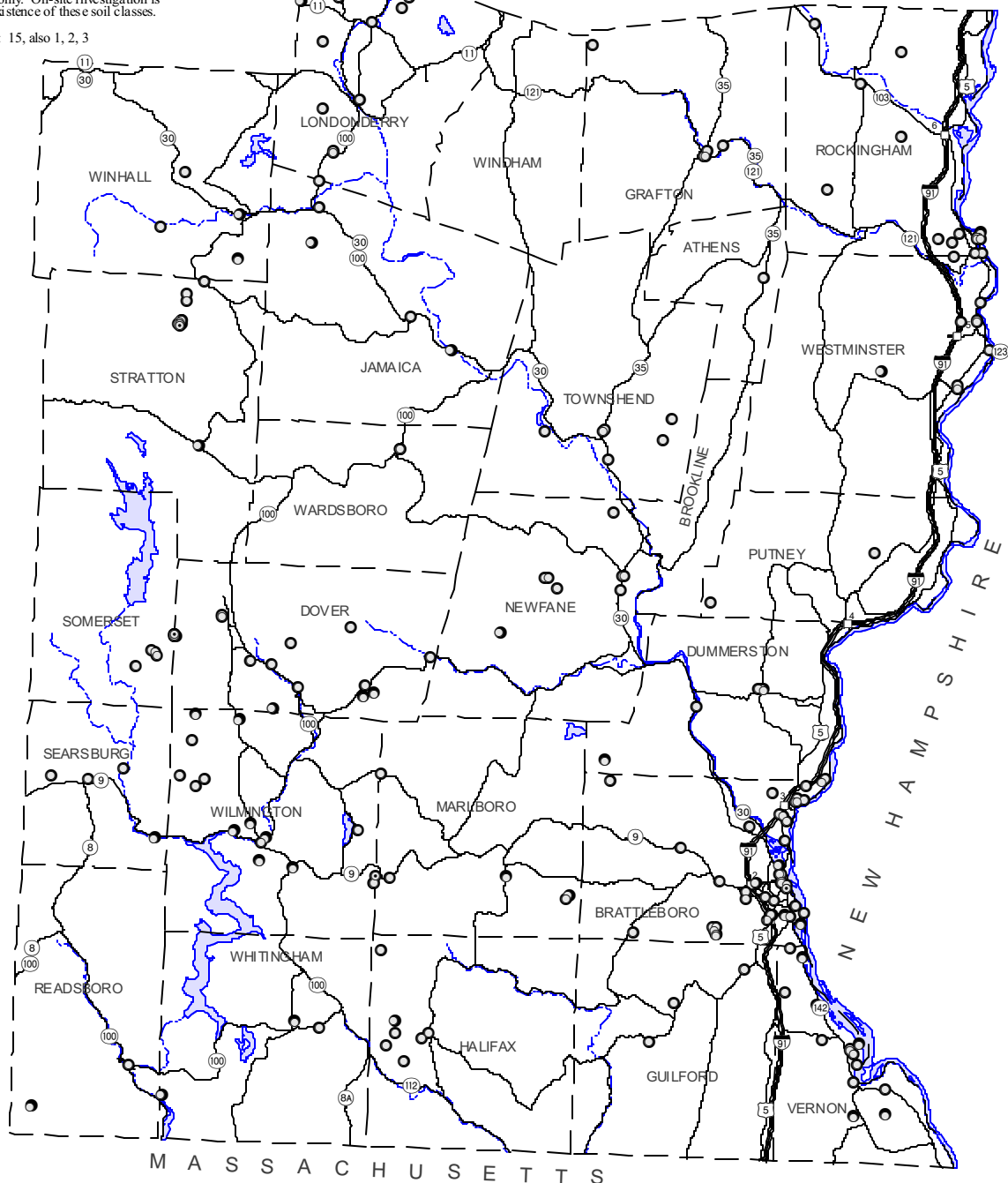
Note: This map should be used for general reference and planning purposes only. On-site investigation is required to verify the existence of these soil classes.

Sources (see appendix): 15, also 1, 2, 3

## Telecommunications Facilities

- Telecommunications facility
- denotes facility used for cellular telecommunications

A telecommunications facility, as per 10 V.S.A. Section 6001(26), is defined as "a support structure which is primarily for communication or broadcast purposes and which will extend vertically 20 feet, or more, in order to transmit or receive communication signals for commercial, industrial, municipal, county or state purposes."








The number line shows two intervals where the area of the squares increases exponentially. In the first interval, from 1 to 2 miles, the area of the squares is 1000 acres, 500 acres, and 100 acres. In the second interval, from 4 to 5 miles, the area of the squares is 2 sq. miles, 1 sq. mile, and 0.25 sq. mile.



September 2001; C:\REGPLN01\UTILITY.APR: 11x17 map


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

Sources (refer to appendix): 6, 7, 8, 9, 10, 11, 12, 13, 14, also 1, 2, 3

Electric utility franchise areas:

- |   |   |
|---|---|
|  | Central Vermont Public Service Corporation  |
|  | Green Mountain Power Corporation            |
|  | Vermont Electric Co-op                      |
|  | Village of Readsboro Electric Department    |
|  | Village of Jacksonville Electric Department |



-  Well head protection area  
 Surface water source protection area

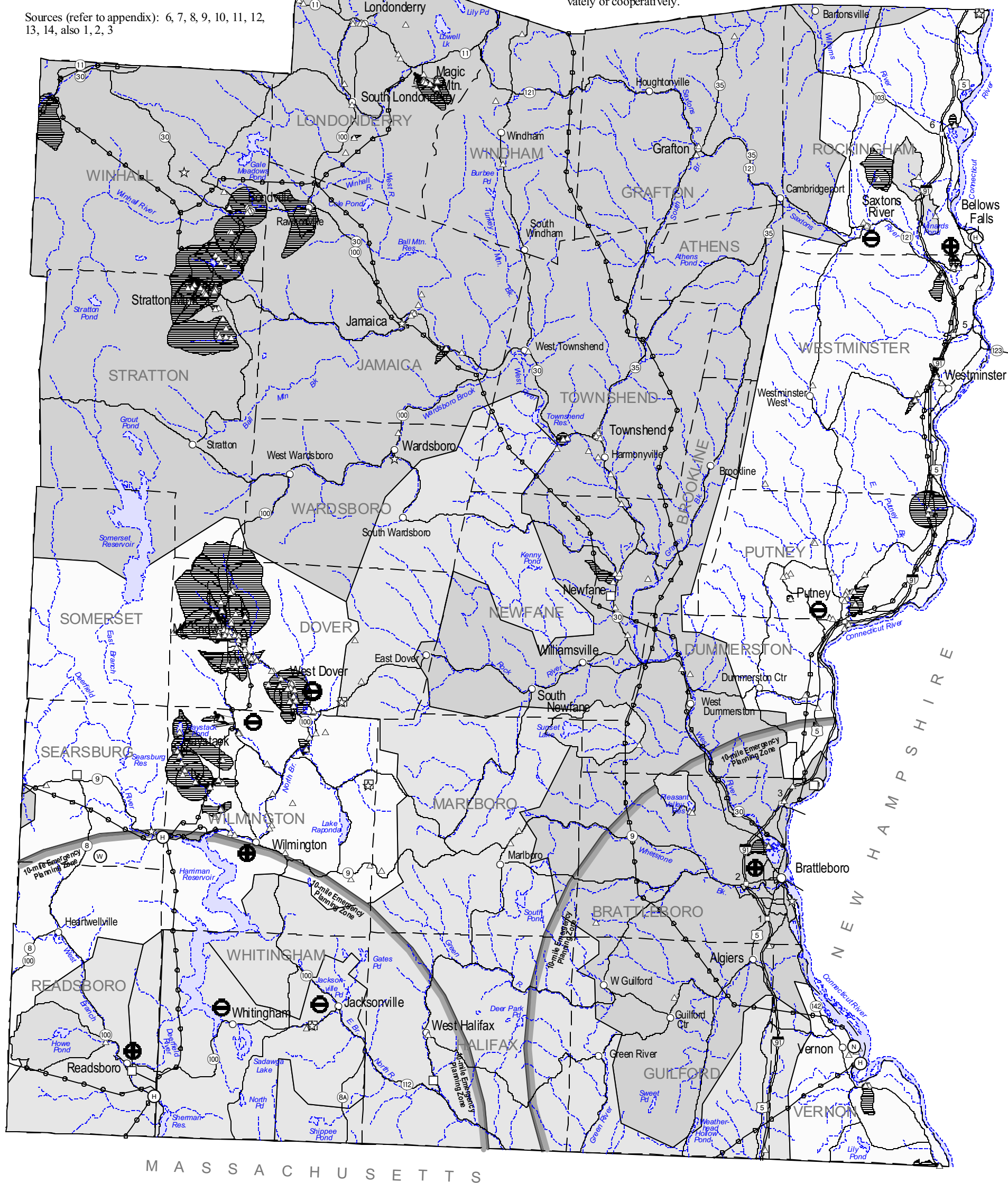
-  Municipal sewer service \*  
 Municipal sewer and water service \*

\* - symbol denotes service in that general area;  
actual service area is not located

Electric Generation Facility:

- ☐ H hydro  
☐ M methane  
☐ N nuclear  
☐ W wind

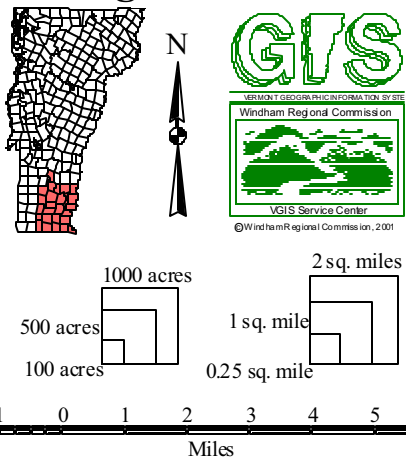
- ☆ Transfer station
- Closed landfill
- △ Public water supply source
-  Electric transmission line
-  Boundary of 10-mile  
Emergency Planning Zone



A public water supply is a water supply system with ten or more connections or regularly serving an average of at least 25 individuals daily at least 60 days a year. These systems may be operated by a municipality or may be operated privately or cooperatively.



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Regional Plan



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Utilities

Electric utility franchise areas:

- Central Vermont Public Service Corporation
- Green Mountain Power Corporation
- Vermont Electric Co-op
- Village of Readsboro Electric Department
- Village of Jacksonville Electric Department

Electric Generation Facility:

- hydro
- methane
- nuclear
- wind

- Well head protection area
- Surface water source protection area

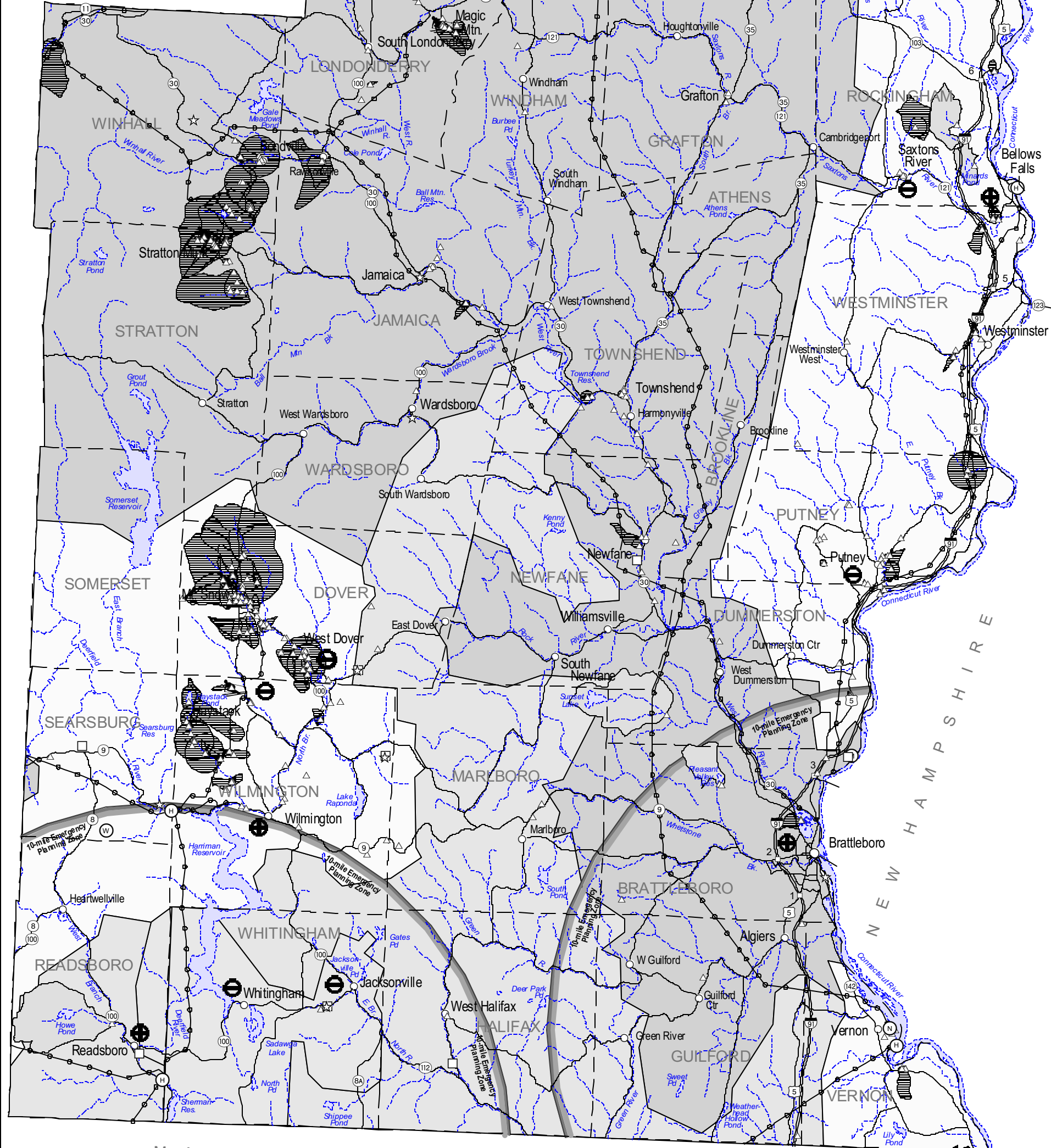
- Municipal sewer service \*
  - Municipal sewer and water service \*
- \* - symbol denotes service in that general area; actual service area is not located

- Transfer station
- Closed landfill
- Public water supply source
- Electric transmission line
- Boundary of 10-mile Emergency Planning Zone

A public water supply is a water supply system with ten or more connections or regularly serving an average of at least 25 individuals daily at least 60 days a year. These systems may be operated by a municipality or may be operated privately or cooperatively.

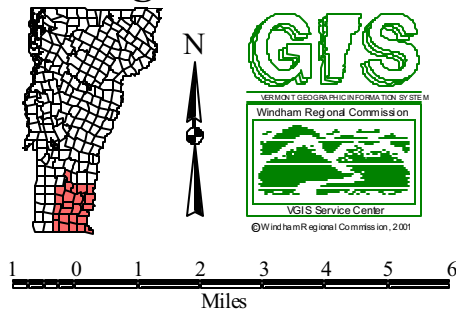
Note: This map should be used for general reference and planning purposes only.

Sources (refer to appendix): 6, 7, 8, 9, 10, 11, 12, 13, 14, also 1, 2, 3



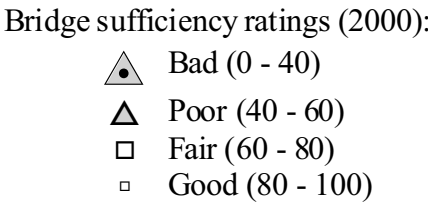
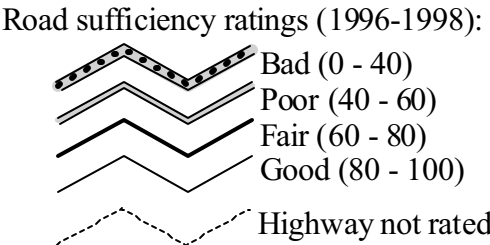
M A S S A C H U S E T T S

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Regional Plan

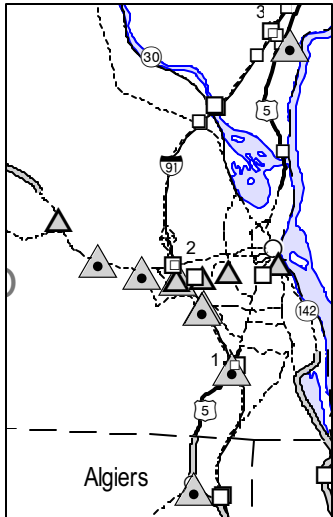


September 2001; C:\REGPLN01\SUFF.APR: 11x17 map

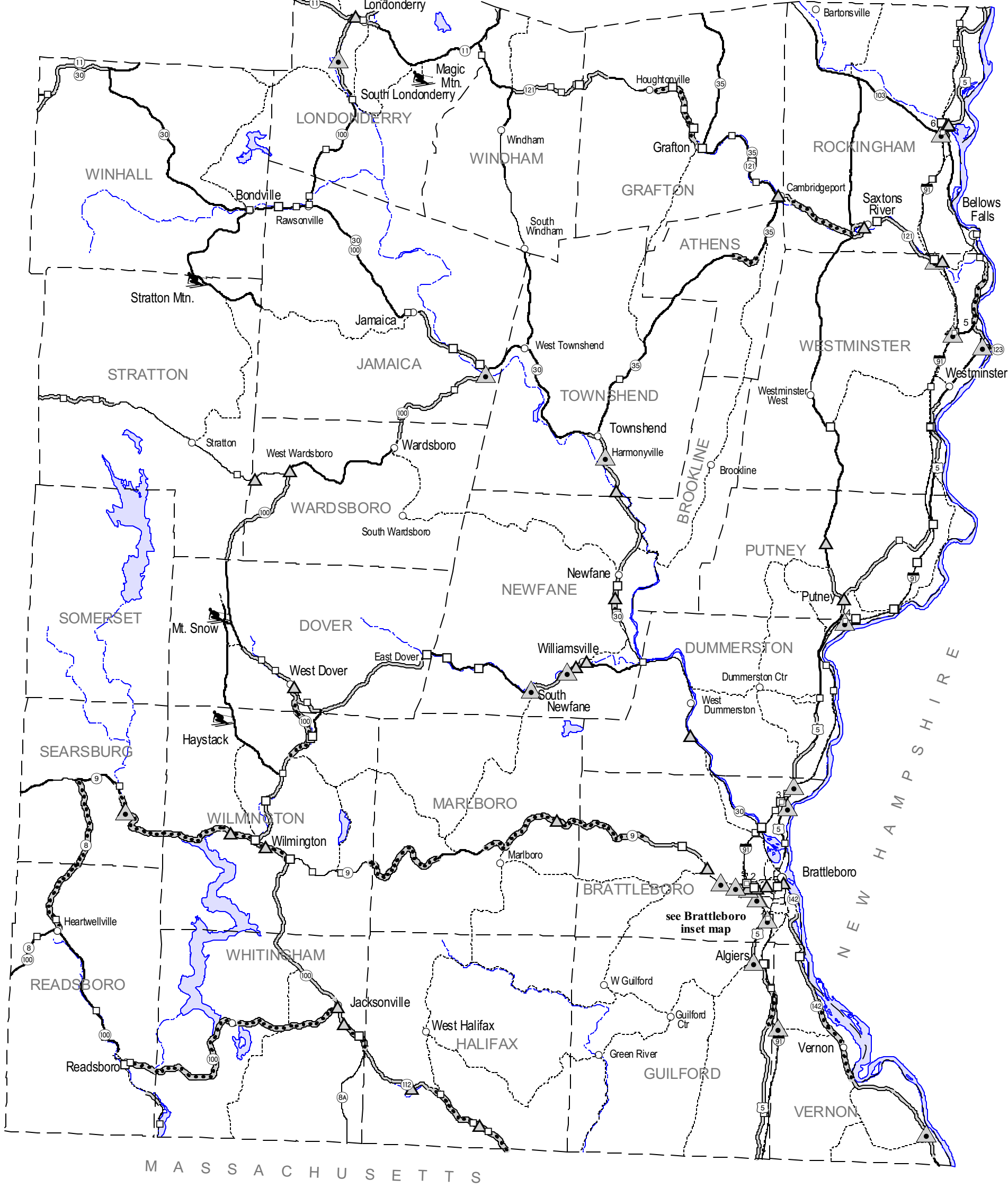
Bridge & Road Sufficiency Ratings



Sufficiency ratings do not always directly correspond with road or bridge condition. Sufficiency ratings are used to identify and prioritize improvements, and are based on structural condition, safety, and service, all weighted by traffic volume.

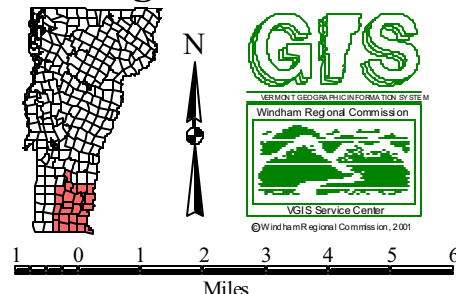


Brattleboro inset





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Regional Plan

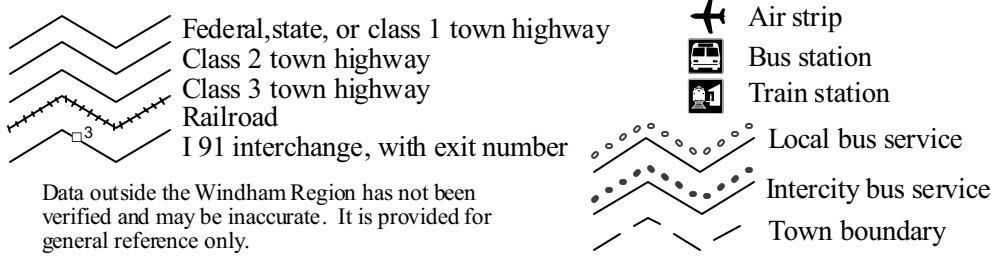


September 2001; C:\REGPLN01\TRANS.APR: existing 11x17 map

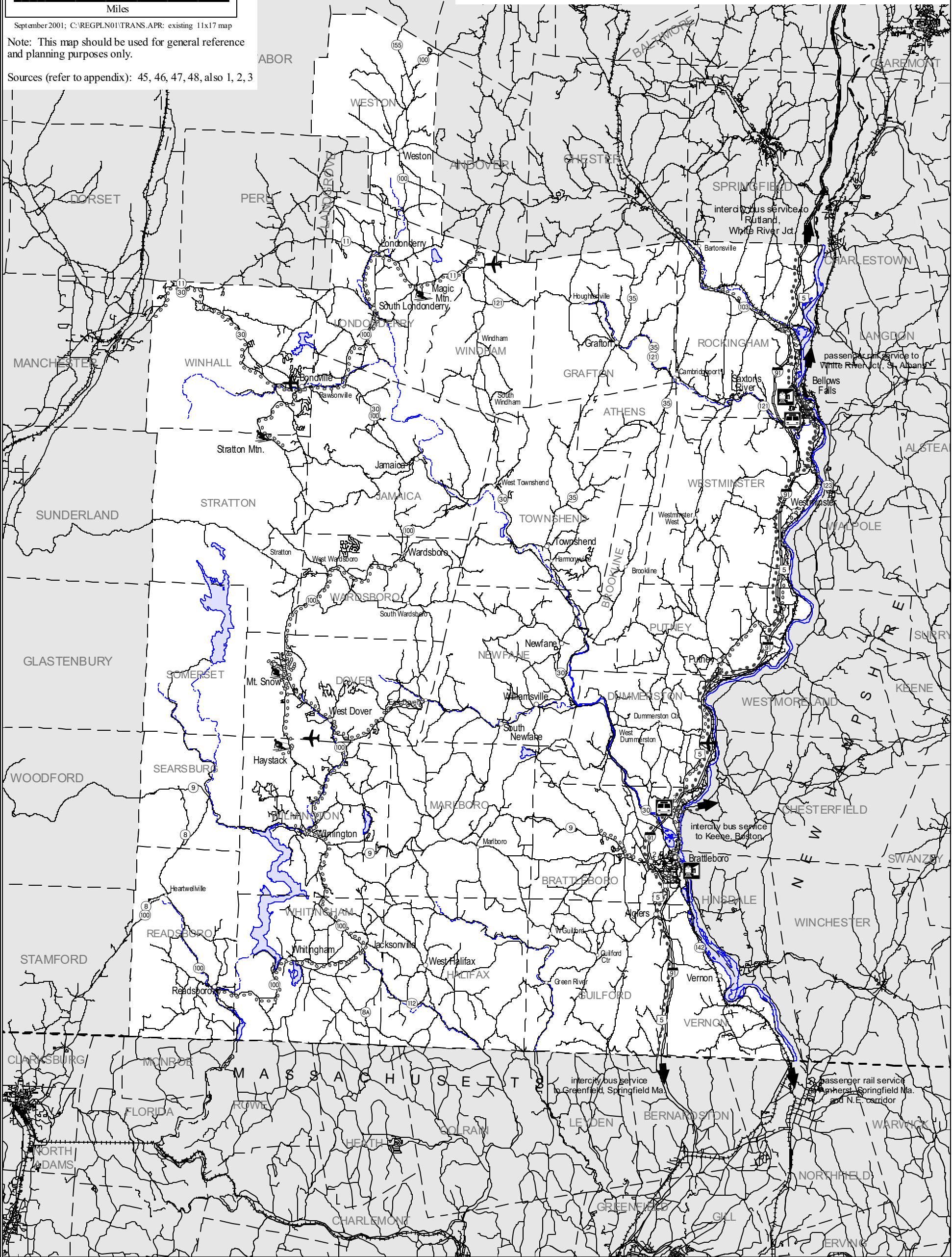
Note: This map should be used for general reference and planning purposes only.

Sources (refer to appendix): 45, 46, 47, 48, also 1, 2, 3

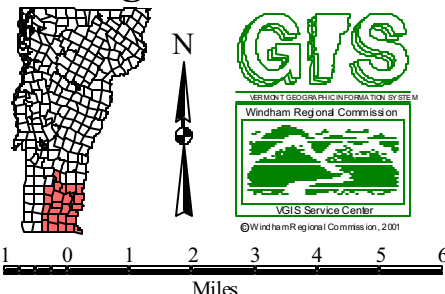
Existing Transportation System



Data outside the Windham Region has not been verified and may be inaccurate. It is provided for general reference only.



2001 Windham  
Regional Plan



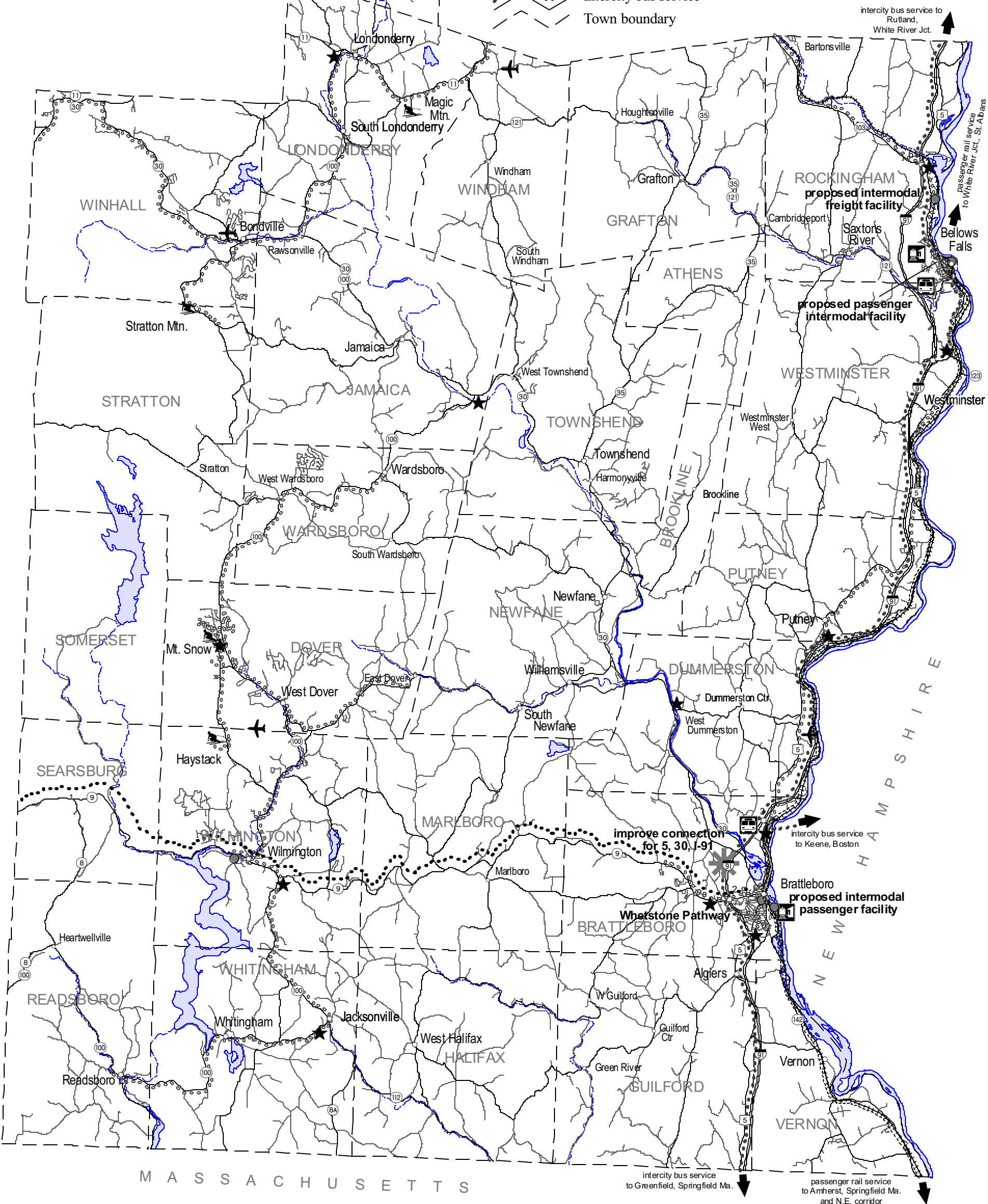
Future Transportation System

- ★ Proposed Park & Ride lot
- Proposed Connecticut River Rail with Trail
- Proposed Bike lane
- Other proposed transportation facility, specific site
- ✱ Other proposed transportation facility, general location
- Federal, state, or class 1 town highway
- Class 2 town highway
- Class 3 town highway
- Railroad
- 191 interchange, with exit number
- Local bus service
- Intercity bus service
- Town boundary
- ✈ Air strip
- Bus station
- Train station

September 2001; C:\REGPLN01\TRANS.APR: future 11x17 map

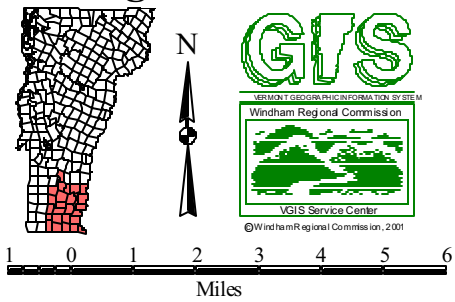
Note: This map should be used for general reference and planning purposes only.

Sources (refer to appendix): 45, 46, 47, 48, 49, also 1, 2, 3





2001 Windham  
Regional Plan



September 2001; C:\REGPLN01\TRANS.APR: enhance 11x17 map

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

Sources (refer to appendix): 45, 46, 47, 48, 49, also 1, 2, 3

Projects to Enhance the  
Existing Transportation System

- ★ Resolve functional conflict in village

⋯ Roadway improvements

⋯ Additional bus service
- Other system improvements:

● specific site

✱ general location
- ▬ Federal, state, or class 1 town highway

▬ Class 2 town highway

▬ Class 3 town highway

▬ Railroad

▬ I 91 interchange, with exit number
- Improvements for bicyclists:

▬ Priority I

▬ Priority II

▬ Priority III
- ✈ Air strip

🚌 Bus station

🚂 Train station
- ⋯ Local bus service

⋯ Intercity bus service

▬ Town boundary

