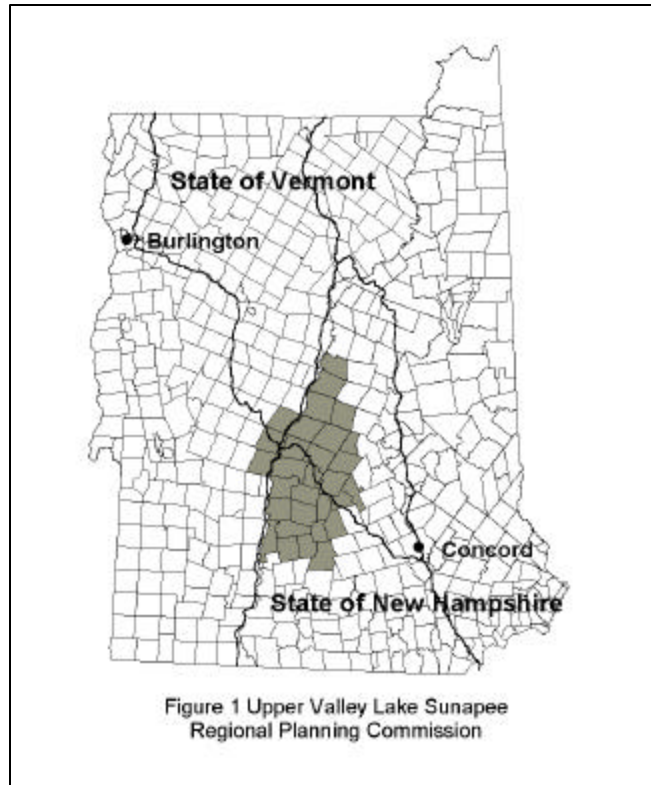


## INTRODUCTION

The Regional Transportation Plan explores the transportation system in the Region and provides a policy framework that is designed to help municipal and state officials make important decisions on transportation and other related issues. The Plan contains goals, policies and recommendations endorsed by the Upper Valley Lake Sunapee Regional Planning Commission (UVLSRPC) Transportation Advisory Committee (TAC).

This Plan is constructed to conform with the general intent of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and subsequent reauthorizations (TEA-21 and the forthcoming TEA3). It emphasizes a comprehensive approach, considering alternative transportation options along with standard highway improvements. The UVLSRPC strongly supports an integrated approach where all transportation modes are included and where a portion of all transportation funding is used to support and develop alternative modes.

In general, the Plan is advisory in nature, purpose and effect. Although the Plan is regulatory in effect through the Act 250 process in Vermont, adoption of the Plan by the Commission in no way changes the structure of local or state governments. The Plan is intended to better enable local governments by providing information and guidance. It recognizes the independent traditions of local government in New Hampshire and Vermont, and seeks to facilitate cooperation among these governments. Adoption of this Plan means that the Commission commits its staff and available program resources to achieving the Region's goals and to fulfilling the Plan's program recommendations.



The Regional Transportation Plan serves as a policy document throughout the planning processes of the New Hampshire Department of Transportation (NH DOT) and Vermont Agency of Transportation (VTrans). The Plan describes the current transportation system in the Region, documents current trends and makes recommendations to guide future growth in ways to maximize the safety and efficiency of the regional transportation system and the mobility of all residents. The

policies set forth in this document serve as guidance for the Commission's transportation planning work programs and as a benchmark for various transportation and land use activities in the Region. The Transportation Advisory Committee, established to provide the NHDOT and VTrans with transportation policy recommendations, uses the Plan as a basis for updating the regional Transportation Improvement Program and in prioritizing projects. The regional Transportation Improvement Program is a comprehensive list of prioritized transportation needs in the Region. The policies contained in the Plan are also used to evaluate projects with potential regional impacts in New Hampshire and in the Act 250 process in Vermont.

The regional Transportation Improvement Program (TIP) contains a list of projects, some of which are funded through various state programs while others are not. The TIP is generally updated by the UVLSRPC every two years, coinciding with the two-year update cycle for the NH 10-Year Transportation Improvement Plan. The TIP serves as a source for new projects in Vermont as the Vermont Capital Program allows. The TIP is the implementation arm of the Regional Transportation Plan and addresses the priorities established in the Plan. Projects listed on the TIP include highway and bridge projects, as well as park-and-ride needs and alternative transportation needs.

The UVLSRPC will work with municipalities and the NHDOT to find potential funding sources to address the unfunded needs listed on the TIP. Numerous funding sources that are available for transportation projects are listed in Appendix VII-A.

This Plan is organized into four sections. The first lists current issues and general goals for the regional transportation system. The second consists of policies to guide the transportation-land use relationship. The third outlines how the design of transportation infrastructure and development in general can have a significant effect on the capacity of the transportation system as well as community character. The final section consists of a discussion of the regional transportation system including pedestrian, bicycle, transit, rail, air, highways and bridges.

## **Regional Transportation Issues**

As jobs, population and traffic continue to increase, the regional transportation system faces a number of related issues and challenges. A summary of the primary transportation issues confronting the Region follow.

### Demographics

As population and income increase within the Region, so do the demands on our transportation system. With an increase in the number of people that live in the Region, there is an increase in the number of vehicles on the roads, and their competition for limited space on the existing infrastructure is starting to create congestion at a few key locations. But there are also other

implications to the growing population. Several expanding segments of our population, that combined make up nearly one-third of our Region's population, exhibit unique transportation demands. The elderly, disabled and low-income are reliant upon alternative transportation modes due to their varied inabilities to operate or maintain an automobile. These growing populations pose a challenge to the Region as housing options are sought which are better integrated with necessary goods and services and minimize travel. Extending transit services into all communities for these populations would provide better mobility but would be very expensive and difficult to implement in rural towns.

### Land Use Development Patterns

The lack of housing options in this Region is a key factor behind the significant increase in residential development in many of the more rural towns. As the jobs remain in the urban core area of the Upper Valley, as well as the Claremont and New London areas, many of the employees are forced to find housing in outlying, rural areas, thereby creating a strain on the transportation system to accommodate the increased traffic.

Decentralized and isolated land use development patterns often have a negative impact upon the effectiveness of the regional transportation system and on the capacity of adjacent arterials and collectors. State and local regulatory systems that address only incremental development do not enable the application of access management principles to maintain the capacity of highways and minimize traffic conflicts. The more dispersed land uses become, the more reliant upon the automobile this Region gets and the less feasible transit becomes. As our population travels more vehicle miles and as traffic congestion increases, air pollution also increases without an improvement to vehicle emissions and/or commuter behavior. Free parking encourages automobile use and discourages alternative modes. If land use development patterns continue as they have occurred over the last ten years, traffic problems will likely continue to worsen.

More centralized, dense, mixed-use land use development patterns encourage alternative modes of transportation, such as walking and public transit. Transportation planning studies and corresponding land use regulations can help to encourage development in ways that maximize the efficiency of the regional transportation system and encourage alternative modes of travel.

### Commuting

The existing land use development pattern, public policy and human behavior are resulting in traffic problems in the following areas of the Upper Valley:

- The I-89 Exit 18/NH Route 120 area and the VT Route 10A/West Wheelock Street corridor are experiencing significant traffic congestion during a.m. and p.m. peak hours.

- The siting of and access to businesses along NH Route 12A in West Lebanon are causing capacity problems along that corridor, making it difficult for freight and commuter traffic to use that highway during peak shopping times.
- US Route 4 from Canaan through Enfield to I-89 Exit 17 experiences significant traffic volumes during a.m. and p.m. peak commuting hours.
- In addition, school transportation plays a role in increasing traffic congestion as the available bus services are not fully utilized and school start times coincide with a.m. peak commuting traffic making congestion worse along the NH 120 corridor and downtown Hanover.

Alternatives to the single-occupant vehicle might help to solve these problems. Alternatives might include car pooling and vanpooling, park-and-ride lots, improved transit services, employer sponsored commuting incentives, commuter rail or an Upper Valley rapid transit system. Additional park-and-ride lots served by public transit and/or satellite parking facilities served by a shuttle can help to reduce peak hour traffic volumes along these problem corridors. Increased transit services can also help to mitigate traffic congestion and provide commuter choice. Studies of new transportation infrastructure should be made, considering such options as commuter rail, a bus rapid transit system and a new I-91 to NH Route 120 connector.

### East-West Highways

The topography of this Region, with north-to-south ridge lines, makes it very difficult to make east-west connections. NH Route 11/103 and US Route 4 are the primary east-west corridors in this Region. Each corridor has unique problems, but both include increasing traffic volumes and lack of access management. Both corridors should be maintained as east-west through-routes while also enabling communities along these corridors to maintain and improve quality-of-life.

Corridor studies could help to further define current issues along each corridor and provide a framework for improving the corridor, which might include access management and projects included in the regional Transportation Improvement Plan.

### Tourism

Tourism plays a significant role in the Region's economy. However, the transportation system has some capacity and/or safety issues near certain tourist destinations. On peak skiing weekends and holidays, traffic backs up for miles on NH Route 103 from the entrance to Mt. Sunapee ski resort in Newbury to Bradford. US Route 4, a major east-west truck route, passes through Quechee Gorge, a popular tourist stop, and causes some pedestrian/motor vehicle conflict and safety problems.

Planning and engineering studies may help to identify solutions to the Mt. Sunapee ski traffic problems. Further traffic circulation and pedestrian safety monitoring studies could help to improve safety and better promote tourism at Quechee Gorge.

### Small Town Issues

Most forms of transportation are expensive and all communities have a difficult time appropriating enough money to cover their needs. Small towns have especially low revenue sources. Additionally, small towns find it extremely burdensome to support the administrative staff needed to adequately implement impact fees on developments. Whether or not they have impact fee ordinances, municipalities should have the authority to require developers to pay their fair share of any off-site improvements determined to be necessitated by specific development proposals otherwise deemed to be in accord with the city or town's regulations.

US and State highways often bisect small rural communities and diminish the economic vitality and sense of place of these small villages while traffic volumes, roadway width and traffic speeds increase. The UVLSRPC is preparing a village highway corridor design guidelines report that will provide communities with tools for improving these rural village highway corridors.

### Funding

Current funding levels are limited and do not provide enough resources to adequately promote transit, special needs transportation, park-and-rides and highway problems like at the intersection of US Route 5 and Sykes Mountain Avenue and Hartland Three-Corners that have been waiting years for funding.

A number of municipally-maintained roadways serve as important regional transportation connections between communities and are essential for emergency services and access to job markets. Additional funding is needed to maintain these roads that serve multiple jurisdictions in safe condition.

### **Goals**

The general transportation goals of the Upper Valley Lake Sunapee Region are listed below. Policies and recommendations are listed after each major issue discussed in the Plan.

- Maintain and improve the efficiency and service of the transportation network throughout the Region for all communities and segments of the population.
- Maintain and enhance the safety of the regional transportation system.

- Integrate transportation planning with land use, economic and environmental planning.
- Facilitate a coherent, bi state regional approach to all highway and transportation planning.
- Continue to increase opportunities for multi modal travel and intermodal connections to effectively reduce reliance on single-occupant vehicles and to be proactive at preventing future problems and congestion.

## LAND USE-TRANSPORTATION TRENDS

The transportation system is a public investment and a significant land use. A large percentage of land is taken up by roads and parking lots. Land use and transportation are inextricably linked, changes to the transportation system impact land values and potential uses. Without planning, congestion on the roadway system will someday limit the transportation of goods and services and/or may decrease property values.

As in most rural regions in the United States, the chief mode of transportation in this Region is the automobile. For a rural area, the Upper Valley Lake Sunapee Region is well served by an extensive interstate highway network that provides quick access to both state capitals and major northeast metropolitan areas. The interstates also provide easy access to the Upper Valley job center for residents of many rural communities.

While the automobile offers unmatched freedom and independence for most, significant emphasis on automobile infrastructure and use has its drawbacks. Auto use is land consumptive. According to figures published in the Winter 1992 *Journal of the American Planning Association*, motor vehicle-related land uses occupy nearly 50 percent of urban areas in the United States. Our current development patterns in this Region appear consistent with these findings. Travel lanes combined with parking areas amount to a large area of impervious land area which can have detrimental environmental impacts as well as being unsightly. Commercial developers are providing parking to satisfy peak demand. This is evident from conditions on Route 12A in West Lebanon as well as Washington Street in Claremont, where vast parking lots dominate the landscape despite being underutilized except for a few peak days.

In recent decades, the population distribution nationwide has become increasingly dispersed, and Americans have come to rely on the automobile as their primary mode of transportation. People are making more trips and driving further distances. This is largely due to the often vast separation of land uses that are essential to people's everyday lives, such as home, work, shopping and schools. As the high cost of housing in our Region's job centers further separates people from their employment, vehicle trips increase, causing higher commuting costs and diminished air quality. Regional automobile commuting or driving alone has increased 16 percent in the past decade. In many communities, zoning ordinances contain provisions that perpetuate this trend: isolated land uses create an environment which is more advantageous to automobiles than to pedestrians or other modes, and minimum parking standards encourage automobile use. Increased automobile ownership, population, and income each have a dramatic effect on automobile use as well.

In the more rural areas of this Region, automobiles are the only viable form of transportation for many households. Many rural communities in this Region have experienced a loss of jobs and services and now must rely on the highway network to access new jobs and services in the core areas. Traffic volumes are increasing on many of the state and rural highways as more and more people employed in the core areas find more affordable housing in outlying areas and commute

greater distances. The highway corridors through many villages, with their growing traffic volumes and speeds, often bisect the community, resulting in a loss of property values, economic vitality, and sense of community.

Alternative modes of transportation, such as walking, bicycling and transit, are often lacking in these rural areas due to low population densities. In general, new residential development in these small towns has been scattered along the rural roads and lacks village-type densities and design. Due to the lack of critical densities in these rural areas, the automobile becomes the only reasonable means of transportation for many. The spatial disconnect between housing and employment has a dramatic effect on transportation choice in the Region.

Conversely, transit use is rapidly increasing ridership in the Upper Valley core area. In fact, according to the most recent Census, transit commuters within the Region have increased 56 percent between 1990 and 2000. Transit ridership in the Upper Valley has increased 62 percent between 2000 and 2002, according to Advance Transit statistics.

Integrated solutions to encourage intermodal connections and other modes of travel include: creating higher residential densities, mixed uses, shared parking, traditional grid street layouts, new park-and-ride facilities, and inclusion of pedestrian and bicycle infrastructure. These measures provide choice to users and minimize the impact on cultural, scenic and environmental resources by helping to reduce vehicle trips. While our national, state and local policies encourage alternatives to personal automobile use, automobile use is still supported more than any other mode.

### **Transportation-Land Use Dynamics**

Roadways serve two basic functions: providing *access* to properties and *mobility* between different locations. Many roads accomplish neither function well. Conflicts occur when roads serve both functions at the same time, often resulting in accidents and/or congestion. Strip development along arterial roadways typify this conflict. Examples include US Route 5 south in Hartford in the vicinity of the VA Hospital, NH Route 12A in West Lebanon and NH Route 11/103 between Claremont and Newport.

While strip development can have an adverse impact on highway capacity through increased conflicts and congestion, transportation investments can also have as dramatic effect upon land uses. For example, the construction of Interstates 91 and 89 made the Upper Valley more accessible and enabled the commercial and medical service growth that has occurred in Lebanon and Hanover in the last thirty years. Expansion of NH Route 11/103 might encourage different commercial enterprises than are currently located along that corridor and would likely lower adjacent residential property values. All large infrastructure projects, such as a new I-91 to NH Route 120 connector from Wilder to DHMC, should be evaluated for potential land use impacts.

As traffic grows, these arterials are typically widened to mitigate congestion and improve capacity. Wide roads and other limited access highways, however, create isolated and often unsafe places. Experts now question the wisdom behind road widening or supply-side mitigation measures because once capacity (or supply) has been increased, additional demand is likely to follow. For the most part, looking to address congestion with an increase in lanes along such developed corridors will only give a community more road surface to maintain, unsafe conditions for vehicles and pedestrians, poor traffic circulation and visual blight. This is not to say that supply-side traffic mitigation is always inappropriate or an insignificant improvement. What is important is that traffic mitigation occurs as part of a comprehensive approach that includes demand-side measures as well as those that critically maintain and enhance capacity. Current initiatives in the region by major employers and public entities to address travel demand, including the Upper Valley Transportation Management Association (UVTMA), are an important step in addressing the Region's traffic problems without increasing the supply of infrastructure.

Carpooling is a traffic mitigation tool with the potential to slow the growth in traffic by reducing the number of single-occupant vehicles. The Upper Valley Rideshare program, operating out of Advance Transit, has been coordinating ridesharing in the Upper Valley for approximately ten years. Upper Valley Rideshare has been successful in helping to establish numerous carpools in this area, thereby reducing traffic congestion and auto emissions. Dartmouth College has recently instituted a cash-out incentive program to encourage employees to carpool and ride the bus into work to reduce single-occupant vehicles and reduce the pressure for expanding parking facilities.

Even when growth patterns are advantageous to alternate transportation modes, road and site designs can become considerable obstacles to integrated, resident-friendly communities. Wide roads without certain design features, including sidewalks, adequate crosswalks, and designated bicycle lanes, can seriously hamper connectivity between residential areas, community centers, and commercial facilities, and can discourage walking, bicycling, and public transit use. Cul-de-sacs, dead-end streets, and complex, looping street designs in residential developments tend to isolate people from one another and from surrounding neighborhoods and make transit use difficult. Design features such as parking lot placement, civic space, and building architecture can all have similar effects on transportation choices. An auto-dependent culture has far reaching impacts, including: health issues from not walking frequently; social impacts from a child's loss of independence; and issues of inequity, as the disabled and elderly are often unable to drive. Design issues are discussed in more detail in the following Facilities Design and Community Planning section. More on transportation equity issues can be found in the Transit section.

## **Goals, Policies & Recommendations**

### Goals

- Improve integration of transportation and land use, environmental and economic development planning at local, regional, state and federal levels.

- Develop an integrated transportation system of various modes of travel which balances transportation options.

#### Policies and Recommendations

- Development design and siting should encourage walking, bicycling, transit use and ridesharing.
- Communities are encouraged to implement policies which promote concentrated, mixed uses and minimize strip development.
- UVLSRPC will assist communities in fully utilizing the capacity of the existing transportation system, through corridor studies, access management and land use planning assistance, to the extent enabled by available funding.
- UVLSRPC and municipalities will continue to seek ways to educate the public on issues pertaining to land use and, transportation and decision-making.
- UVLSRPC will assist the communities of the Region in planning for job growth and housing options so that they will be well-coordinated with the transportation system.

## **FACILITY DESIGN AND COMMUNITY PLANNING**

Many of the issues that are presented by local officials and the general public at state transportation agency project hearings involve traffic speed, congestion, dangerous intersections and community character. Improved facility design can often resolve issues such as these.

This section on facility design and community planning includes a discussion of a variety of variables such as roadway geometry, historic preservation, streetscapes, drainage, multi-modal infrastructure, access management, parking, development patterns and orientation of buildings.

### **Roadway Geometry**

Roadway geometry is perhaps the most basic issue relative to transportation planning in this Region. This topic refers to the width of traveled ways, desired speed of traffic, angle of turns and steepness of grades. Roadway geometry can go a long way toward encouraging appropriate motor vehicle travel speeds, protecting scenic areas and allowing multi-modal travel along our public roadways.

Many federal and state highway projects built in this Region during the 1960s and 1970s eliminated street trees and widened roadways to accommodate increased motor vehicle travel, at the expense of local streetscapes. Those conditions still exist in many of our communities. In addition, many municipal land use regulations encourage linear development along once rural portions of many of these corridors, with little to no provision to protect scenic resources or provide effective access management and attractive streetscaping.

The state transportation agencies and many engineering/design firms utilize “the Green Book” (*A Policy on the Geometric Design of Highways and Streets*, published by the American Association of State Highway and Transportation Officials) as the design basis for all roadway projects. The Green Book is intended to be flexible in order to accommodate the specific needs and constraints of each project site (context sensitive design). Because each “highway project is unique,” the Federal Highway Administration published *Flexibility in Highway Design* to help “provide safe, efficient transportation service that conserves, and even enhances the environmental, scenic, historic and community resources that are so vital to our way of life” (FHWA, Washington, D.C., 1997). Flexibility in design guidelines is vitally important in protecting this Region’s landscape and sense of place. For example, highway reconstruction projects in a historic village should maintain similar roadway dimensions to protect community character, where the existing street is quite narrow and structures have minimal setbacks. The Vermont State design standards were adopted in 1997 in response to the need for more flexibility in design.

Individual transportation projects should not only be designed to be site sensitive, but also to create an integrated system of transportation infrastructure that provides for the movement of goods, people and services in a fully complementary way.

## **Access Management**

Access management is the practice of controlling access points along roadways to minimize conflicting traffic movements and to maximize roadway capacity and system efficiency. It involves limiting overly abundant, uncoordinated or poorly designed access points and driveways. It seeks to mitigate the negative impacts of these access points along corridors that create safety hazards and/or reduce roadway capacity. The need for access management is crucial along corridors that are just beginning to experience development growth and have inadequate land use regulations, such as NH Route 120 in Lebanon. If access management or other developmental controls are not implemented, the end result is typically the kind of strip development found along corridors such as NH Route 12A in West Lebanon and NH Route 11/103 in Claremont.

Certain corridors, such as NH Route 12A in West Lebanon and Washington Street in Claremont, would benefit from a reduced number of access points and clear, safe, coordinated curb cuts provided to a cluster of commercial establishments all served by shared parking facilities. Two-way left-turn lanes, or “scramble lanes,” like the one on NH Route 12A in West Lebanon, encourage strip development and should be discouraged along major travel corridors. Instead, access management might also entail improvements to the travel corridors by eliminating left-turn maneuvers except at a few key locations. This would allow for less confusion and limit conflicting traffic movements along these corridors to improve their capacity and safety.

Most municipalities in this Region have parking requirements that result in vast paved areas built for maximum peak parking demand rather than some lesser standard serving the needs for all but a few days each year. Those parking areas are also often uncoordinated with and isolated from similar adjacent land uses. This is a factor in the strip development evident along many of our travel corridors on the outskirts of the Region’s urban areas. The total number of parking spaces could be greatly reduced while still providing sufficient parking for the businesses in these areas if the development patterns allowed for a more coordinated approach in which numerous buildings shared access points and parking facilities. Maximum parking requirements might be considered that effectively reduce the total number of parking spaces required for businesses, especially where businesses are clustered together where parking facilities could be coordinated.

Corridor management plans are beneficial to promote a coordinated plan for areas developed or developing in a linear fashion. Such plans can then be implemented through improvements, zoning, driveway regulations and site plan review to encourage such things as shared access and parking facilities along the entire corridor. Municipalities might also encourage frontage or reverse frontage roads to provide access to properties in a way that reduces conflict points.

It is plausible that many costly and unsightly highway widening projects may be averted by implementing corridor-wide access management improvements coupled with an integrated land use policy to guide future growth in a manner which does not incrementally reduce highway capacity. Each major proposed development should be reviewed for its impact upon the local and regional transportation system. Developers should provide the necessary infrastructure improvements to not

overburden the existing or near-future transportation system. All projects should be considered as part of an integrated development plan in the municipality and Region.

## **Drainage**

Drainage is an important consideration as it, if done well, can prolong the life of roads, which are a significant infrastructure investment for any community. If done poorly, it can result in soil erosion, water quality degradation and even infrastructure loss during a storm event. Best management practices (BMPs) should be employed on all transportation projects to ensure the longevity of the structure, whether the project involves a highway or a foot path, as well as ensure proper environmental protection. BMPs include such techniques as minimizing impervious surfaces, using vegetation or stones in ditches to control and filter stormwater, implementing rip rap or other techniques to reduce erosion and provide vegetated buffer zones between roadways and surface water that slow water and filter sediment from runoff. Vegetated buffer zones might consist of level spreaders or grass swales. An excellent resource on this subject is the *Vermont Better Back Roads Manual* (George D. Aiken and Northern Vermont Resource Conservation and Development Councils, 1995). In New Hampshire, *Managing Stormwater as a Valuable Resource* (NH Department of Environmental Services, 2001) is a good reference.

Recent changes in storm water runoff requirements, per Phase II of the U.S. Environmental Protection Agency storm water program and 10 V.S.A. § 1264, will modify the existing permitting processes to better protect water resources.

Certain types of drainage grates can pose a significant safety threat to bicyclists. Drainage grates that are bicycle-safe should be used on all roadways where bicycles are permitted.

## **Streetscapes**

Streetscapes are important aspects of roadways as they shape the environment in urban areas and villages. Streetscapes, consisting of all roadside treatments including sidewalks, landscaping and other roadside civic spaces, not only provide travelers with a sense of the community they are passing through, but also serve to indicate to travelers that they are passing through a populated area and should slow down. Streetscapes are also important as they provide pedestrian infrastructure, such as lighting and landscaping improvements, which can benefit the community in many ways.

Traffic calming is a traffic speed control function often incorporated into streetscape designs, indicating to motorists to slow down through populated areas. This is a technique with many applications for different situations that can be tailored for many different locations and at varying scales. Traffic calming sometimes includes features that act as a gateway to indicate where the village begins, such as decorative plantings and signage. Traffic calming approaches include narrowing roadways, curb extensions, raised pedestrian crosswalks, roundabouts, rumble strips and

speed bumps. Traffic calming should be considered on all major travel corridors as they pass through the Region's villages and cities. However, it is essential that the design of traffic calming measures be based on a comprehensive look at the role and condition of area roadways to ensure that the intended purpose is safely met. Unintended consequences of traffic calming techniques can be the same as those associated with traffic congestion - an increase in traffic on less suitable rural through-roads.

People live and work in the villages and cities along our major travel corridors. Often these major travel corridors bisect the communities and become as much of a hindrance to the local community as they are an asset. With some careful streetscape improvements, a community's quality of life can increase dramatically. Such things as safe pedestrian accommodations that link the school and the library and/or the post office and the elderly housing complex can add greatly to the mobility and overall quality of life of residents. Separation of sidewalks and highways with high traffic volumes and/or speeds is important to increase pedestrian safety and facility use. Trees and other landscaping features create an inviting atmosphere and can provide shade that encourages pedestrian use of a sidewalk. Incorporating pedestrian, bicycle and transit needs into the design of the streetscape can add to both the quality of life in the community and the capacity of the roadway. Such streetscape improvements can also create a pleasant environment that attracts people, which in turn can greatly enhance the economic vitality of a village.

## **Community Design**

Community design elements are important and often overlooked. The combination of all structures in a developed area creates a "sense of place." This Region has a strong identity, largely due to the historic villages and downtown areas surrounded by a scenic, undeveloped landscape. While the design of one house can reflect a property owner's style, an entire block or neighborhood of a particular style or pattern can define community character. For example, the traditional neighborhood developments in the Region's village centers are often comprised of compatible architectural styles. Typically, these neighborhoods are built with minimal setbacks from the road, garages placed behind the primary residence, and mature street trees lining the streets. In many newer subdivisions, both the setbacks and distance between residences are large and the front of the home is typically dominated with garage doors.

As the Region's economy continues to grow, future developments will need to complement, not detract from, the Region's character and the overall quality of life. Transportation infrastructure and development should complement each other through compatible transportation and land use planning.

## **Goals, Policies and Recommendations**

### Goals

- Improve the integration of facility design and community development to maintain the high quality of life in this Region.

### Policies and Recommendations

- Regional planners, state agencies and municipalities should work together to:
  - Promote flexible, context sensitive design techniques that provide appropriate transportation capacity and safety needs while also preserving historical and environmental resources and community character.
  - Encourage appropriate design speeds on all roadways that provide for the safety of all transportation modes and do not reduce the quality of life in communities.
  - Promote access management and other design options in place of highway widening projects where feasible.
  - Encourage coordinated access and parking facilities along all major travel corridors.
  - Provide safe, integrated multi-modal facilities in all major transportation improvement projects to encourage adequate and equitable mobility for all residents and visitors to the Region.
- UVLSRPC will promote flexible standards, such as the Vermont Road Design Standards and others that preserve community character and scenic roads, and encourage the development of multi-use growth centers or villages.
- UVLSRPC will assist communities in reviewing parking regulations including consideration of maximum parking requirements, to reduce impervious surfaces and minimize developers' construction and maintenance costs.
- Planning boards/commissions should ensure that master plans and land use regulations encourage nodal development patterns that replicate and/or complement traditional New England settlement patterns and discourage linear development along travel corridors. Planning boards/commissions should also ensure that master plans and land use regulations encourage pedestrian-oriented development in urban and other developed

areas so that buildings are oriented to the street, parking is situated to the side or rear of buildings and pedestrian, bicycle and transit use is encouraged.

- UVLSRPC will seek funding to conduct detailed corridor studies of the major travel corridors in the Region including review of existing land use regulations.
- UVLSRPC will continue to assist municipalities in reviewing and updating land use regulations, such as subdivision, driveway regulations, zoning and site plan review, to encourage development patterns that support a more efficient and diverse transportation system.
- UVLSRPC will encourage best management practices for highway drainage that preserve transportation infrastructure and protect against soil erosion, preserve water quality and benefit groundwater recharge.
- UVLSRPC will work with communities with downtowns to undertake inventories of pedestrian facilities and sidewalks that evaluate sufficiencies based on American Disabilities Act (ADA) requirements and that recommend improvements, including linkages and network expansions, as permitted by available funding.
- Municipalities should consider parking standards and/or constructing municipal parking facilities that encourage coordinated village development patterns.
- Regional planners, state agencies and municipalities should consider traffic calming on all major travel corridors. This consideration should be based on a comprehensive look at the role and condition of area roadways to make sure the intended purpose is safely met and to prevent unintended consequences of traffic calming techniques.
- Municipalities should have the authority to require developers to pay their fair share of any off-site improvements determined to be necessitated by specific development proposals otherwise deemed to be in accord with the city or town's regulations, regardless of the presence of an impact fee ordinance.

## **REGIONAL TRANSPORTATION SYSTEM**

### **Pedestrian**

Walking is the most basic and cost- and energy-efficient form of transportation. We are fortunate in this Region that many of the traditional New England villages are still relatively intact and provide fairly walkable environments. Such villages typically consist of a town hall, general store, post office, church, school and residential structures set close to the street and close to each other, all centered around a town common. Such a community layout lends itself well to pedestrians, as the village contains the primary services residents need in a dense, multi-use development pattern. Walking is naturally the best way to get around within the village since the buildings are so close together and are generally oriented towards pedestrians and not cars.

The urban areas in this Region generally have networks of sidewalks in the downtown areas or village centers. In many parts of the Region, however, walking is discouraged by roadways that have no sidewalks and inadequate shoulders. Walking is also discouraged by unsafe crosswalks, poorly maintained walkways and design features that do not allow disabled access.

Much of the development that has taken place in the United States since World War II has consisted of a dispersed pattern of isolated land uses oriented toward one form of transportation, the automobile. The result is places where pedestrian access is discouraged and even unsafe. This is the case in many shopping districts in the Region that discourage pedestrian circulation and encourage motor vehicle use to travel from one store to another. This leads to an inefficient use of energy and a situation that worsens traffic congestion along such corridors as NH Route 12A in West Lebanon and Washington Street in Claremont.

Sidewalks along heavily used corridors and/or high speed roadways should provide adequate separation, with a landscaped buffer, to encourage use. Many sidewalks are underutilized because they place a pedestrian a few feet from cars traveling at 40 mph or more. This creates an unpleasant walking experience and a situation where many pedestrians do not feel safe and therefore, do not use the sidewalk.

The pattern of development and orientation of buildings also can have a dramatic effect upon the use of pedestrian facilities. Buildings that are set close to each other, as in older pre-World War II neighborhoods, encourage pedestrian access. Alternatively, when buildings have large setbacks from the access road, isolated from each other by large parking lots, pedestrians are discouraged from walking. Optimal pedestrian access can be achieved by building to a pedestrian scale rather than building for the automobile. This might be achieved by emulating the development style of traditional New England villages where structures are placed near the street and close to adjacent buildings with coordinated, shared parking in the rear. The downtown areas of Claremont, Newport, Lebanon and Hanover all exhibit development styles that encourage pedestrian access.

Access for many pedestrians is limited by the weakest point in the facility network. For example, just one missing or inappropriately designed wheelchair ramp can render a system impassable by some users. Therefore, careful consideration is needed when designing, constructing and maintaining sidewalks and paths. It is important to provide wheelchair ramps with appropriate geometry for safe, comfortable use and for continuity of the system. Likewise, all driveways should be constructed carefully to provide wheelchair users with an easy surface on which to travel.

To be safe and effective, crosswalks should provide drivers with clear visibility of a pedestrian waiting to cross the road. In order to provide that visibility, crosswalks should be placed in areas with good sight distances and with adequate separation from parked vehicles, large trees, snow storage and other obstacles. Roadway design should complement crosswalks by minimizing traffic weaving and providing curb extensions, or other details to make the pedestrian crossing obvious to drivers and therefore safer.

Signalized intersections in urban or village areas are often ideal locations for pedestrian crossings. Signals should encourage pedestrian as well as bicycle access while also serving the primary function of moving motor vehicles efficiently.

The *Vermont Pedestrian and Bicycle Facility Planning and Design Manual* published for the Vermont Agency of Transportation is an excellent resource.

Since snow in this Region might cover the ground for over one-third of a calendar year, winter maintenance, such as snow removal and deicing, are important to provide safe year-round pedestrian access.

## **Goals, Policies and Recommendations**

### Goals

- Provide safe, attractive and continuous pedestrian circulation in all downtown, village and commercial areas.
- Promote walkable community design.
- Integrate pedestrian facilities with intermodal transfer facilities to promote alternative modes of travel, including transit and passenger rail.

## Policies and Recommendations

- Pedestrians should have safe access along all public roads, not including interstate highways, in village and urban areas as well as critical linkages between facilities such as schools, recreation areas and other important civic and service areas.
- UVLSRPC will assist communities in planning for safe walking routes to schools.
- Municipalities and state agencies should acquire enough right-of-way during roadway reconstruction and construction projects to accommodate future bicycle and pedestrian systems.
- UVLSRPC will encourage adequate bicycle and pedestrian facilities throughout the Region, especially along corridors in growth areas such as NH Routes 12A and 120 in the Lebanon and Hanover area.
- Crosswalks should be provided at key crossing locations in order to provide connectivity throughout communities.
- All sidewalks and crosswalks should provide safe mobility for all individuals. These facilities should include, but not be limited to, crosswalks at key locations and properly aligned and sloped handicapped ramps to provide continuity of facility networks.
- Institutional buildings, commercial districts and employment centers should provide for adequate and safe pedestrian access, integrated with neighborhood, municipal and regional networks.
- Developments, such as service or retail centers, should be built for pedestrian access, minimize conflicts between automobiles and patrons, and should provide quality, usable pedestrian networks as appropriate.
- Pedestrian facilities should provide adequate separation from high traffic volumes and/or high-speed roadways. See the *Vermont Pedestrian and Bicycle Facility Planning and Design Manual* for guidelines and thresholds.
- Pedestrian facilities should include appropriate landscaping to provide shading, as well as benches and other amenities to encourage use.
- Adequate separations should be maintained between all crosswalks and on-street parking spaces. Under no circumstances should a parked vehicle be required to back up into a crosswalk to enter the travelway. Adequate buffers in front of and behind all crosswalks, consistent with American Association of State Highway and Transportation Officials (AASHTO), the Manual on Uniform Traffic Control Devices (MUTCD) and state policies, should be maintained for high visibility of pedestrians.

- Bump-outs or curb-extensions are encouraged to be provided at crosswalk locations in downtown or village areas to provide better visibility of crossing pedestrians.
- Crossing signals should be provided at all signalized intersections with significant pedestrian use and should seek to accommodate elderly and disabled populations.
- Municipalities should provide proper winter maintenance of pedestrian facilities.
- UVLSRPC will research sample ordinances and other tools municipalities can use to encourage pedestrian-friendly development and walkable communities.

## **REGIONAL TRANSPORTATION SYSTEM**

### **Bicycle**

Bicycling is an important and often neglected form of transportation. It is relatively inexpensive, efficient for short trips and produces much less pollution than motorized modes. Bicycling is one means to mitigate traffic congestion while also increasing the activity levels and health of residents of the Upper Valley. Bicycle use, in conjunction with transit buses equipped with bike racks, might provide an important commuter choice serving a larger geographic area not typically served by cycling alone. Bicycling is also important as often the sole form of independent transportation for children. Cycling and bicycle touring are important facets of the Region's tourist economy as well as recreational outlets for residents.

A Regional Bikeway System Plan was completed by the UVLSRPC in June 1993. The Plan details the importance and relevance of an extensive and safe bikeway system. This Plan also provides policy guidelines and recommendations for maintenance to existing facilities and improvements to our regional transportation network to provide better bicycle transportation options for residents and visitors alike. Many of the recommendations listed under this section were gleaned from the 1993 Plan. Map 1 shows the Regional bicycle routes as determined through the planning process in 1993. The UVLSRPC should consider updating the Regional Bikeway System Plan and the bicycle routes.

The Upper Valley Lake Sunapee Regional Bikeway System Plan recommends a network that incorporates bicycle lanes and paths along highways and abandoned railroad rights-of-way, based on available right-of-way widths and traffic conditions. The Plan provides a fairly well integrated bike system that should be augmented in urban and village areas with additional local routes. State and local transportation projects should provide the necessary infrastructure improvements on all highway and trail projects to support Regional and local bikeway system plans, where feasible.

A number of recommendations in the Regional Bikeway System Plan have been implemented. For instance, numerous roadway projects throughout the Region have included shoulder widening to encourage greater bicycle accessibility. A number of Transportation Enhancement-funded projects have added bicycle infrastructure in communities in this Region and other improvements are planned for the future. In addition, inactive rail corridors have been turned into multi-use paths that serve as great recreational and transportation assets to residents of this Region. However, much work is needed to provide continuity of existing bicycle routes, linking existing facilities to the communities and providing bicycling infrastructure for children and less experienced cyclists who will not ride on highways. Particular consideration should be given to connecting important civic places, such as schools, recreation centers and libraries, with residential areas. Cycling should also be considered as a viable form of transportation for employee commutes and the appropriate on-site facilities be provided by employers to encourage such behavior. In addition, it is important to provide good bicycling access to tourist destination.

Please go to the Regional Plan webpage to view the Regional Bike Routes Map.

Given the importance of bicycle facilities in this Region, it should be a priority to investigate appropriate design features to encourage viable bikeway projects. It is the express purpose of this section to provide recommendations that discourage poorly designed facilities and maximize public investment in quality infrastructure that will encourage a high level of use.

In general, bicycle facilities should conform with the American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* (AASHTO, Washington, D.C. 1999). However, design guidelines should be flexible in order to fit within the constraints found in our villages and historic districts. For example, there are many places where wide expanses of pavement may not be warranted or cannot occur due to historic buildings set close to the centerline of the highway. Vermont allows for flexibility in bicycle facility design in the *Vermont Pedestrian and Bicycle Facility Planning and Design Manual* produced for the Vermont Agency of Transportation.

Bicycle facility planning should consider design features to encourage safe use. For instance, many highway corridors with more than 8000 Average Daily Traffic (ADT) would benefit from paths segregated from the roadway with a sufficient landscaped buffer to separate the bike path from the roadway. The *Vermont Pedestrian and Bicycle Facility Planning and Design Manual* contains suggestions for appropriate facility type based on average daily traffic and motor vehicle travel speed.

Bicycle parking and other support facilities such as bike racks or lockers are essential for promoting higher levels of bicycle travel. Such facilities should be provided by all public institutions and in commercial and mixed use districts. Support facilities should be provided in adequate number so as to accommodate desired use with a fully-operational, coordinated regional bikeway system. Support facilities should also be fully integrated with multi-modal centers and downtowns such as in White River Junction, Lebanon, Hanover, Claremont and Newport.

## **Goals, Policies and Recommendations**

### Goals

- Provide a safe, integrated network of bikeways throughout the Region for transportation and recreation.

### Policies and Recommendations

- UVLSRPC, state agencies and municipalities should support the development of adequate cycling facilities to encourage increased use of this alternative as part of all state and local transportation projects, when appropriate.

- All bicycle facilities should be designed and constructed based on designs appropriate for the abilities of anticipated user groups, average daily traffic levels and motor vehicle travel speed, where feasible. Bicycle facilities should also be sensitive to historic and scenic features.
- Municipalities should encourage adequate bicycle facilities as part of development proposals. It is important to provide support facilities for bicycles as well as to provide for external connectivity to existing and planned bike facilities.
- UVLSRPC will assist municipalities in developing plans and land use regulations that accommodate bicycle use and minimize the total reliance on automotive travel.
- UVLSRPC will assist municipalities in planning for the development of schools, recreation centers, libraries and other public institutions in ways that encourage safe bicycle access and to provide adequate facilities for cyclists, such as bike lockers and showers.
- UVLSRPC, state agencies and municipalities should work together to coordinate all bicycle facilities to provide continuous access connecting mixed traffic, on-street lanes, paths and trails.
- UVLSRPC, state agencies and municipalities should work together to connect all bicycle facilities to park-and-ride lot locations, transit routes and train depots.
- UVLSRPC supports self-actuated traffic signals for cyclists at intersections along bicycle routes and in urban areas. These would allow bicycles traveling on the roadway to trigger the traffic signal in order to make through or left-turn movements at signalized intersections.
- UVLSRPC will promote sufficient parking facilities and trail head/access areas to support recreational and commuter use of bicycle routes and paths.
- UVLSRPC, state agencies, municipalities and other partners should work together to advance the development of maps and/or brochures of bicycle routes and facilities for commuters, tourists and children.
- UVLSRPC and state agencies should encourage multiple uses of rail corridors where appropriate.
- UVLSRPC will promote flexibility of highway design to better encourage bicycle activity.

- UVLSRPC will promote the consideration of narrower travel lanes where appropriate to accommodate bicycle lanes.
- Provisions, such as the necessary right-of-way, for bike lanes or paths should be included whenever roads are built or re-built.

## REGIONAL TRANSPORTATION SYSTEM

### Transit and Mass Transit

Public transit includes buses and shuttles used to transport commuters on fixed routes or to transport others on an as-needed, on-call basis (demand response or paratransit). For the purposes of this section, transit also includes discussion of certain alternatives to single-occupant vehicles, such as carpooling and vanpooling. Transit has the potential to transport a significantly greater portion of the traveling public and remove a large number of single-occupant vehicles from the highways in this Region. Whether for commuting, shopping or service-related trips, transit could be expanded to achieve closer to its full potential and contribute toward mitigating and preventing highway congestion in this Region.

However, for a rural region like this one, transit is a challenge. Many of the rural communities in this Region lack the critical densities needed to support traditional public transit. Providing quality transit in a rural area is costly and transit operators are not allocated adequate and consistent funding to meet the growing demand for services.

The Lebanon/Hanover/White River Junction urban area as well as Claremont have denser development patterns that better support transit. Such nodal (or centralized, non-linear development patterns), mixed-use developments accommodate greater densities and are generally more pedestrian friendly, which both helps to make transit services more efficient and economical. Denser development patterns and public infrastructure improvements, including an integrated system of sidewalks, park-and-ride lots, bicycle routes and civic spaces, could promote even higher levels of transit ridership.

### Transit Providers

A number of transit providers provide service in the Region. Transit providers are listed below with a brief description of their service areas within the Region.

Map 2 depicts fixed public transit routes of the primary providers in this Region, including Advance Transit and Community Transportation Services.

Advance Transit. Advance Transit serves the Upper Valley with commuter-based services. All vehicles are wheelchair lift-equipped and have bike racks. The existing six fixed routes serve the municipalities of Canaan, Enfield, Hanover and Lebanon in New Hampshire and Norwich, Hartford and Hartland in Vermont. The primary focus of Advance Transit is to provide commuter transportation that connects residents along major travel corridors to the large employment and shopping centers in Hartford, Lebanon and Hanover. Through generous contributions from municipalities and

employers as well as through funding from both states, starting in 2002 Advance Transit began offering free passenger service on all routes. Total ridership in 2000 was 308,858, an increase of 26 percent since 1999. Total ridership reached over 500,000 in 2002. This equates to a dramatic 62 percent increase in total ridership in just two years. With the new free service, Advance Transit is experiencing unprecedented demand during peak commuting times of day.

Upper Valley Rideshare. Upper Valley Rideshare (UVRS) provides carpool and vanpool matching services and guaranteed ride home services. UVRS promotes carpooling as a simple, cost-saving way to commute daily and reduce the number of single-occupant vehicles on the roads. UVRS services cover a wide area ranging from Springfield, Vermont to the south, Rutland to the west, St. Johnsbury and Burlington to the north, and the Lake Sunapee area to the east. Among the benefits for business owners, implementing a carpool program reduces the capital cost of building additional parking facilities as the company grows, reduces congestion in existing parking areas, enhances the employee benefits package, reduces absenteeism, provides a low-cost recruitment tool, and improves community relations by reducing neighborhood traffic and parking problems. Guaranteed ride home services are important as they provide the necessary emergency transportation needs of individuals who give up the freedom of taking their own vehicle to work.

Community Transportation Services. Community Transportation Services (CTS) serves elderly, disabled and the general public in the Claremont and Newport area with demand response services and two fixed routes. All vehicles are wheelchair lift-equipped. Total annual ridership is approximately 50,000. Demand response services are available to residents in Charlestown, Claremont, Croydon, Newport, Sunapee and Unity. The fixed routes serve Claremont and Newport and now also extend into Croydon, Sunapee and Unity. The services provided by CTS are vitally important to elderly and disabled populations as well as those who do not have their own automobiles.

Stagecoach. Stagecoach also provides limited transit services in the Upper Valley. Stagecoach serves the elderly, disabled and general public in a 26-town area in Orange County and northern Windsor County, Vermont. All vehicles are wheelchair lift-equipped. Commuter service is provided along the US Route 5 corridor from Wells River to White River Junction as well as along the VT Routes 12 and 14 corridors from Randolph, Vermont to White River Junction and to Dartmouth College and Dartmouth Hitchcock Medical Center. In addition, Stagecoach also provides demand response service to bring passengers into the Lebanon area for medical services.

Town and Village Bus. Town and Village Bus, out of Chester, Vermont, provides commuter shuttles for welfare recipients, low-income individuals and the general public from the Springfield and Windsor areas to Centerra, Dartmouth Hitchcock Medical Center and Dartmouth College. This express route includes bus stops at the Exit 8

Ascutney and Exit 9 Hartland park-and-ride lots off I-91. All vehicles are wheelchair lift-equipped.

Bugbee Senior Center. Bugbee Senior Center in White River Junction provides demand response transit service for elderly to the Senior Center and to medical appointments with advance notice. The service area includes White River Junction, Hartford, Wilder and a portion of Norwich. All vehicles are wheelchair lift-equipped.

Grafton County Senior Center. Grafton County Senior Center provides transit services to the elderly populations in Grafton County, New Hampshire for a variety of personal and medical needs. All vehicles are wheelchair lift-equipped.

Dartmouth Coach. Dartmouth Coach provides long-distance, intercity travel between Hanover, Lebanon, New London and Boston, Massachusetts. Buses serve the general public traveling from the Upper Valley Lake Sunapee Region, including Dartmouth College students, to Logan Airport and South Station in Boston. All vehicles are fully accessible with advance notice.

Vermont Transit. Vermont Transit provides long-distance, intercity transit services. There is one regional bus terminal located in White River Junction, Vermont. Available services include a White River Junction to Newport, Vermont route as well as service to Montreal, Rutland, Burlington, Brattleboro, Keene, Concord, New Hampshire; Springfield, Massachusetts; Hartford, Connecticut; Manchester Airport and Boston. Service in this Region includes the terminal in White River Junction as well as stops in Hanover and New London. Services are fully coordinated with Greyhound. Vehicles are not accessible by those in wheelchairs or others with special needs.

Transit ridership in the Upper Valley, measured as the riders on all bus trips, is experiencing significant growth year after year, largely due to the commuter-based services of Advance Transit. The Town and Village Bus also provides important commuter services to DHMC and downtown Hanover. Other providers - such as Community Transportation Services, Stagecoach, Town and Village, Bugbee Senior Center and Grafton County Senior Center - provide essential demand response services to the elderly and disabled. However, demand response services are costly to provide and, in most cases, the need for services far exceeds availability.

### Transit Infrastructure

There are no dedicated bus lanes or preemptive signalization for buses at this time in the Region. Preemptive transit signalization would allow bus drivers to remotely trip intersection traffic signals and allow time savings and greater route efficiency. This type of infrastructure improvement would help transit services in key problem areas, such as downtown Hanover and the I-89 Exit 18 area.

A few bus shelters now exist to serve Advance Transit in the Upper Valley area and no shelters serve Community Transportation Services in Sullivan County. A network of shelters at the busiest bus stops would keep patrons dry in wet weather and encourage bus usage. Shelters also maintain a high-level of visibility for local transit services. Maintenance of shelters is a key issue to address.

The park-and-ride lot system is an integral part of Upper Valley Rideshare's success and a critical part of the public transit systems success in the future. Park-and-ride lots facilitate intermodal connections and benefit transit providers. The existing lots provide a safe, visible place to park a vehicle or meet a carpool. They also offer easy access to the most heavily traveled commuting corridors.

Three formal park-and-ride lot facilities, listed below, are located within the Region. Other facilities outside of the Region also serve commuter traffic to the Lebanon-Hanover employment center. Additional park-and-ride lots, if located appropriately, would encourage greater transit ridership. Ideally, park-and-ride lots should be located along transit routes and be convenient to residential areas so that they could serve commuters to the two Labor Market Areas (LMAs) in this Region. The Upper Valley Transportation Management Association (UVTMA) is actively seeking out new park-and-ride lot locations along the US Route 4, I-89 and I-91 corridors that would serve commuters to the Upper Valley employment center and would be serviced by transit bus. Large new lots in more developed areas, such as Enfield and Grantham, would enable car- and van-pooling. Small new lots in rural village areas along primary travel corridors, such as Grafton, would also help to encourage carpooling.

**Table 1 Formal Park-and-Ride Facilities in and around Region**

TOWN	LOCATION
Ascutney, Vermont	VT 131, I-91 Exit 8
Hartland, Vermont	US 5, I-91 Exit 9
Lyme, New Hampshire	NH 10, Village
New London, New Hampshire	NH 103A, I-89 Exit 12
Royalton, Vermont	VT 14, at junction of VT 110
Sharon, Vermont	VT 132, I-89 Exit 2
Springfield, Vermont	US 5, I-91 Exit 7
Thetford, Vermont	VT 113, I-91 Exit 14

The Region's largest employers are experiencing significant growth and the resulting parking needs are proving difficult and costly to address. A number of employers, mostly notably Dartmouth College and Dartmouth-Hitchcock Medical Center, are relying much more heavily on transit services to reduce employee usage of single-occupant vehicles. Dartmouth College is exploring the possibility of developing satellite parking lots serviced by bus for employees rather than building additional parking spaces on valuable land.

## Transit-Dependent Populations

Many residents of this Region have access to jobs and services through our excellent highway network. There are many throughout the Region, however, that lack reliable transportation because they cannot drive for various financial or personal health reasons and are reliant upon public transit to meet their mobility needs. These individuals are limited in their ability to utilize the existing transportation system, which often isolates them from the workforce, goods and services, and civic activities. This problem is not well understood, therefore, the UVLSRPC conducted a transit needs assessment to estimate the relative need for transit in this Region.

Only limited data exist relative to transit needs in this Region. The Vermont Agency of Transportation is currently conducting a short-range public transportation plan for all public transit providers in the State. Similar plans are not available in New Hampshire. The purpose for this assessment is to estimate the relative need for transit in this Region. The next step would be to assess how those needs are being met, a potential future project for the Commission. To estimate relative regional transit needs, the UVLSRPC followed a similar methodology as was used in the Vermont short-range public transportation plans. This analysis considered population groups that exhibit potentially transit dependent traits as well as the general population distribution in the Region. Potential transit dependency was determined by using available US Census 2000 data including young and elderly population groups, persons with disabilities, individuals below the poverty level, auto-less households. These population characteristics represent those individuals who may require transit to meet their mobility needs because they cannot drive for financial, age or personal health reasons.

These characteristics were evaluated to determine relative transit need based on the percentage of each population category to the total population as well as the density of each category in each municipality. Municipalities were then evaluated by rank based on these percentages and density rates for each category. A cumulative rank was determined for each municipality to indicate the relative transit need by municipality. Map 3 and Table 2 show the results of this analysis.


This analysis shows that the relative need for public transportation is significant, as 34 percent of individuals in this Region exhibit transit dependent traits (see Figure 2, which shows the percentage of the regional population that exhibits transit dependent traits). These transit dependent populations include one or more of the following demographic characteristics:

1. **Age**-The aging populations (65+ years) in New London, Grantham, and Sunapee have grown in excess of 40 percent between 1990 and 2000 according to the US Census. In fact, the US Census Bureau projects that between 1996 and 2025, there will be an 83 percent increase in the 65 and older population nationwide. Younger age groups (10-17 years) are also in need of alternative means of transportation, as they are independent but cannot drive.

Please go to the Regional Plan webpage to view the Public Transit Fixed Routes Map.

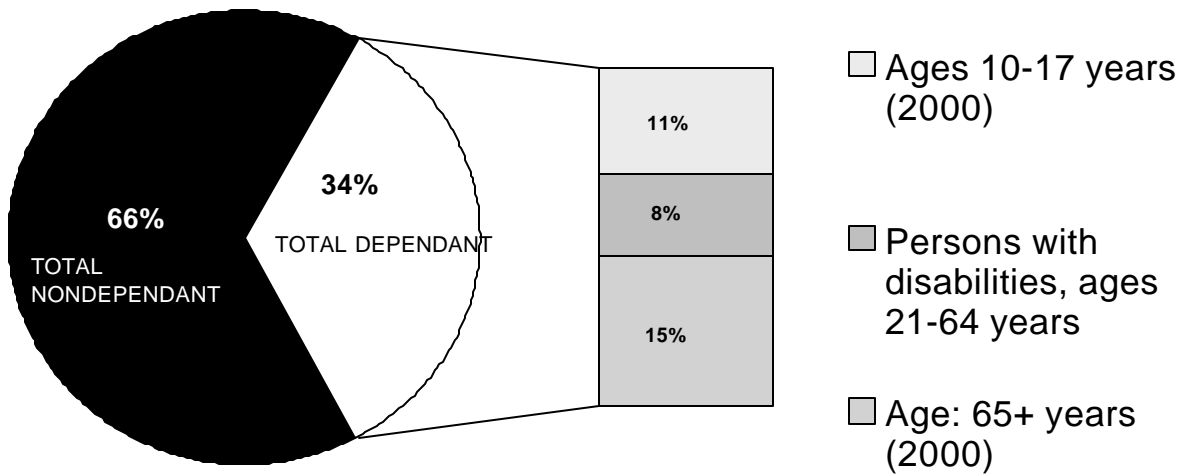
Please go to the Regional Plan webpage to view the Transit Dependent Populations Map.

**Table 2: Location of Transit Dependent Populations by Municipality**  
 Relative transit need of each community compared to the rest of the Region was calculated based on US Census statistics for young and elderly population groups, persons with disabilities, individuals below the federal poverty level, autoless households, and the size of the community. The combined score for potentially transit dependent persons was determined by adding the rank assigned to each municipality for each characteristic. *The lower the combined score, the higher the relative transit need is, based on the parameters of this analysis.*

Relative transit need	Name of Jurisdiction	Combined Score, independent of available transit services
HIGH  LOW	Claremont	37
	Newport	48
	Hartford, VT	61
	Lebanon	67
	Charlestown	79
	Hanover	102
	Sunapee	112
	Goshen	114
	New London	118
	Unity	122
	Enfield	124
	Canaan	126
	Norwich, VT	128
	Acworth	132
	Cornish	135
	Lempster	140
	Hartland, VT	142
	Grantham	162
	Piermont	164
	Grafton	165
	Dorchester	172
	Croydon	174
	Orford	174
	Wilmot	176
	Lyme	181
	Washington	187
Plainfield	193	
Springfield	194	
Newbury	201	
Orange	206	

Source: US Census Bureau, 2000

**Figure 2: Percentage of UVLSRPC Population with Selected Transit Dependant Traits, 2000**



Source: US Census Bureau, 2000

Note: Poverty and auto-less household data not comparable

2. **Poverty**-Acworth ranks number one in the Region for percentage of individuals below the federal poverty level (16 percent), for which automobile affordability is disproportionately burdensome. Dorchester, Grafton, and Goshen are in the top third within the region (11, 8 and percent respectively).
3. **Disabled**-Disabled individuals, as reported in the 2000 Census, are in relatively high proportions (greater than 10 percent) in the rural communities of Dorchester, Orange, Croydon, Piermont and Unity.

Of all these communities mentioned above, only Sunapee, Croydon and Unity have some limited fixed route transit service. Additional transit services in these rural areas would give elderly, low income, and disabled adults transportation options.

The needs are expected to increase in years to come as the population ages. Transit services are concentrated where population densities are the greatest, but we have no region-wide data to indicate how well the needs are being met in those areas. Rural communities, where many transit dependent individuals reside, have little, if any, transit services available.

#### Gaps in Transit Services

Regionally-based and managed transit operators provide excellent service, but only in relatively localized areas. For example, there is limited connectivity for potential employees to travel between Claremont and Lebanon. Town and Village Bus does provide limited transit service from the Bellows Falls/Springfield area as well as from the Ascutney and Hartland park-and-ride lots to the Hanover-Lebanon area and has experienced significant growth on that route. Many businesses in the Hartford-Lebanon-Hanover Labor Market Area (LMA) might benefit by providing additional transit services to the Claremont area and thereby make reliable transportation available to potential employees. Better coordination between existing transit providers might provide for better connectivity; however, funding is needed to make that happen.

Community Transportation Services (CTS) provides demand response services in six Sullivan County towns. The remaining six towns, including Plainfield, Grantham, Cornish, Acworth, Lempster, Washington and Goshen do not have demand response service available for the general public. No transit providers maintain demand response services in Grafton County for the general public, although Grafton County Senior Center provides service for elderly residents in the County. Stagecoach provides some limited demand response services in Hartford and Norwich, and the Bugbee Senior Center provides service for the elderly in portions of Hartford and Norwich.

This growing unmet need makes it extremely difficult for care providers to support the growing needs of the elderly for medical, recreation and shopping trips. If an individual is not located nearby fixed route transit service, demand-response services and taxis are the only options.

Both are expensive due to the often long trips. Demand-response service works fairly well for arranged appointments but is particularly limited for unscheduled evening, weekend or holiday times. There is a need to develop systems to provide on-demand transportation services for residents in rural areas for shopping and other needs. Furthermore, “excursion trips” to get out and socialize, visit the grandchildren, and/or have lunch with friends are often limited to once or twice per year. These types of trips are often discounted as unnecessary when funding is low despite their importance in healthy aging.

Demand-response is also often not coordinated with many human service and transit providers serving the same area. Greater coordination among existing demand-response transit providers would help enhance the efficiency and effectiveness of the agencies serving the elderly and disabled with transportation services. Programs in both Vermont and New Hampshire are limited by available funds, allowing only the most necessary trips to their clients.

Operational hours of existing fixed route transit service is another constraint that makes it difficult for disabled or low income individuals to find and keep employment or to get the necessary education to obtain better employment. Public transit is available within the Region's job centers during the traditional workweek hours, but is severely limited or nonexistent during the evenings and on weekends. Within the urban areas, where most of the Region's disabled live, this lack of service limits the ability of transit dependent people from working a flexible or second- or third-shift job.

The *Upper Valley Housing Needs Analysis* (Applied Economic Research, 2002) commissioned by the UVLSRPC, estimates employment growth to continue at the same rate as in the past decade, providing that housing and labor force availability are sufficient to support that rate of growth. Since the cost of land and housing is less expensive in the rural areas and more costly in urban areas, many low- to moderate-income families choose to live in rural areas where transit services are limited or do not exist. Affordable or workforce housing located in the urban core areas would not only allow lower-income individuals better access to public transportation, but would also be closer to jobs and services.

For many residents of the Upper Valley, traveling by automobile is the only logical and convenient way to get around. Enticing motorists out of their single-occupant vehicles and into buses will likely require expanded service hours and an increase in convenience of services. This might range from improvements in travel times, “guaranteed ride-home” programs, and linked service with daycare. A study would help to determine the feasibility of possible long-term goals for public transportation in this Region, such as commuter rail or a rapid transit system that makes travel by bus a priority through dedicated infrastructure, efficient pick-up design and locations, and priority bus traffic signalization.

## **Goals, Policies and Recommendations**

### Goals

- Expand the core services provided to improve the quality of public transit services.
- Foster land use development patterns that better enable the use of alternatives to single-occupant vehicles.
- Strive for transportation infrastructure that better enable the use of alternatives to single-occupant vehicles.
- Provide greater linkages between existing transit providers.
- Ensure demand response service is available to all who need it.
- Ensure a basic level of mobility for all citizens to access employment and necessary goods and services.
- Improve coordination between human service providers, social service agencies and transit operators to provide transportation to transit-dependent populations.
- Enable the region's senior citizens and disenfranchised to participate fully in their communities without the need for an automobile.

### Policies and Recommendations

- UVLSRPC and municipalities should encourage legislators and state officials to provide adequate and consistent funding sources for transit operations and capital costs.
- UVLSRPC should assist transit providers to work together to provide integrated, seamless, region-wide service between various service areas, to the best extent possible. Optimally, this network would also provide frequent service and connectivity between employment centers, commercial service areas and large residential areas.
- UVLSRPC and major traffic generators should work through the Upper Valley Transportation Management Association to further transit support and use and to reduce the number of single-occupant vehicles in the Upper Valley.
- UVLSRPC, state agencies, municipalities and the UVTMA should work toward the development of additional park-and-ride lots and satellite parking facilities served by transit providers throughout the Region and beyond.

- UVLSRPC will research sample ordinances and other tools municipalities can use to encourage transit-friendly development.
- UVLSRPC will continue to assess regional transit needs and solutions.
- UVLSRPC, state agencies and social service providers should seek ways to provide an adequate and reliable transportation network for individuals that rely solely on transit for mobility.
- UVLSRPC will assist human service and transportation providers with coordination and planning in improving demand-response and fixed route services as well as obtaining maximum utility from available funds.
- Through education, outreach and regulations, the UVLSRPC will seek to reduce dependence on automobiles by encouraging alternative transportation.
- UVLSRPC will evaluate state-funded transportation projects and development plans for handicapped accessibility and infrastructure that improves transportation modal choice.
- UVLSRPC will assist with prioritizing and evaluating locations for the development of park-and-ride lots to facilitate the use of transit, ridesharing and carpooling.
- UVLSRPC will work with Workforce Investment Boards to better understand the transportation challenges associated with the employment and education of the disabled.
- UVLSRPC will promote the development of childcare facilities, housing, shopping, services, and employment in close proximity to allow alternative transportation modes for day-to-day activities.

## REGIONAL TRANSPORTATION SYSTEM

### Rail

The Region has a rich history in rail use. Recent economic times have greatly impacted the New England rail industry, leaving the Region with only a few operational railroads. Current trends appear to indicate a revitalization of rail services as both the States of Vermont and New Hampshire as well as nonprofit groups pursue initiatives to strengthen our existing system and create new services. This includes the revitalization of the Westboro Rail Yard in West Lebanon to move freight between VT and NH, recent purchase of the Wells River to White River Junction line by the Vermont Agency of Transportation, the investigation of high-speed passenger rail service between Boston and Montreal, and local plans for an interpretive rail tour by the New England Transportation Museum.

In the future, railroads may once again play a significant role in the Region's development and transportation network. Many industries rely on railroads as a primary mode of transportation, and communities can benefit from keeping freight traffic off their streets. Rail is a positive investment which has substantial public benefits. It would benefit communities to collaborate with railroad interests and prepare for future changes in railroad investment, and to ensure those changes are consistent with the community's long-range vision and goals. (Map 4 shows rail corridors within the Region.) Railroad planning, service, and funding coordination should include broad interests, including a coherent approach by both states.

Railroad planning primarily occurs at the state and regional level. Each state plans for their rail system and its future investment. Communities should be aware of this process as they may be affected by future rail improvements. Increased rail traffic may exacerbate hazardous conditions at an at-grade rail crossing or cause concern among neighbors who have become accustomed to peaceful abandoned rights-of-way. Understanding state plans will help communities prepare for utilizing rail access to nurture business and industry as well as prepare for negative impacts such as noise and safety conflicts. This is also an opportunity for communities to influence future policies by supporting those that are consistent with local and regional plans.

**Table 3: Regional Rail Provider Summary**

Operator	Rail line	Type/Commodities	Major Stops	Frequency
AMTRAK	VTrans/NC	Passenger	New York City - St. Albans, VT	7 days/week
Claremont-Concord RR	B&M	Freight: lumber, paper products, salt, petroleum	Claremont; West Lebanon - White River Junction	Varies

Please go to the Regional Plan webpage to view the Rail Corridor System Map.

New England Central RR	NC	Freight: stone, lumber, paper, grain, salt, petroleum	New York City - Canada	Varies
Canadian American RR Co.	VTrans/NC	Freight: stone, lumber, paper, grain, salt, petroleum	New York City - Canada	1/week

Notes: B&M=Boston and Maine, NC=New England Central; there are no class 1 railroads within VT or NH. Class 1 railroads are defined by the Surface Transportation Board as a railroad with FY2000 operating revenues of at least \$261.9 million.

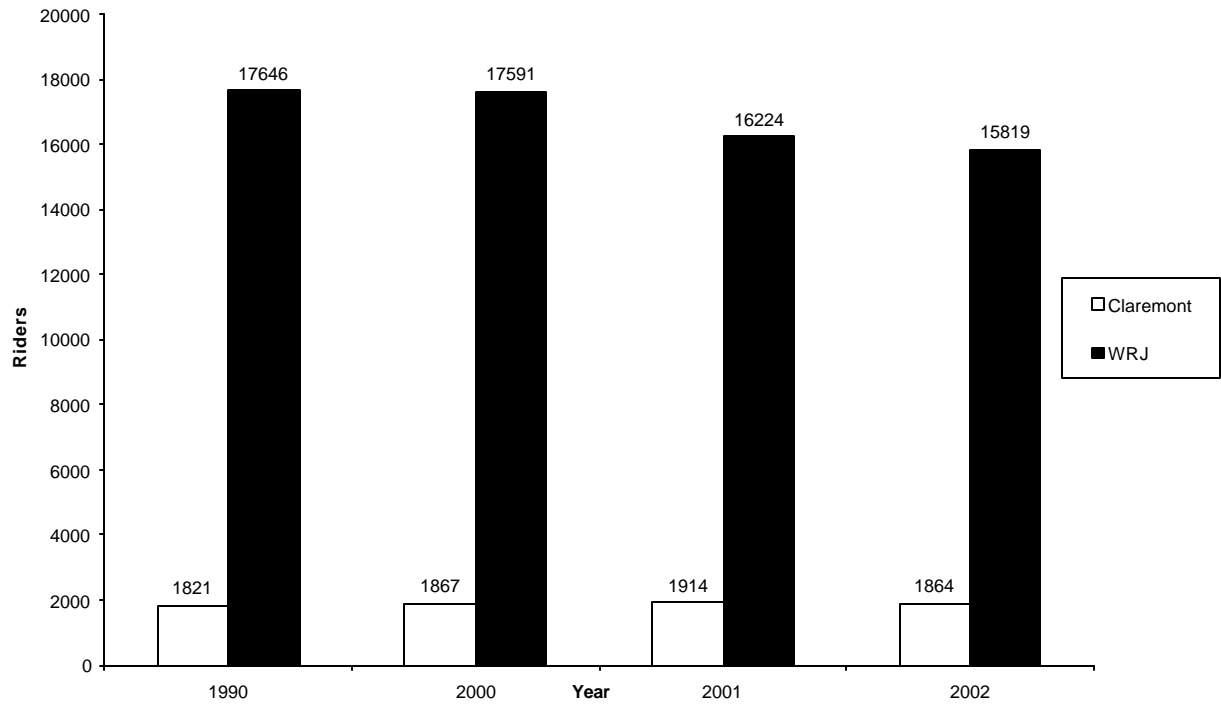
### Passenger Rail Service

AMTRAK passenger train service is provided seven days a week, with one train in each direction daily between St. Albans, VT and Washington, DC, via Claremont Junction and White River Junction within the Region, and nearby Windsor, Vermont.

The White River Junction railroad station is handicapped accessible and is located within easy walking distance of the Advance Transit bus stop in front of the Hotel Coolidge in White River Junction. AMTRAK ridership from the White River Junction station dropped 10 percent from federal fiscal year 2000 to 2002. During the same period, Claremont Station ridership remained fairly constant (Figure 3 shows passenger rail ridership at White River Junction and Claremont stops). Windsor Station ridership figures have remained at about half of the riders at Claremont Station since 2000. Intermodal connections at the Claremont Station remain poor, partially explaining the low ridership. Although passengers may enter and exit without baggage at Claremont Station, the addition of “check baggage” facilities and bus service connections would better integrate the transportation network and possibly enhance ridership at this station. Perhaps skier bus connections to Mount Sunapee, Mount Ascutney, and Okemo Mountain could be made from this rail stop. Further study would be needed to determine why passenger ridership is decreasing at the White River Junction station and whether this rail-bus service would be beneficial.

As AMTRAK struggles to remain profitable, services in the Region remain in jeopardy. Although the White River Junction station has one of the highest riderships, Claremont and other stations in Vermont possibly face reduced services or consolidation as AMTRAK cuts costs. Recently ticket agents at AMTRAK facilities within the Region have been replaced with automated ticket booths as a means to save costs. Additional measures such as these can be expected in the future as the rail industry seeks to become more cost-effective. It is important that as these measures occur, care is taken to ensure rail use is still encouraged and functional. This is especially important for encouraging rail tourism where patrons are unfamiliar with the area. Travelers need clear guidance in order to give the rail transportation system legitimacy and reliability.

**Figure 3: Passenger Rail Ridership**



Source: Vermont Agency of Transportation Rail Division, Ridership by Federal Fiscal Year

Vermont, New Hampshire, Massachusetts, and Canada have begun investigating high speed rail service from Boston to Montreal, which would traverse the Region. The chief objective of high speed rail service is to provide an alternate mode of travel thereby reducing highway and air space congestion. The first phase of the study has estimated that potential ridership numbers and the physical layout of the corridor will not preclude high speed rail. The next phase will evaluate the costs and benefits of the service. High speed rail development would provide many benefits to the UVLSRPC Region, including greater mobility and expanded economic development potential. However, federal funding policy and priorities will need to change if investment in new rail service is to become feasible.

### Freight Rail Service

The old Boston and Maine's Northern Line, which spans from White River Junction to Concord, NH has not operated for a number of years and in fact, much of the track has been removed. The line was abandoned by Guilford Industries, the owner of the Boston and Maine Railroad, and purchased by New Hampshire Department of Transportation (NHDOT) with Enhancement funds, in order to ensure preservation of the corridor. The abandonment of this line does not include a one-mile section in Lebanon east from the Vermont line to approximately the Glen Road Bridge. This section is currently operated by the Claremont-Concord Railroad with freight service.

The Claremont-Concord Railroad operates between Claremont Junction, the interline connection with the New England Central Railroad, and Pleasant Street in Claremont. The Claremont-Concord Railroad transfers cars from Claremont Junction to downtown Claremont. Freight service is also provided from White River Junction to West Lebanon. The City of Lebanon has recently rezoned some land near the existing Twin State Sand and Gravel site in West Lebanon to facilitate the rail-intensive development within the NH portion of this rail corridor. These developments show a continued investment in rail in the Region.

The Claremont-Concord Railroad right-of-way, from Pleasant Street in Claremont east to downtown Newport, was abandoned several years ago, with the State acquiring the right-of-way for rail banking purposes and converting it to a recreational trail. The remainder from Newport through Newbury was abandoned at an earlier date and was not preserved.

The Vermont Agency of Transportation (VTrans) owns the tracks north from White River Junction to Wells River. The New England Central Railroad Company (NECR), which is headquartered in St. Albans, Vermont, previously bought out the holdings of Central Vermont Railway. It operates freight service within the Region, from Hartford, Vermont to Charlestown, New Hampshire. The NECR connects with the Northern Vermont Railroad at White River Junction. Along this line, shipments consist primarily of processed stone products, lumber, paper products, grain, salt, and petroleum. The use of this line has decreased in recent years; in fact, only one freight train currently runs per week. Vermont Statewide Freight Study indicate limited opportunities for rail freight. The Region's rail system will not support time-sensitive freight because of substandard tracks which increase travel times and limit market area.

However, that Freight Study recommends that Vermont continue to expand programs that support the construction of rail facilities and implement a rail weight and clearance improvement program, providing a complete double-stack clearance route. A double-stack clearance route would necessitate taller bridges to accommodate taller, or double-stacked, trains to increase freight capacity and route efficiency.

This area has the potential to reestablish itself as a regional rail hub connecting New York City with Montreal, but will require improvements to upgrade substandard infrastructure. Greater capacity should be developed for shipping freight by rail, including oil and other important commodities, to be delivered to the core population areas of Lebanon and Claremont.

### At-Grade Rail Crossings

The safety of rail corridor and highway crossings is an issue of great importance in this Region and nationwide. All active at-grade rail crossings should be maintained or improved with adequate approach geometries, signs, lighting and pavement markings to enhance safety. At-grade crossings at highway and rail trail intersections should also be made safer with adequate approach geometries, signs and pavement markings.

### Abandoned Rail Corridors

Inactive rail corridors should be preserved for future rail use and for other uses, as has been the case with the Northern Rail Trail and the Sugar River Rail Trail. Unlike an air route, for example, which can be abandoned and reestablished without difficulty, selling parcels of a rail corridor results in the effective loss of that line. Thus, keeping these corridors intact should be given a high priority. As these corridors close or reopen, consideration should be given to sharing the line with recreation and other transportation modes when appropriate.

Rail-with-Trail options should be considered along all rail corridors that can support such multi-use while not precluding current or future rail operations. VTrans recently evaluated the feasibility of a rail-with-trail along the Berlin line route which spans from Wells River to White River Junction, Vermont. While topographical constraints prohibit the shared use of much of this line, there are many segments that would be suitable for recreation or alternative transportation use. The Region and individual communities can benefit from the recreation and transportation use of these shared rail lines.

## **Goals, Policies and Recommendations**

### Goals

- Integrate present and future railroad planning with land use planning, economic development and rail tourism.
- Accomplish a coherent bi-state approach to railroad planning, service, and funding.

- Continue existing railroad service and extend and improve where appropriate.

#### Policies and Recommendations

- Preserve all existing railroad rights-of-way, whether abandoned, inactive or in service. NHDOT and VTrans should actively preserve the integrity of all railroad rights-of-way indefinitely for transportation (rails-with-trails and rails-to-trails), recreation and utility purposes.
- UVLSRPC will work together with municipalities, NHDOT and VTrans to review the future potential for rail service when locating industrial zones and make appropriate accommodations for site plans with rail service.
- UVLSRPC, state agencies and municipalities will work together to integrate railroads into the larger transportation network by providing multi-modal linkages and amenities at rail stations. Check baggage facilities at the Claremont AMTRAK station as well as continued operation of AMTRAK at its White River Junction station are high priorities.
- UVLSRPC will assist communities, business and industry with comprehensive planning to find ways to utilize passenger and freight rail transportation to reduce highway traffic. For example, planning for the future development of high speed rail within the Region.
- UVLSRPC will seek the railroad industry's participation in transportation planning.
- UVLSRPC will assist NHDOT and VTrans in the completion of rail capital investment projects which are consistent with regional and local plans by advocating for their incorporation in the transportation improvement program.
- Whenever feasible, at-grade rail crossings with roads should be avoided.
- UVLSRPC member communities should encourage their respective states to invest federal money in rail transportation.

## REGIONAL TRANSPORTATION PLAN

### Aeronautics

The Region has two general aviation airports, in Claremont and Newport, and one in Lebanon providing commercial air travel, general aviation, and air freight service to selected major cities in the northeast. The Region's airports are important and serve varied roles including commercial air freight, passenger air service, recreational and tourism aviation. They also serve as focal points for regional commercial/industrial growth centers. While airports are considered to be important to the Region's economic development, they also require extensive infrastructure and are expensive to operate and maintain. Issues facing our regional aviation system include: declining commercial operation; providing better multi-modal connectivity between airports and alternative modes of transportation, such as transit; and balancing airport growth with environmental impacts.

**Table 4: Regional Airport Summary**

<u>Airport</u>	<u>Type</u>	<u>Ownership</u>	<u>Runways</u>	<u>Traffic Control Tower</u>	<u>Hanger Facilities</u>	<u>Est. Operations</u> (takeoffs and landings)
Claremont	GA	City of Claremont	3,100' x 100' 1,600' x 100'	No	No	29/day
Newport	GA	Town of Newport	3,450' x 50' 1,900' x 80' (turf)	No	Yes	110/week
Lebanon	GA/CO	City of Lebanon	5,200' x 150' 5,496 x 150'	Yes	Yes	129/day

Notes: GA=General Aviation, CO=Commercial Aviation; all runways asphalt unless otherwise noted.

Claremont and Newport Airport operations are strictly general aviation (GA) facilities, which are used by licensed private pilots for travel, including corporate flight departments. Lebanon Airport operations are 51 percent local operations (training activities) and 49 percent itinerant operations, including: air taxi, air carrier, general aviation, and military uses. Air freight does not account for a significant portion of the annual operations at the Lebanon Airport.

### Commercial Travel

The majority of the air travel services for this region are provided by the larger international airports, including Manchester Airport in New Hampshire, Burlington International Airport in Vermont, Bradley International Airport in Hartford, CT and Logan Airport in Boston. These facilities range from 60-130 miles outside the region and offer much broader services at more competitive rates. Congestion, the cost of parking, and convenience factors have led travelers from urban airports such as Logan, to smaller facilities like Manchester Airport. We have yet to

see similar benefits at Lebanon Airport due to its relatively small size and population base, which have contributed to high fares and poor connections with other flights. In fact, with Manchester's rapid growth, commercial air traffic at Lebanon Municipal Airport has declined. Passenger service in Lebanon has dropped from 22,278 in 1999 to 16,088 in 2000, and currently there is one commercial carrier down from three in 1993. The number of passengers departing the Lebanon airport is down 43 percent from 2001 figures. Figures 4, 5 and 6 demonstrate the approximate flight activity at the three airports in this Region.

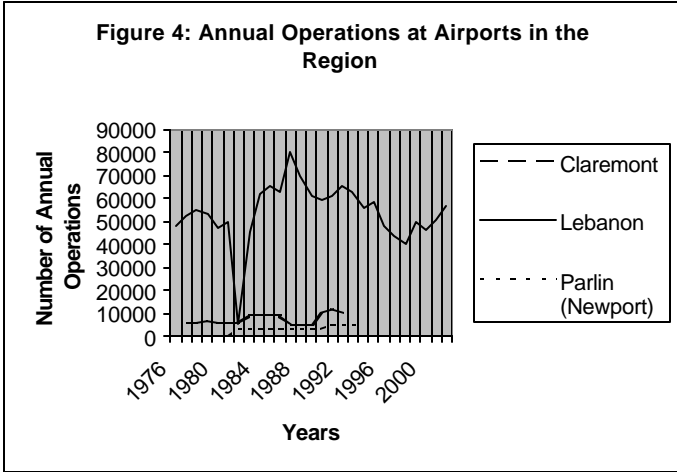
It appears that Manchester Airport is growing rapidly and gathering a significant portion of Lebanon Airport's market. This decrease in commercial air passenger use has, in part, contributed to a loss in revenue and budget deficits for Lebanon. Regional airport long-range plans and capital improvements must consider the close proximity of these larger facilities and their role in serving New England air travelers. Lebanon Airport is at a critical decision point: Can the airport continue to provide commercial air travel at a level sufficient to financially support the airport, while operation costs continue to increase, and revenue and commercial air travel decrease?

### Intermodal Connections

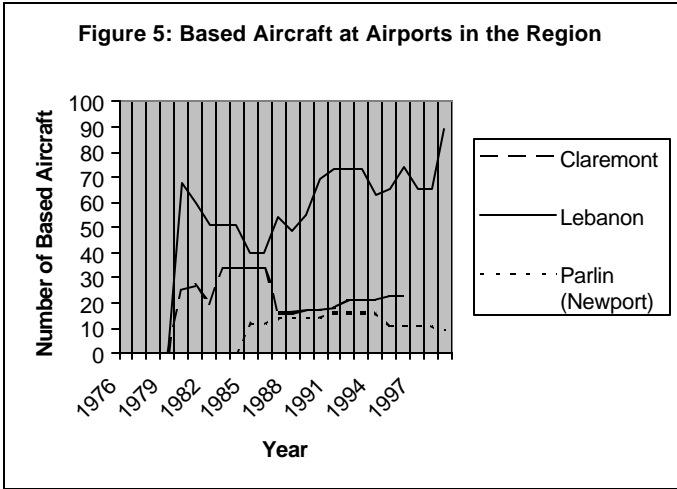
Both Claremont and Lebanon Airports are surrounded by commercial and industrial development which will likely experience additional growth. Both airports are located near population centers and have reasonable access to state and interstate highways; however, they are not well linked with other modes of travel. Parlin Field in Newport is isolated and north of downtown Newport. Intermodal linkages will benefit community transportation systems by providing opportunities for travelers to access regional destinations without being reliant upon an automobile. This will integrate the regional transportation system and provide travelers with a better means of exploring our Region.

Dartmouth Coach and Vermont Transit both offer excellent connections to the Manchester Airport and Logan Airport. These connections help to reduce single-occupant vehicles and to provide maximum convenience to travelers flying in and out of these airports. Connections with these providers should be maximized through publicity efforts, expanding park and ride facilities, and through other methods.

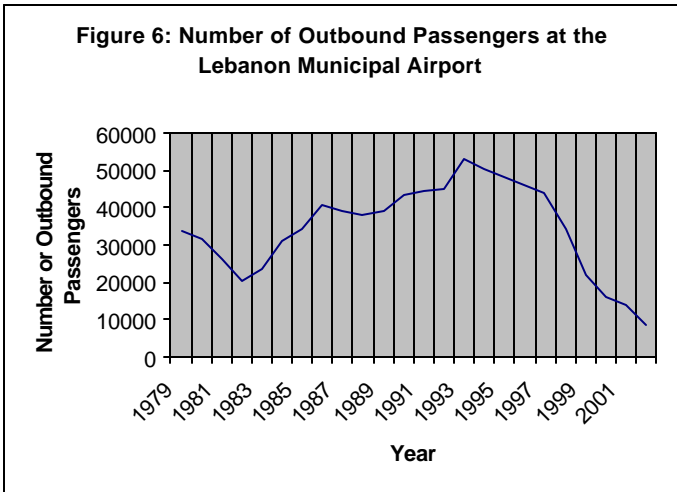
As private plane ownership and use grow, airports become more of a tourist portal for travelers. Enhancing intermodal connections at the Region's airports will promote tourism use and could lessen the seasonal traffic impacts on roads. The Region's airports should be promoted as tourist gateways, through informational kiosks, better intermodal connections and promotions.



Source: New Hampshire State Airport System Plan Update, Edwards and Kelcey / RKG



Source: New Hampshire State Airport System Plan Update, Edwards and Kelcey / RKG



Source: Lebanon Municipal Airport

## Natural Resources

With airport growth comes infrastructure expansions and more flights which impact natural resources such as air quality, wildlife habitat and wetlands. As the number of flights increase, so will the noise impacts. Sensitive areas should be identified and protected through the use of appropriate regulations should the Region's commercial airports increase operations and/or expand.

## **Goals, Policies and Recommendations**

### Goals

- Improve the efficiency and service of the Regional aviation system.

### Policies and Recommendations

- The UVLSRPC will work with municipalities, the Lebanon Airport Advisory Committee and chambers of commerce to plan for greater tourist use of the Region's airports.
- Linkages should be provided between the Region's airports and other modes of transportation.
- The Region's major employers, institutions and communities should participate in evaluating the appropriate role of the Region's airports within the state and regional aviation system.
- The UVLSRPC will assist communities in balancing airport growth and environmental protection, including the development of noise reduction ordinances.

## REGIONAL TRANSPORTATION SYSTEM

### Highways and Bridges

The primary transportation resource in the Region is roads (see Map 5). This Regional network is made up of approximately 3,545 road miles, of which about two-thirds are municipally-maintained roads. For a rural area, the Region is well served by an excellent network of highways, including two interstates that intersect in Hartford. Key to this system are those interstate highways, I-89 and I-91, which enable easy access to Boston, Montreal and New York City. The highway and street network plays a dominant role in moving people, goods and services around and through the Region and will continue to do so in the foreseeable future. Because of this highway network, the Hartford/Lebanon and Claremont/Newport areas are able to serve a large geographic area with commercial and industrial services.

### Road Classification Systems

Legislative Highway Classification Systems. The States of Vermont and New Hampshire each have their own hierarchical highway classification systems. The New Hampshire system was established by the Legislature and consists of seven classifications, while the Vermont system consists of four. (See Table 5).

**Table 5: State Highway Classification Systems**

<b>Highway Classification</b>	<b>New Hampshire</b>	<b>Vermont</b>
Primary State Highways	<i>Primary State Highways</i> (NH Class I) consist of all existing or proposed highways on the primary state highway system, excepting all portions within the compact sections of cities and towns of 7,500 inhabitants and over. The state assumes full control and pays all the costs of construction, maintenance, and reconstruction of its sections, excepting portions of such highways within the compact sections of Claremont, Hanover, and Lebanon, which are classified as Class IV highways.	<i>Primary State Highways</i> (VT Class 1) consist of all existing highways on the primary state system.

Secondary State Highways	<i>Secondary State Highways</i> (NH Class II) consist of all existing or proposed highways on the secondary state highway system, excepting portions within the compact sections of Claremont, Hanover, and Lebanon, which are classified as Class IV highways. Currently, those roads that are improved or reconstructed to the satisfaction of the NH Commissioner of Transportation will then be maintained by NHDOT. All unimproved highways, where no state and local funds have been expended, must be maintained by the municipality.	<b>State Aid Roads (VT Class 2) consist of all existing highways on the secondary state system.</b>
Recreational Roads	<i>Recreational Roads</i> (NH Class III) consist of all roads leading to, and within, state reservations designated by the Legislature. The NHDOT assumes full control of reconstruction and maintenance of such roads.	No comparable classification in Vermont
Urban Compact Streets	<i>City and Town Streets</i> (NH Class IV) consist of all state highways within the compact sections of Claremont, Hanover, and Lebanon. Class I and Class II highways through these areas include US Route 4, NH Route 10, NH Route 11, NH Route 12, NH Route 12A, NH Route 103, and NH Route 120.	No comparable classification in Vermont
Municipally Maintained Roads	<i>Rural Roads</i> (NH Class V) consist of all other traveled highways which the city or town has the duty to maintain regularly.	<i>City and Town Streets</i> (VT Class 3) consist of all highways maintained by cities and towns.
Unmaintained Roads	<i>Unmaintained Roads</i> (NH Class VI) consist of all other existing public rights-of-way including highways discontinued as open highways, highways closed and subject to gates and bars, and highways not maintained in suitable condition for travel for five years or more.	<i>Unmaintained Highways</i> (VT Class 4) consist of all other existing public rights-of-ways including highways discontinued as open highways, highways closed and subject of gates bars, and highways not maintained in a usable condition for travel.

Functional Highway Classification Systems. A functional classification system refers to how roads, as part of an overall highway network, are used relative to movement and access. In general, higher class roads, including interstate highways and other limited-access highways, maximize movement and provide no direct access to properties. Lower class roads, such as a cul-de-sac, serve as the primary access to properties and do not allow through traffic. (*Traffic Engineering Handbook, 5<sup>th</sup> Edition* (ITE, Washington, D.C., 1999))

Please go to the Regional Plan webpage to view the Highway Network Map.

**Table 6 Functional Highway Classification System**

Controlled Access Highways	To serve long-distance travel and high volumes of traffic at high speeds and high levels -of-service with access limited to interchanges
Arterial Street and Highways	To serve longer-distance travel between population centers with access controlled through limits on driveway locations and spacing of intersections
Collector Roads and Streets	To link the local street system with arterial highways; serves access to abutting properties; commercial traffic is limited to local delivery uses
Local Roads and Streets	To provide short-distance travel at low speeds and low traffic volumes with access from developed areas to the highway network

**Source:** *Traffic Engineering Handbook, 5<sup>th</sup> Edition* (ITE, Washington, D.C., 1999)

### Highway Condition

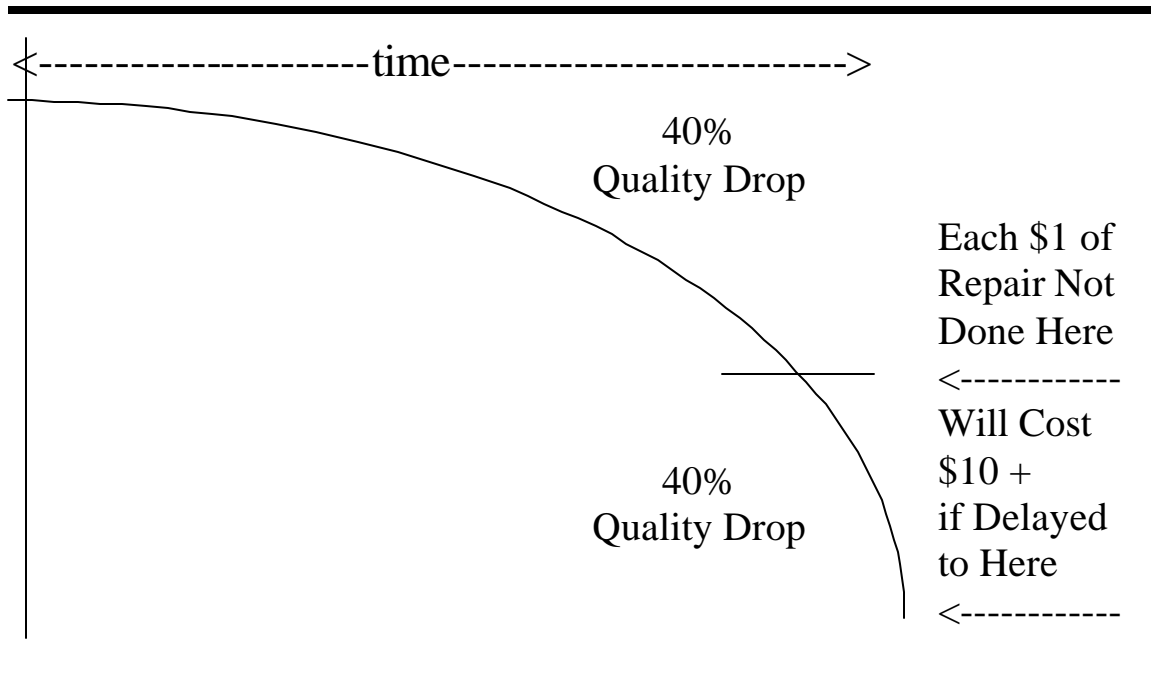
Interstate, US and State Highways. There are 543 miles of primary and secondary state highways within the Region. Both the New Hampshire Department of Transportation and the Vermont Agency of Transportation maintain sufficiency ratings and Pavement Management Systems (PMS) in an effort to effectively use their funding, prioritize highway improvements and enhance the quality of their highways. Both states use an automatic road analyzer vehicle that measures ride smoothness as it travels over a roadway and rates each state highway. PMS values are based on a scale of zero to five; five indicates a perfectly smooth surface and zero an impassable road. A highway with a rating of 2.50 or greater is generally considered to be adequate, while all roads below that level are considered candidates for improvement. See Map 6 for available pavement condition data.

Municipal Roads. There are 1,574 miles of municipally-maintained roads within the Region. Roadway networks are typically one of the biggest investments for a municipality and the costs to maintain these systems are significant. Many communities are faced with the problem of improving this aging infrastructure. The UVLSRPC encourages the use of both road surface and small structure (culverts, etc.) management systems to aid municipalities in effectively employing highway funds to maintain the quality of their road networks. These tools provide a structural framework for maintaining roads and associated infrastructure in the most cost-effective manner, based upon the principle that infrastructure in good condition costs less to maintain than when it is in poor condition. Illustrated in Figure 7, there is only a 40 percent drop in pavement quality during the first 75 percent of life of the pavement surface. While during the next 17 percent of surface life the quality drops 40 percent and the cost of repair increases four to five times. UVLSRPC has so far trained 23 member communities in using road surface management techniques.

Please go to the Regional Plan webpage to view the Pavement Condition Map.

**Figure 7: Pavement Deterioration/Rehabilitation Curve.** This curve demonstrates the relationship between level of roadway deterioration and the cost of needed repairs. The more deteriorated a highway is allowed to get, the more costly the required maintenance will be. Conversely, a roadway kept in good condition only requires preventative maintenance. It is in municipalities' best financial interest to maintain their roadways in good operating condition to minimize costly infrastructure reconstruction projects.

## Cost of Delaying Maintenance



**Source:** Road Surface Management System Workshop Notebook and Reference, University of New Hampshire Technology Transfer Center, October 1998

The Vermont Local Roads program and New Hampshire Technology Transfer (T2) Center both assist communities with best practices for maintaining roads and associated structures such as culverts, bridges and drainage ditches. These programs help communities with up-to-date techniques for managing paved and unpaved roads so that management is cost-effective and environmentally friendly.

Sound land use planning can also help keep road maintenance costs down. Municipalities should think carefully about where they would like to accommodate development and then consider how to encourage development that maximizes the affective use of the existing transportation system. Development generally increases pressures on roads. New developments may necessitate costly improvements; however, if well-planned these costs can be minimized. By directing development where infrastructure already exists or is planned for, there is often less need for off-site improvements. Developers should be required to pay for their proportional fair share of improvement costs on their projects. The extent of improvements should bear a rational connection to the needs created by and the benefits conferred upon the subdivision or site plan. Certain land use regulations can empower a municipality to guide development and to require off-site improvements as needed, such as subdivision, zoning, site plan review, capital improvements plan (CIP) and impact fee ordinances. Requiring and implementing these fees can be a complex process that is particularly burdensome on small municipalities. Large off-site improvements are less of a problem when development is sited according to a community's development goals.

### Traffic Volumes

The UVLSRPC, New Hampshire Department of Transportation and Vermont Agency of Transportation gather traffic data annually from many sources to complete a picture of the Region's traffic flow patterns. Current and projected traffic volumes are used for planning and designing roads and their maintenance. See Map 7 for some of this data.

A number of corridors in this Region are experiencing traffic congestion to varying degrees, including:

- NH Route 10 in downtown Hanover;
- NH Route 11/103 between Claremont and Newport;
- NH Route 12A in Lebanon near I-89 Exit 20;
- NH Route 120 between Hanover and Lebanon;
- US Route 4 in Canaan, Enfield, Hartford and Lebanon;
- US Route 5 in White River Junction; and,
- VT Route 10A in Norwich and West Wheelock Street in Hanover.

A number of intersections in this Region are also experiencing traffic congestion or poor intersection performance. While performance varies at each location, the problem intersections in this Region include:

- Broad Street/Summer Street, Claremont
- Main Street/Bridge Street, Lebanon
- Main Street/Seminary Hill Road, Lebanon
- Main Street/Wheelock Street, Hanover
- NH Route 11/North Street, Claremont
- NH Route 11/Winter Street, Claremont
- NH Route 11/Broad Street, Claremont
- NH Route 11/NH Route 10, Newport
- NH Route 12A/KMart Drive, Lebanon
- NH Route 12A/I-89 Exit 20 Ramps, Lebanon
- NH Route 12A/Airport Road, Lebanon
- NH Route 12A/Interchange Drive, Lebanon
- NH Route 120/Etna Road, Lebanon
- NH Route 120/Heater Road, Lebanon
- NH Route 120/I-89 Exit 18 Ramps, Lebanon
- NH Route 120/Hanover Street, Lebanon
- Park Street/Lebanon Street, Hanover
- US Route 5/Sykes Mountain Avenue, Hartford

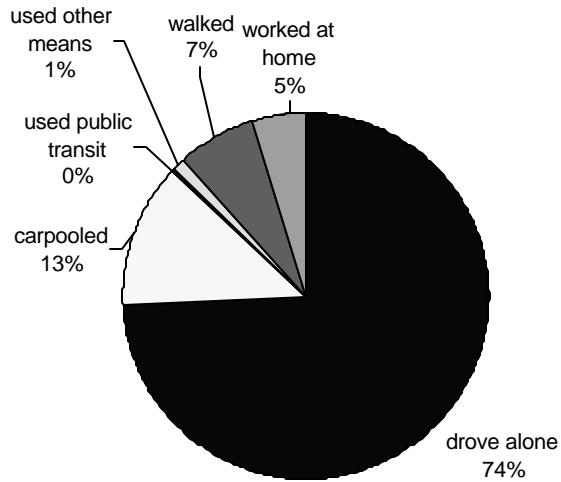
Traffic volumes in the past ten years have mirrored the growth and development experienced by the Upper Valley. As more jobs are created and more people move to the Region, traffic volumes increase. Decentralized and scattered housing development and isolated land uses have the tendency to promote increased auto usage. As these development patterns continue, we can expect traffic volumes to increase accordingly. Expansion plans of the Region's major employers - including Dartmouth Hitchcock Medical Center (DHMC) and Dartmouth College - will likely have a significant impact on traffic in this Region. Population growth, increasing automobile registrations and workforce participation rates each influence traffic volumes.

Linear or strip-development patterns together with poor access management along major travel corridors, such as NH Route 12A in Lebanon, Washington Street in Claremont, and portions of Route 5 in Hartford, can greatly diminish roadway capacity and lead to congestion. Better coordination of parking and access can reduce accidents and travel times.

Traffic volumes have increased significantly along certain corridors and at key intersections for a number of reasons. Large commercial developments, such as the Centerra Office Park and the relocation of the DHMC from Hanover to Lebanon, have shifted traffic patterns which have impacted Route 120. Housing development in Orange, Grafton, Enfield and Canaan have increased traffic volumes along US Route 4. Tourist related activities have contributed to higher

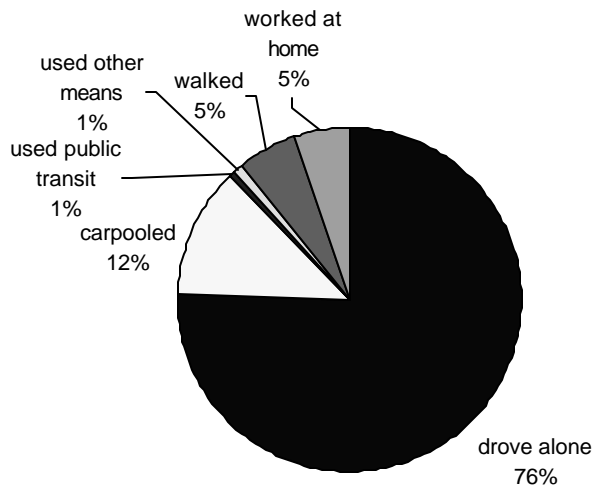
Please go to the Regional Plan webpage to view the Road Congestion Map.

**Figure 8: Transportation Means in the UVLSRPC Region, 1990**



Source: US Census Bureau, Census 1990

**Figure 9: Transportation Means in the UVLSRPC Region, 2000**



Source: US Census Bureau, Census 2000

traffic volumes as well, particularly in the Quechee Gorge area. Future growth will increase traffic pressures on these important arterials, which are constrained by topography. This places a heavy reliance on these critical routes. Multiple routes leading to the Region's job centers would provide alternatives for travelers and lessen pressures on major travel corridors. The benefit of redundant routes must be balanced with the cost of constructing and maintaining them, plus the additional growth they may facilitate.

Other factors may also influence traffic volumes including driving patterns, major transportation infrastructure projects and employer commute incentives. National trends indicate that more people now are commuting greater distances than in decades past. See Figures 8 and 9 for a comparison of transportation means in 1990 and 2000. National trends also indicate that people are traveling more miles than ever before. According to the Bureau of Transportation Statistics, in 1998 Americans drove 1.4 trillion more miles in their automobiles than in 1980 (National Transportation Statistics, Washington, D.C., April 2001). Certain area employers are providing incentives to employees for not traveling by single-occupant vehicle. These incentives are, in part, a result of the large costs associated with building and maintaining parking facilities. Upper Valley Rideshare and the Upper Valley Transportation Management Association seek to reduce the number of commuting vehicles on the Region's roads with demand-side programs.

Park-and-ride lots should be developed at strategic locations along commuting corridors to promote carpooling and transit use, thereby reducing the number of single-occupant vehicles on the roads. Small park-and-ride facilities in rural villages, such as Grafton, might help to encourage carpooling from these outlying areas.

## Bridges

There are 727 bridges within the Region. Bridges, like pavement, do not deteriorate in a linear fashion. If maintenance is deferred and bridges are allowed to worsen in condition, the cost of repair or even reconstruction is much higher than if repaired promptly. Washing bridges is an example of a preventive maintenance that can save significant costs.

State Bridges. The Vermont Agency of Transportation evaluates all bridges over twenty feet long using a federal sufficiency rating system. Bridges are determined to be eligible for funding based on a federal sufficiency rating system. Bridges with a rating of less than 50 out of 100 are not eligible for federal funding, while ratings of 50 to 80 indicate bridges in poor condition that are eligibility for rehabilitation funds and rating above 80 are eligible for bridge replacement funds. Twenty-three percent of the state-maintained bridges within this part of the Region are in poor condition and in need of rehabilitation or replacement.

The New Hampshire Department of Transportation also evaluates all bridges over twenty feet long.

Please go to the Regional Plan webpage to view the Bridge Condition Map.

Map 8 displays bridge condition information by red list and yellow list classifications. Red list bridges require interim inspections due to known deficiencies, poor conditions, weight restrictions, or type of construction. Yellow list bridges are structurally deficient or functionally obsolete but not eligible for red list status. Twenty-one percent of the state-maintained bridges in this part of the Region are on the red list and ten percent are yellow listed.

Municipal Bridges. The New Hampshire Department of Transportation and the Vermont Agency of Transportation also inspect municipal bridges and use the same review standards that they use on state bridges. Approximately 34 percent of municipally-owned bridges in this Region have been determined to be in poor condition or worse.

Many of the Region's bridges, such as the Windsor-Cornish Covered Bridge, are historically significant or unique. Rehabilitation and maintenance of the Region's historic and covered bridges should be done in a way to preserve prominent and historic features. Old wooden or covered bridges may be maintained or restored, provided that desired traffic volume and vehicle types are still accommodated.

New technologies materials researchers are working to develop alternative bridge construction materials that are more resistant to salt than concrete or metal. In addition, many new technologies allow new bridges to appear as though they were built of wood or stone. In some cases, wooden bridges are structurally stronger than newer construction materials. Bridges should be made to accommodate multi-modal traffic in a safe manner, while also being sensitive to the aesthetic sensibilities of the area.

### Highway Network Challenges

High Accident Locations (HAL). The roadway network should provide for the safe public usage of highways and streets. Certain locations have histories of multiple accidents due to a variety of factors, including poor alignment or sight distances, excessive traffic speeds, conflicting traffic movements, poorly configured or excessive curb cuts and traffic congestion. High accident location data are collected by local police departments and agencies of transportation. According to the Vermont Agency of Transportation (VTrans), a high accident location "is defined as a location on the federal-aid highway system that has experienced a minimum of five accidents over a five-year period and that has an Actual Rate to Critical Rate Ratio (ARCR) of 1 or greater". There are currently no high accident locations with the Region.

Sometimes there are locations which are not classified as "high accident"; however, they are hazardous in some manner. This is often because crashes occur infrequently at a given location in rural areas and are random events. Rural roads have low traffic

volumes which result in fewer crashes. The intersections of Route 12/Route 5 in Hartland, Church Street/ Route 10A in Norwich and Route 4/Waterman Hill Road in Hartford are examples of intersections which are not HAL but exhibit potentially hazardous traits that have not yet manifested in a high number of accidents. Road safety audits are a proactive approach designed to identify existing or potential hazardous locations such as these by reviewing the location, traffic, signage, markings and operations for deficiencies. By reviewing these elements and identifying which may result in a crash, improvements can be made before the location reaches its “crash potential”. Often these reviews identify low-cost safety improvements (pavement markings, hazard beacons, etc.) that can enhance safety significantly at a low cost.

Roadway Capacity. Poor land use planning and development causes traffic pressure on highways and roads. This occurs namely when land use development is decentralized and the proximity of jobs and housing is out of balance. As more demand for these facilities compete for a limited supply of infrastructure, congestion increases. The financial and environmental issues related to increasing capacity of these roads makes the traditional solution of wider and more roads an unreasonable approach to the problem in many cases. Managing growth by regulating the location of land use development, and in some instances the amount and timing, offers a means for municipalities to coordinate growth with transportation improvements.

Public facility ordinances or concurrency plans combine planning and capital budgeting to link public investments and development approval. Both Vermont and New Hampshire enable municipalities to withhold development permits when the impacts would exceed the transportation network capacity. These plans allow communities to control land use changes in an effort to maintain capacity in identified growth areas and limit or exclude growth where capacity is unavailable. This approach to addressing congestion provides certainty to landowners as to when development can occur and alternatives, such as developing only when capacity is available or investing in capacity improvements themselves. This is arguably fairer than the existing permitting system where the developer who is last in seeking approval for their project is confronted with network improvement costs which are only partially the result of their proposal. This is inherent in Act 250's criterion 5, undue congestion, where projects are permitted until there is a capacity problem.

Further complicating this issue is the piecemeal nature in which most development occurs and jurisdictional barriers that divide the region. Planning across multiple jurisdictions is critical when developing these strategies. This is especially true when growth in one community deteriorates the roadway capacity in another, inequitably dispersing the benefits and costs of the development. In order to facilitate this process UVLSRPC seeks to employ corridor planning and transportation modeling techniques to assist communities in understanding the transportation system's capacity and existing travel

demand. Municipalities can then use this information to track transportation impacts to understand what capacity is available now and in the future. The Transportation Advisory Committee and the Transportation Improvement Plan for each state can then use this information as a basis for transportation prioritization. This will direct development in areas where there are and will be investments in transportation capacity.

While developments should not cause undue loss in adjacent roadway capacity, transportation investments should be consistent with desired land use policy along highway corridors. The chosen highway infrastructure can greatly influence land use development patterns. For instance, a state highway with two travel lanes in either direction and one “scramble lane” in the middle, will likely promote strip development and discourage residential investments. Similarly, a new highway connector, such as one connecting I-91 in Wilder to NH Route 120 near Dartmouth Hitchcock Medical Center, could have significant and unintended impacts on adjacent land uses, while also serving its primary purpose: to mitigate congestion in Hanover and at the I-89 Exit 18 interchange area. Just like large development proposals, large infrastructure projects should be fully evaluated for their intended and unintended consequences on the transportation system and land uses.

Interchange Development. The seventeen interstate highway interchanges within the Region offer access to our interstate highway system. Many of these areas have experienced great development pressures because of their ability to easily serve large markets. When development is not properly planned, it can interfere with the proper functioning of the interchange. Along Route 12A near I-89 Exit 20 in West Lebanon, and Sykes Avenue and Route 5 near the I-91 and I-89 interchange in White River Junction, traffic hampers the movement of vehicles onto or off of the interstate. The placement of traffic signals can also interfere with exiting the interstate. This occurs at I-89 Exit 18, where traffic frequently queues onto the interstate during peak hours. In order to prevent these conditions, development and roadway access must be maintained to sustain interchange functions.

Particularly for undeveloped or lightly developed rural interchanges, scenic attributes of the interchange are important considerations in maintaining our tourist economy. Design guidelines for interchange development being developed by the Vermont Agency of Commerce and Community Development will help communities balance these issues with the economic benefits of the interchange.

#### NH Class VI Roads, VT Class 4 Roads and Municipal Trails

Class VI (NH) and Class 4 (VT) roads are public rights-of-way that the public has a right to use, however, not necessarily the right to develop. They are generally not considered acceptable roadways for residential access and therefore lands are rarely subdivided if their access is limited to a Class VI (NH) or Class 4 (VT) road. As our Region’s population grows, pressures for development increase in these uninhabited areas. While landowners are concerned with accessing their property and having a reasonable use of their land, municipalities must consider

the budget implications of the costs of improvements and maintenance but keep in mind that these roads also serve as an important community recreational resource for residents and visitors. If building permits are granted along Class VI (NH) or Class 4 (VT) roads, municipalities will likely be confronted with infrastructure, emergency service, budgetary, and environmental challenges.

Municipalities should have written policies for dealing with Class VI (NH) and Class 4 (VT) roads to ensure a fair process for issuing or not issuing building permits. These should address when building permits should be granted and when maintenance should be discontinued.

Municipalities are authorized in both states to reclassify local roads as municipal trails. The public right-of-way is maintained with a municipal trail, but the designation protects against future development along those corridors.

### Scenic Byways

Federal and state legislation permits both New Hampshire and Vermont to designate state-maintained highways as Scenic Byways. This designation provides communities with access to resources to protect and enhance scenic qualities and visitor amenities along travel corridors. Vermont created the Vermont Byways Program in 1993, which incorporated the Scenic Preservation Council and the Scenic Roads Program (established in 1977), and New Hampshire developed the NH Scenic and Cultural Byways Program in 1992. Each program promotes the creation or partnership of varying interests to protect and promote the historic, cultural, natural, scenic, and recreational qualities of the road corridors. State-designated scenic byways are eligible for National Scenic Byway funding providing they meet certain criteria.

The Connecticut River Byway was designated in 1998 and encompasses highways in the bi-state area bordering on the Connecticut River, including NH Routes 10, 12, 12A and 25A as well as US Route 5 in Vermont. The Lake Sunapee Scenic Byway, also designated in 1998, follows Routes 11, 103, 103B and I-89. Both Byways serve as important travel corridors as well as links to some of the region's most noteworthy natural and cultural attractions.

### Scenic Roads

In addition to the National and State Scenic Byway Programs, municipalities in both New Hampshire and Vermont are enabled by legislation to designate municipally-maintained roads, not including state-maintained, numbered highways, as scenic roads. These laws protect certain scenic resources along scenic road corridors from potential damage resulting from road construction or utility work. The laws are based on protecting the scenic qualities of a road, including large trees and stone walls that contribute greatly to the character and aesthetic beauty of the Region. The New Hampshire law requires that when work is being done to the roadway, significant features will not be disturbed until written consent is given by the Planning Board or board responsible for the program. In Vermont, certain standards established by the State Transportation Board, as established per 10 VSA Section 425, that determine acceptable construction methods, including minimum width, alignment, roadside grading and plantings, and traffic control methods.

## Goals, Policies and Recommendations

### Goals

- Provide a safe and efficient transportation infrastructure.
- Maintain highway capacity through sound land use planning, corridor management and access management.
- Preserve scenic resources.

### Policies and Recommendations

- Through state transportation improvement programs UVLSRPC will:
  - Act as liaison between state agencies and communities to promote safe highways.
  - Encourage NHDOT, VTRANS and municipalities to prioritize the maintenance of existing infrastructure over new construction
  - When feasible, encourage the rehabilitation and maintenance of historic or rare types of bridges, including covered bridges, in ways that preserve the historic features and scale.
  - Encourage the rehabilitation or reconstruction of all bridges which are rated as functionally obsolete or structurally deficient.
  - Direct capacity-building transportation investments to local and regional growth centers.
  - Use the Regional Plan as a guide for project development and project review.
  - Municipalities should have the authority to require developers to pay their fair share of any off-site improvements determined to be necessitated by specific development proposals otherwise deemed to be in accord with the city or town's regulations, regardless of whether or not they have impact fee ordinances.
  - The UVLSRPC will continue to train communities to use Road Surface Management Systems to maintain their roads.
  - The UVLSRPC will seek funding to develop corridor studies for NH Route 120, NH Route 12A and NH Route 11/103, and US Routes 4 and 5 to assist in maintaining safe conditions and concurrency between development and roadway capacity.
  - UVLSRPC will continue to identify dangerous intersections and other dangerous roadway sections and encourage VTrans and NHDOT to conduct road safety audit reviews of identified areas.

- Applicants should not be granted development permits when the projected traffic will exceed the capacity of the existing infrastructure during peak periods or is likely to cause a significant decrease in safety, or add to an already unsafe condition.
- VTrans and NHDOT should assess the regional impacts of their proposed highway projects on existing land uses and quality of life.
- The UVLSRPC will assist communities with interchange development planning issues.
- Communities should discourage development in areas that rely solely on NH Class VI or VT Class 4 roads for access, and have written policies for dealing with these roads and the issuing of building permits.
- UVLSRPC will encourage the designation of new scenic roads to preserve historic features or important scenic areas.
- The preservation of trees, working landscapes, natural resources, historic structures and other scenic features should be considered in all transportation projects and appropriate mitigation implemented.
- Municipalities should adopt access management and driveway design standards which ensure safe and controlled access year-round.
- The UVLSRPC will advocate for alternative transportation modes and land use development patterns that support them to help resolve and prevent traffic congestion.
- The UVLSRPC will seek funding to develop an interstate highway corridor management plan to protect scenic resources.
- UVLSRPC will continue to participate in the Scenic Byway Programs to further regional and local objectives for protection and enhancement of resources in the Connecticut River corridor and Lake Sunapee area.
- States and municipalities should consider covered or wooden bridges to replace functionally obsolete or structurally deficient bridges when practical.