

III. Land Use and Transportation

Transportation and land use are inextricably linked, each effecting how the other functions. This chapter will focus on the interrelationships between land use and transportation, and the role transportation has played in facilitating and responding to land use changes in southern Windsor County.

Historic sites and structures, utilities and facilities, community services, commercial and residential development, employment, transportation, recreational opportunities, farms, and other features are all woven together with the natural environment to make up the unique fabric of the Region. The predominant pattern of village centers surrounded by rural working landscapes reflects the history of the Region, and contributes to the quality of life that residents cherish. The transportation system that has developed over time to serve these areas is an essential link to the quality of life of the Region. In general, the municipal plans in the Region seek to preserve these historic land use patterns and maintain the existing transportation network. However, much of the recent residential development has not been focused within historic village areas and, together with the changing commuting patterns, is changing the demands on the regional transportation system.

A. Historic Overview

The linkage of land use to transportation is related to early settlement patterns, to the continuous investment in roads and highways, and to state and federal policies. Past investment in roads and highways had a significant impact on land use by allowing the efficient movement of people, goods, and services. The construction of the interstate system in Vermont and across the U.S. had a profound effect on land use patterns particularly in areas previously not served by major roadways. This expanded highway system, while allowing for greater mobility, made people increasingly reliant on the automobile.

Historically, the towns and cities developed along rivers and lakes due to the ease of transporting raw products such as timber, grain, and other agricultural products by water in addition to using water as a source of power. During the nineteenth century, the railroad provided an alternative to water-related forms of transportation. The major advantage of the railroad was the ability to inexpensively ship bulky natural resources such as minerals, timber, and manufactured goods over great distances. As the railroads developed, depot towns flourished into centers where people lived, recreated, and worked.

During the twentieth century, federal and state policies focused transportation investment in roads and highways and encouraged home-ownership, which facilitated residential, commercial, and industrial development away from city and village centers nationally. Federal and state policies subsidized the highway system through taxation at the expense of railroads and other modes of transportation. The consequence of these policies enabled the development of suburban land use patterns and the inevitable decline of many cities and villages nationally.

B. Early Settlement Patterns and Historical Trends

Towns in southern Windsor County were first established in the mid 1700s. Settlers came primarily from southern New England attracted by the availability of land and an abundance of natural resources. The earliest forms of transportation included footpaths, horse and carriage trails, the Connecticut River, and railroads in the mid to late 1800s. The steep slopes and extensive water courses in the area required the early settlers to address transportation issues immediately. Acceptances of surveyed roads and the height of the Mill Brook Bridge were issues at a meeting in Windsor in 1770. In 1796 the first bridge across the Connecticut River linked Windsor, VT and Cornish, NH.

The beginning of Routes 5, 103, and 131 can be traced back to early Indian trails and military routes. The Crown Point Military Road, which ran northwest from Charlestown, NH to Crown Point, NY, was constructed in the 1760s and played a significant role in the early settlement of Cavendish, Ludlow, and Springfield. For many years it was the only road across the Green Mountains.

As the history of the Region progressed, transportation continued to play a significant role in both determining and responding to development patterns. Early transportation routes were improved to accommodate the movement of people and goods into and out of the Region. The seeds of economic development including agriculture, forestry, and tourism took root and began to flourish. The increased need to transport goods required roads to be of sufficient size and quality to allow large wagons access to and from the Region. In the early 1800s, canals were built along the southern Connecticut River allowing large flatboats access to southern New England markets.

Some of the first products from the Region were provided through agricultural activities. By the mid 1800s, Windsor County was one of five Vermont counties with the highest density of sheep in the State. As a result, factories and mills were spawned along the Black River between Springfield and Ludlow to process the wool of the prevalent Merino sheep. In the late 1800s, dairy farming and the production of milk, cheese, and butter surpassed sheep farming. Events and economic forces outside the Region, including major wars and the growing demand for industrial goods to accommodate national needs, stimulated additional manufacturing activities in Ludlow, Springfield, and Windsor. Notably, the Towns of Springfield and Windsor became nationally recognized for the production of machine tools.

As early access routes into the Region improved, and as additional routes were established to reach local economic resources, a transportation network began to form. Local roads were constructed or upgraded to improve accessibility. These improvements made it easier for residents living outside the concentrated village areas to travel for commerce and employment. Better roads also led to dispersed development along these routes.

Rail service, established by 1869, increased the shipment of goods to distant markets and boosted the tourism industry. Early Vermont tourist attractions of the 1800s included mountain tops, mineral springs, and spas which became the trendy vacation retreats from hot summer weather. These attractions were forerunners of the resorts, bed-and-breakfast hotels, and other vacation and recreation activities available today. Additional growth was

stimulated as major state highways were paved to accommodate traffic flowing through the Region.

The construction of Interstate highways 91 and 89 in the late 1950s and early 1960s had an enormous impact on land use patterns. The relationship between construction of the two Interstate highways and the placement of the access ramps had a particularly profound effect on development in the Upper Valley area. The development pattern near this hub provides tangible evidence of the effect of high speed, limited access transportation routes.

Southern Windsor County has direct access to I-91 at three points: Hartland/Windsor, Weathersfield, and Springfield. The proximity of the I-91 and I-89 interchanges also affected the Region by providing rapid access to distant markets along the Interstate system. Not only were the Region's abundant tourism and recreational resources made readily available to visitors, but residents were provided easy and timely access to the larger shopping and employment centers in the Brattleboro, VT/Keene, NH area and the Upper Valley area (White River Jct. and Hanover/Lebanon, NH.).

Growth in the Region was expansive during the 1960s and early 1970s, primarily resulting from the effects of Interstate access. However, the decline in the Region's economic base and in its population during the 1980's provides evidence that improving access to outside markets does not necessarily guarantee stability or sustained growth. Maintaining sustainable growth relies upon achieving a balance between the provision of infrastructure including transportation, the economic and social conditions, and the natural resources that exist within the Region. It is necessary to understand the interconnection of these different systems, their influence, and their limitations to achieve sustainable communities.

C. Current Land Use and Transportation

The historic settlement pattern of traditional village centers surrounded by working rural landscapes predominates today's landscape. Village centers generally consist of relatively dense development and a mix of uses that form the backbone of each community. The mixed uses in most villages, including civic buildings, stores, restaurants and other commercial establishments, provide some of the daily needs of residents within walking distance of homes, but many residents rely on roads to access jobs and more specialized or diverse services in other parts of the Region or beyond.

Access to metropolitan areas, recreational opportunities, water, good soils, and other social and environmental factors continue to determine where growth is likely to occur. More recently, the growth in the popularity of the Region for skiing and tourism has increased development in the Towns of Andover, Chester, Ludlow, Reading, and West Windsor. The influence of tourism is now felt throughout the Region. Most of the commercial and industrial development has occurred along the major highways interconnecting the villages, and along the state and interstate highway systems. Because of this trend, sprawl, strip development, and seasonal traffic congestion are emerging problems in the Region. Towns should remain aware of the potential for strip development, and include prevention strategies and tools such as overlay access management districts, cluster development, mixed use zones, and the official map in their town plans and zoning regulations.

As the Current Land Use/Land Cover map shows (**Appendix A** of the Regional Plan), large areas of the landscape in southern Windsor County are forested. Although this map is based on orthophotographs taken in 1994, the distribution of land uses has remained fairly consistent over the last decade. Those lands that are forested for timber usage contribute to the local economy, and those that aren't provide wildlife habitat and recreational opportunities, and maintain the air and water quality that are important for the quality of life of the Region's residents.

U.S. Census 2000 population figures show a clear trend of residential growth in outlying rural towns and slower growth in areas of concentrated development. Growth in town population centers would maximize the existing road systems and capacity in those areas. These areas offer a larger, more diverse local road network, and better access to jobs, services and public transit. However, the predominant growth trend in recent years has been growth in rural areas with limited transportation options. If this trend continues, the burden to maintain existing roads and add capacity will become more costly.

Over the last five years, the greatest development trend has been single family homes and small subdivisions in the more rural towns where no municipal water or sewer services are available. Development in these areas has been largely dependent on site limitations. Changes to state regulation of residential on-site wastewater systems lifted many of the restrictions on the use of land with limitations to bedrock and seasonal water table and gave the State universal permitting jurisdiction starting in 2007. The changes significantly increase the amount of land potentially available for development, as much of the land was off-limits to development solely because of physical constraints for supporting on-site septic systems.

Near Okemo Mountain Resort in Ludlow, the development of second homes and vacation condominiums has occurred at a rapid pace. According to 2000 Census figures, the number of seasonal housing units increased by 13.7% in Ludlow between 1990 and 2000. As buildable land on the mountain becomes scarce, these larger vacation-oriented developments are likely to move to outlying towns such as Andover and Cavendish.

Residential development in towns with easy access to I-91 has increased in recent years due to expanded employment opportunities in the Upper Valley.

Towns such as Windsor and Springfield that have extended water and sewer service to industrial parks outside the downtown should consider carefully the area between the industrial park and the downtown. With available water and sewer, these areas could easily experience future strip development and sprawl. The trend toward revitalization of downtowns and redevelopment of brownfield sites can help to counteract this development pressure outside downtowns and encourage more efficient travel.

D. Future Land Use and Transportation

As the Region's population and economy grows and expands, each community will be affected differently. The existing regional transportation system will have to be dynamic to meet changing demands, as large-scale roadway infrastructure expansion is unlikely in the near future due to funding constraints. Factors such as geographic location, natural resource

constraints, regulations, public policy, and public investments contribute to the direction that new growth takes in any community.

Job growth in the tourism-related industry in this Region and in the Upper Valley employment center can both be expected to continue into the near future. If the low availability and high cost of housing in those respective job centers continues, the increase in commute times can also be expected to increase. Access to those jobs becomes particularly important for lower-income workers. Therefore, park-and-ride lot capacity and increased transit services become important to provide adequate job access to those markets. To make the existing transit systems more efficient, land use development and transportation investments should support smart growth, as discussed below. Economic reinvestment in Regional and Town Centers can also help to employ residents locally and improve the efficiency of the transportation system.

The Regional Plan encourages growth in the traditional villages and downtown areas surrounded by open fields, farms, large tracts of forested lands and low-density development. The Regional Plan also establishes future land use categories to serve as a guide for the desired types and intensities of future land uses. (See Future Land Use Map, **Appendix A** of the Regional Plan.) The concentration of growth in established areas has many benefits. It preserves the character of communities, engenders a sense of place and civic pride, and ensures the maintenance of the high quality of life residents of the Region enjoy and expect. It also saves residents money, time, and natural resources. Concentrated development allows for the safest and most efficient transportation systems, the most efficient provision of public services, convenient access to businesses, and the most economical use of land. It ensures a more effective use of tax dollars on public infrastructure, and can create stronger local and regional economies. It can also benefit public transit by promoting greater efficiencies, village circulator routes and bus friendly community design. Any local public investments should reinforce the general character and planned growth patterns of the town as indicated in the town plan.

The future land use categories consist of the following types:

1. Regional Centers

Regional centers provide services, shopping, and employment opportunities to communities within and beyond the Region's boundaries. The core area of a typical regional center consists of a mix of land uses, including residential, commercial, and industrial development at higher densities than surrounding areas. Existing transportation routes provide access for both local and through traffic. Commuters may generate traffic loads during peak hours and public transit service may be provided as greater concentrations of people reside within these Centers. A full range of governmental services and institutions, including hospitals, schools, water and sewer service, and fire and police protection are offered. The core areas of Ludlow, Springfield and Windsor are designated as regional centers.

a. Transportation Characteristics of Regional Centers

Regional centers are the commercial, industrial, and social hubs of the Region. Historically, goods distribution congregated at access points to the transportation network which in turn attracted additional development. The early transportation

system consisted of a network of interconnecting sidewalks, rail lines, roads, and access points to the Connecticut River. The disappearance of river transport, the decline of the railroads, and the growth in vehicular modes of transportation has focused attention and investment on roadway improvements. This trend has resulted in a disproportionate aging of the infrastructure for non-vehicular modes of transportation, such as railroads and sidewalks.

Today, roads within regional centers must serve a diverse group of users including commuters, tourists, industry, commerce, pedestrians, bicyclists, and public transit providers. These diverse users often have conflicting expectations for how the transportation system should function, underscoring the complexity of transportation issues within these centers. In addition, roads and parking facilities have become the dominant features.

The road system in Ludlow, Springfield and Windsor consists of a network of local streets that feed into collector and arterial roads. Traffic volumes along the primary roads range from 14,000 Average Annual Daily Traffic (AADT) in Springfield, 12,000 AADT in Ludlow, to 8,000 AADT in Windsor. Although these routes are numbered (e.g. US 5, VT 11, VT 103), the Towns are responsible for maintenance of the Class 1 Town Highway portions which lie within the limits of the urban or village boundary. Traffic flows are influenced by frequent curb cuts, low travel speeds, and are prone to commuter peak hour congestion.

b. Desired Functions

As the economic and employment centers of the Region, the transportation infrastructure of regional centers must be capable of handling higher traffic volumes created by dense development. The transportation system in these areas should support many different users while providing safe and reliable links to outside markets and resources. Opportunities for enhancing intermodal connections should be encouraged. Roadway improvement standards should be sensitive to the historic and cultural integrity of regional centers. Access to alternative modes of transportation, such as rail facilities, now available in Windsor should also be preserved.

2. Town Centers

A town center provides localized services, such as shopping and employment that may only partially address the needs of town residents. Development is concentrated in a smaller geographic area but is similar to regional centers in character with high density mixed commercial, residential, and industrial uses. Limited governmental services and institutions are offered, such as schools, libraries, and clinics, which are typically sub-regional in nature and not significantly influential in a regional context. Services and amenities may attract residents from communities that are immediately adjacent to town centers. Police and fire protection may be provided and municipal sewer and water services are generally available. Existing roads generally provide access for the local community and from beyond the area. Town centers include the Chester-Chester Depot, Cavendish, North Springfield and Proctorsville. Ascutney is encouraged to grow as Town Centers with the provision of adequate public water and/or sewer services.

a. Transportation Characteristics of Town Centers

Like regional centers, the transportation infrastructure within town centers must serve multiple users with often conflicting expectations. Although rail facilities are within close proximity, connections are limited. Pedestrian walkways are present but may be deteriorating or lack interconnections. As the cultural and social meeting center of the community, the interaction between vehicles and pedestrians plays an important role.

Typical traffic volumes range from 3,300 AADT in Cavendish to 9,100 AADT in Chester. The primary state roads are functionally classified as principal arterials and major collectors. In addition, VT Route 103 is one of only three east-west travel corridors in southern Vermont and is a designated state truck route. These roads experience seasonal peak traffic congestion during ski and fall foliage weekends, an opportunity for tourist related transit services. Through truck volumes are comparably high. Accommodating both on-street and off-street parking while sustaining local businesses is also a concern.

b. Desired Functions

The transportation infrastructure within town centers should support economic development opportunities and local business interests, and simultaneously accommodate through traffic while maintaining the safety for non-motorized forms of transportation. Preservation of historic resources and "community character" should be a primary concern for all road improvement projects. Although peak hour congestion is an acknowledged problem, village character should not be sacrificed for capacity improvements. Alternative methods of addressing seasonal peak traffic including improved pedestrian and bicycle circulation, enhanced rail usage, off-street parking, and seasonal re-routing of traffic should be investigated. Access to alternative modes of transportation, such as rail facilities, now available in Chester and Ludlow should also be preserved.

3. Village Centers and Hamlets

Village centers include the smaller villages of Brownsville, Perkinsville and Feltchville, and hamlets include Downer's Corners, Gassetts, Peaseville, Simonsville, South Reading and Weathersfield Bow. These areas have a small area of concentrated development with one or more commercial establishments. Though limited services and amenities may be available, industrial development is minimal or non-existent. The proximity of adjacent industrial facilities may also influence village centers and hamlets. State highways that pass through most of these areas serve primarily through traffic. Local roads serve primarily the local population, but may include services for moderate traffic flow related to specific destinations or through traffic. Conflicts between through traffic and the community are prevalent.

There are densely settled areas in the Region which were formerly villages or hamlets but now consist of small concentrations of historic structures, primarily residential, with little if any commercial development. There is, typically, no other development except for a church or community center. Government services and institutions are not generally provided and residents must travel to other communities for shopping and employment. Transportation

issues are typically minor but may arise in relation to outside influences or natural resource constraints. These areas include Amsden, Hammondsville, and Weathersfield Center.

a. Transportation Characteristics of Village Centers and Hamlets

Historically, transportation infrastructure played an integral part in the formation of village centers and hamlets that provided the social, cultural, and commercial center of the community. With the arrival of automobiles, roads were widened or bypasses constructed to accommodate vehicles, often at the expense of a pedestrian-friendly environment. Pedestrians were forced to share roads with motorized vehicles. As roads expanded, additional traffic followed and the comfort level of pedestrians was sacrificed. The primary focus became the roads that passed through the village centers and hamlets.

The Region's village centers and hamlets occur exclusively along major collector roadways. Moderate traffic volumes vary between 6,500 AADT in Gassetts to 3,000 AADT in Perkinsville and 500 AADT in South Reading. The traffic flow is comprised of a mix of local, intra-regional and through traffic.

b. Desired Function

The transportation system should not be the dominant feature of villages/hamlets, and roads should compliment the aesthetics, history and function of the community. Infrastructure improvements should accommodate all modes of transportation, but not at the expense of human scale and pedestrian friendliness. Transportation improvements and design standards should reflect the unique historic character of each village. Vehicle speeds and the use of traffic calming techniques should be addressed as part of any roadway improvement project. The routing of traffic should strive to minimize the impact on villages/hamlets.

4. Medium-Density Neighborhoods

These areas include the medium-density neighborhoods that immediately surround regional and town centers. They are primarily residential, but typically also include limited commercial and civic uses. Medium-density neighborhoods are generally served by public water and sewer systems. These neighborhood areas include portions of Chester, Ludlow, Springfield and Windsor.

a. Transportation Characteristics of Medium-Density Neighborhoods

Medium-density neighborhoods are typically served by a network of interconnected Class 2 and 3 town highways and limited portions of state highways. These areas are generally within walking distance of the Regional or Town Centers. Sidewalks are typically present, but often lack connectivity. Public transportation services are present but fixed routes are limited primarily to Springfield and Ludlow.

b. Desired Function

The transportation system should provide an interconnected urban road network with street trees, sidewalks and buildings oriented to the street to create pleasant pedestrian environment. Infrastructure improvements should accommodate all modes of transportation.

5. Resort and Recreation Area

Resort and recreation areas are unique features that influence the balance of the cultural, natural, and infrastructure systems surrounding them. Typically, they are located in areas with abundant scenic and natural resources that are attractive for their recreational, tourism, and/or second home opportunities. They generate significant traffic during the peak tourist seasons of summer, autumn foliage, and winter. The influence of resorts extend throughout and beyond the regional context. Though resorts offer significant seasonal employment opportunities, the high cost of housing and typically low wage scale can result in increased commuting from beyond the host community. Transportation issues are complex, fluctuating seasonally. Development often includes condominiums, second homes, and recreational structures. Resort and recreation areas in the Region include: Okemo Mountain Resort in Ludlow, Ascutney Mountain Resort in Brownsville and the Lake Rescue and Lake Pauline area in Ludlow.

a. Transportation Characteristics of Resort/Recreation Areas

Resort and recreation areas serve an important economic function for residents and visitors to the Region. As magnets for tourism, jobs and second home development, high traffic levels create transportation issues that are unique to these areas. For example, VT Route 103 in Ludlow serves not only traffic destined for attractions in the Region but also to other resorts in surrounding counties. Resort traffic combined with local and through traffic results in seasonal congestion. Adding to the complexity of the problem, the transportation infrastructure is designed around the constraints of steep terrain, scenic river valleys, and historic villages. Although no one solution will solve the entire problem, the situation requires an innovative approach to address the transportation needs of resort and recreation areas. For example, Okemo Mountain Resort provides shuttle service and traffic control assistance during seasonal peaks. This initiative has significantly improved traffic flows through downtown Ludlow. Specific issues with ski traffic are discussed later in this chapter. Roadways serving the development around the lakes contribute to water quality threats, including pollution and aggradation.

The traffic volumes of roads accessing resort and recreation areas vary from 12,000 AADT in Ludlow to 2,100 AADT in West Windsor.

b. Desired Function

The development of resort and recreation areas has, in the past, been closely allied with improvements in the transportation system. Traffic congestion is a problem along VT Route 103 in Chester and Ludlow during peak tourist travel times. Potential solutions to mitigate this congestion include consideration of expanding rail and bus public transportation services, expanding shuttle service, promoting pedestrian and bicycle use, traffic demand management and coordination of existing transit services. The ability to develop cost effective and convenient links between the modes should be the primary goal for transportation improvements in resort and recreation areas. Roads serving the lakes area should incorporate best practices to improve water quality. The Vermont Better Back Roads Manual (George D. Aiken

and Northern Vermont Resource Conservation and Development Councils, 1995) is an excellent resource on BMPs and ways to mitigate stormwater.

6. Industrial Sites

Industrial sites are significant because of their role in providing local jobs and municipal tax base. Industrial sites include: Dean Industrial Park in Ludlow, Luzenac mine sites, North Springfield Industrial Park, Windsor Industrial park and other industrial activity areas shown on the Future Land Use Map (see **Appendix A** of the Regional Plan). Growth of these areas is encouraged; however, providing adequate access for cars and trucks is a primary concern.

a. Transportation Characteristics of Industrial Sites

Industrial sites are trip-generators and centers of economic activity. While railroads may be used to haul freight by a few industrial businesses in the Region, the predominant transportation mode for industrial uses is the road system. Traffic volumes attributed to industrial sites vary widely, but trucks comprise a high percentage of the traffic flow. Trucks compose about 20 percent of the traffic on Precision Drive, serving the North Springfield Industrial Park. The Park is estimated to generate about 300 average daily truck trips per day (North Springfield Truck Study, 2008).

b. Desired Function

Preserving easy access between industrial sites and the larger transportation network is a primary concern. Industrial sites located close to I-91 are prime locations for industrial uses that generate large-truck traffic. Industrial sites in more remote locations should consider infrastructure improvements to maximize truck access, while also minimizing the negative impacts on neighboring properties. The function and safety of adjacent state highways and Class 1 and 2 town highways needs to be considered in any development proposal in these areas. Existing local roads and bridges may need to be upgraded to better withstand heavy truck traffic. Access management should play an important role in preventing strip development and/or unsafe traffic conditions in close proximity to industrial sites.

7. Rural Areas

Rural areas show no discernable concentration of development other than dispersed development, primarily residential, and a working landscape, including farms, forestry and earth extraction activities. Traffic volumes are typically low, and consist primarily of through traffic on state highways and local traffic on town highways and private roads. Certain routes which pass through rural areas may be considered scenic by travelers and may attract bicyclists and tourism-related traffic. Transportation issues related to rural lands are less complex, but issues may arise related to specific infrastructure needs or natural resource concerns.

a. Transportation Characteristics of Rural Areas

The transportation system that serves rural areas consists of a vast network of local, private and state roads. The roads serve a diverse group of users including tourists,

bicyclists, cars, trucks and, to a limited degree, pedestrians. Traffic volumes vary widely from only a few cars a day to several thousand per day.

b. Desired Function

Access through rural areas should not result in the loss of Vermont's trademark, its rural character. Instead, emphasis should be placed on properly maintaining the existing network of roads and bridges. Infrastructure improvements should address safety concerns of motorists, bicyclists and pedestrians alike.

8. Resource Areas

Resource areas represent natural areas that require special protections because of their fragile nature, irreplaceable value, and unique or important ecological functions. Resource Areas are comprised of a variety of very low density land uses, including conservation lands, state parks or forests, working landscape activities, outdoor recreation, hunting, fishing and very low density residential. Transportation characteristics and desired functions are the same as for Rural Areas.

E. Special Considerations for Land Use and Transportation

It is important for a coordinated vision for how changes in land use and transportation should take place in the future. However, the interrelationships between land use and transportation are complex. The following special considerations further define how future growth should occur in order to encourage an efficient transportation system.

1. Smart Growth

Smart Growth is discussed in the Regional Plan and in the Future Land Use and Transportation section in this chapter. It entails encouraging clustered development and mixed land uses within areas of concentrated development.

Clustered, mixed-use development is more efficient and less land-consumptive than dispersed, sprawling development. Clustered development generally encourages less vehicular travel and more pedestrian, bicycle and transit travel. It can also reduce the total road miles maintained by municipalities. Development in rural areas outside of villages and downtowns makes travel by alternative modes impractical in many cases and increases the vehicle miles traveled in the Region. The Future Land Use and Transportation section in this chapter encourages development in areas of concentrated development or in clusters.

Promoting commercial development, higher-density residential development, multi-family residential units, workforce housing and housing for other potentially transit-dependent individuals along transit routes and within downtowns and villages, can improve access to jobs, essential facilities and services for residents.

2. Ski Corridor Traffic

Both Okemo Mountain Resort and Killington Resort have developed master plans to expand their ski trails and the amount of skier visits each year, and to transform their ski areas into four-season resorts. Traffic from these resorts tends toward VT Routes 100 and 103, and US Route 4 north of the Region. Villages along these routes experience congestion

problems during peak ski days, and can expect additional traffic as a result of the expansion of the ski resorts. Because the Act 250 review process will not allow such heavy increases in traffic volumes, the two resorts have been working with regional planning commissions to develop a plan for these corridors.

The RPC, the Rutland Regional Planning Commission, and the Two Rivers-Ottawaquechee Regional Commission, working in partnership with VTTrans and the Okemo and Killington ski areas, developed an analytical tool for assessing the impact of development-related traffic growth in regionally-significant highway corridors. The tool measures traffic impacts in terms of reductions in travel time along highway corridors (VT Routes 100 and 103, and US Route 4). It establishes a measure of traffic impact that goes beyond the typical level of service (LOS) analysis. The effort is three-fold: Measure traffic, define at what level traffic becomes unacceptable, and then determine ways to mitigate. The process to maintain and refine this travel time model is ongoing and will continue over time.

The Ski Corridor planning and evaluation process will work continuously to identify creative and innovative demand-related techniques to mitigate and reduce the influence on the existing regional traffic patterns of new ski resort development. In addition, Connecticut River Transit, the Ludlow Municipal Transit System, Okemo Mountain Resort and the RPC continue to work on utilizing existing transit services to reduce “internal” auto trips in and around the resort.

3. Maintain Rights-of-Way for Future Needs

As communities grow, new roads may be needed to facilitate the safe and efficient movement of goods, people and services. Maintaining existing rights-of-way is advisable in order to preserve public rights to lands needed for future travel needs.

Rights-of-way can also help to protect the safe functioning of intersections, as well as preserve the ability to expand the intersection based on future demand. State- and town-owned rights-of-way that serve these purposes should be protected as well.

4. Traffic Calming

According to the Institute of Transportation Engineers, traffic calming is the combination of physical measures that reduce the speed, alter driver behavior, and improve conditions for non-motorist street users. Examples of traffic calming techniques include: narrowing roadway travel lanes, landscaping, the use of curb extensions and striping to clearly define pedestrian crossings, bike lanes, lighting, and raised pavement. The major advantage of traffic calming over more traditional speed reduction measures, such as police enforcement, is that traffic calming measures are “self enforcing.” Because traffic calming devices force drivers to slow down, they can be more effective than measures that rely on enforcement. Traffic calming in villages achieves three results: increased pedestrian safety, lower traffic speeds, and more livable village centers.

VTTrans developed Traffic Calming Standard Drawings as design guidelines for traffic calming on state highways. These guidelines can be used by the designers and engineers at VTTrans who work on paving and roadway projects. The development of traffic calming

typical sections marks a significant change in the way VTtrans now approaches project design.

Certain traffic calming techniques may be appropriate and should be considered in all areas of concentrated development in this Region where a reduction in traffic speed would enhance pedestrian and bicycle safety as well as improve community quality of life. The impact of traffic calming on adjacent corridors should also be considered.

5. Access Management

Access management involves managing traffic flow and safety, and preserving the carrying capacity of roads through the design and spacing of driveways and street connections (“curb cuts”) to public roadways in order to preserve safety, reduce congestion, and promote desirable land use patterns. Access management focuses on the connection between transportation and land use.

Access management is not a critical problem in this Region at this time. However, the following corridors would benefit from access management to improve safety and address capacity before becoming a critical problem: VT Route 106/River Street in Springfield, VT Route 11 in Springfield, VT Route 103, and along the other major travel corridors. In addition, the RPC encourages towns to implement sound driveway policies that seek to reduce drainage impacts to town roads and to maximize safety.

In 2001, the RPC undertook an access management study to categorize all major state routes in the Region based on: traffic volume, travel lanes, speed limit, number of access points per mile, and existing and future land use. With this information, the Vermont Agency of Transportation with the assistance of the RPC established Access Categories for the Region’s state highways. The majority of southern Windsor County roads were given an Access Category of 4. Category 4 is described as follows:

- Daily traffic volumes below 5,000 AADT
- Speed limit varies from 30-50 mph
- Provide for inter-town and intra-town travel needs
- There is a reasonable balance between access and mobility

VT Route 103, a major east-west arterial for the Region’s auto-users, trucks and for Vermont as a whole, is the primary exception to Category 4. VT Route 103 was given an Access Category of 3 and 6 - six for the villages of Chester and Ludlow, and 3 for those areas outside the villages. Access Category 3 is defined as follows:

- Daily traffic volumes above 5,000 AADT
- Travel speeds 50 mph or higher for long distances
- Provide interregional travel needs
- Principal Arterial
- Generally a National Highway System (NHS) Route

Category 6 is described as follows:

- Daily traffic volumes over 5,000 AADT
- Speed limit varies from 25-40 mph
- Typically exhibits access density of 40 accesses per mile or greater (on both sides of the roadway)
- Provide for inter-town, intra-town and intro-community travel needs
- There is a reasonable balance between access and mobility; however, functions as an “urban” roadway

Roads such as US 5, Vermont 11, and Vermont 106 that pass through village and town centers such as Chester, Reading, Springfield, and Windsor were also given an Access Category of 6.

In cooperation with VTrans, the RPC is working with towns to explore access management, identify techniques to apply in each community, and develop the necessary tools with which to implement those techniques. Coordination between state and local decision makers is essential to make access management work well, as it involves sometime complex interrelationships between subdivision and other land development decisions, and access permitting. The RPC encourages all towns to consider access management in local land use regulations.

6. Transportation Interchanges

The RPC completed a study of the Region’s interstate interchanges: Interstate Exits of the Region: Study and Policies in March 2004. The purpose of the study was to protect the aesthetic and natural resources of the land around the interchanges and the economic and cultural viability of traditional village and town centers by carefully considering the kinds of uses to be allowed at interchanges and the site plan review conditions to regulate those uses. In addition, this information may be used to protect valuable land for conservation through easement with a land trust or other measures. And finally, the information was used to formulate regional goals and policies concerning interchanges in the southern Windsor County Region.

A land use analysis was conducted to establish a clear picture of the existing land use patterns and traffic volumes; suggest policies and recommendations to local municipalities interested in addressing development at each interchange in the Region through their own plans; guide future investments; and facilitate state policies.

Three interstate exits serve the Region. They are located in Springfield (Exit 7), Weathersfield (Exit 8), and in Hartland (Exit 9). Although Exit 9 is not in the Region, it provides interstate access to the Town of Windsor. The study indicated that all of the interchanges are unique.

Exit 7, Springfield, is developed with two gas stations, one of which is a truck stop, and a Holiday Inn Express hotel with a Howard Johnson’s restaurant. Adjacent to the hotel is the Springfield Correctional Facility, and an industrial area is planned nearby. Springfield has created a new “Exit Seven District”, which will allow the Town to control the growth and

construction around the interchange. Sewer and water has been extended to the correctional facility, Howard Johnson's and gas station areas. Most of the developable property at the interchange has been developed, although re-development may expand existing uses and increase traffic impacts. The Exit Seven District requires site plan review that addresses signs, lighting, noise, aesthetics, parking, and access management.

Within a half mile from the interchange and along four-lane Route 131, Exit 8, Weathersfield has four gas stations, three with convenience stores and three with garage service provided on site, one restaurant (1799 Ascutney House) and a cafe. The village of Ascutney is in close proximity to the interchange, along Route 5 just north of Route 131. The Weathersfield Town Plan addresses the interchange area generally but does not address commercial strip development, and its current zoning would accommodate commercial strip development in this area. The Town of Weathersfield developed an Exit 8 Interstate Interchange Master Plan in 2007. The Master Plan calls for access management and traffic calming improvements along VT Route 131 in the interchange area. In addition, the Master Plan identifies zoning changes to encourage a more pedestrian-scaled development pattern in this area. It also calls for integrating the current commercial strip development area into the village of Ascutney, including street and sidewalk connections. Any revision to the Town Plan and Regulations should directly address the interchange area, consider site plan review and access management, and connection of the area to the village with bicycle and pedestrian facilities.

Exit 9, Hartland is discussed in the Hartland Town Plan. The Town Plan notes the benefits that the interchange brings to the communities north and south of the interstate exit onto Route 5. Much of the land surrounding the interchange lacks commercial development and has a significant amount of undeveloped pasture land, in contrast to other parts of Route 5 and exits along Interstate 91.

The Hartland Town Plan requires that development at the interchange must be compatible with its "rural surroundings," and recommends that proposed uses be subject to site plan review. The Plan further requires that development around the interchange needs to preserve the "rural Vermont business image." Several types of uses should be encouraged around the interchange: "professional offices, clean light industry, and small specialty retail including farmers markets, nursery and landscaping businesses, and arts and crafts." However, Hartland does not have zoning bylaws to regulate land development at this time.

In addition to Interstate Exits, the functionality of intersections along all major travel corridors should be preserved to maintain or improve capacity, reduce vehicular delays and to not preclude future intersection expansion needs. The RPC encourages sound access management at all intersections for safety reasons.

7. Corridor Preservation

Corridor preservation, in terms of prioritizing maintenance over new construction, has been recognized by the TAC as a regional transportation priority for over ten years. Corridor preservation also refers to efforts to preserve and maintain the existing transportation roadways, particularly state highways and Class 2 town highways, in order to protect future mobility. Corridor preservation entails sound road maintenance techniques to extend the life

of existing roadways, access management to preserve capacity and encouraging land use development that maximizes existing highway capacity and safety. These efforts are needed to prolong the life of the existing transportation infrastructure and protect the public investment in roadways, while meeting growing future demand with limited budgets.

8. Community Design

Community design, as regulated through local site plan review and design review, can encourage more inviting places for residents and visitors, and can promote a safer and more efficient transportation system. Such design features might include building setbacks, structure height and scale, and quality pedestrian facilities connecting adjacent properties and communities, that all combine to enhance the community character and transportation functionality. Community design, as addressed through zoning bylaws, site plan review and design review, can contribute toward preserving community character and encouraging pedestrian activity.

LAND USE GOALS

1. Promote sound land use planning that minimizes the need to expand the existing highway infrastructure and maximizes transportation system efficiency and safety.
2. Preserve rural and village character by recommending projects that balance the transportation needs of roadway users and residents.
3. Protect the economic, aesthetic, natural resource and cultural viability of traditional village and town centers through careful planning and review of development proposals.
4. Implement access management strategies as a means of preserving the financial investment and functional capacity of the regional roadway network.

LAND USE POLICIES

1. Preserve the character and environmental integrity of existing settlement patterns through maintenance and/or development of transportation improvements that are consistent with or enhance these resources.
2. Preserve existing historic, cultural and natural resources.
3. Encourage the enhancement, preservation, capacity and efficiency of the Region's road network by controlling access, minimizing curb cuts, discouraging land use patterns that promote strip development and encouraging development consistent with the future land use categories established in the Regional Plan.
4. Continue to encourage greater town participation in the issuance of access permits on state highways.

5. Encourage VTrans to reduce speed limits on the Region's State Highways that pass directly through village centers where towns have no jurisdiction.
6. Implement traffic calming techniques in the re-design and construction of village streets and bridges to reduce vehicle speeds and improve pedestrian circulation.
7. Encourage the efficiency of the Region's road network by promoting access to jobs and services through bicycle and pedestrian facilities, park-and-ride lots, public transit services and ridesharing.
8. Encourage VTrans to develop guidelines for design exceptions for roads on the National Highway System.
9. Preserve the functionality of interstate highway interchanges and intersections of state highways for existing and projected traffic volumes.

LAND USE RECOMMENDATIONS

1. Work with Planning Commissions to implement sound land use planning techniques that promote compact development patterns and designated growth centers.
2. Promote limited numbers of curb cuts, shared parking facilities and pedestrian links within regional centers, villages and existing strip development areas in order to improve or maintain highway capacity. Discourage new areas of strip development.
3. Work with VTrans to implement traffic calming techniques into the design of projects that may impact town and village centers.
4. Encourage the use of the techniques identified in the Ski Corridor Traffic Management Plan to monitor traffic increases from large trip generators, such as resorts, and allow for implementation of methods to offset peak period traffic.
5. Any proposed development adjacent to an interchange should be clustered within existing development to limit the number of direct access points on to arterial roads. Any proposed project that would significantly alter traffic flow or volume of should be discouraged and/or mitigated to the greatest extent possible.
6. Any proposed development that is to be located at an interchange should enhance the existing economy and environment. Any retail and commercial business best suited for village centers/downtowns should be discouraged from locating near the Region's interchanges.