

# Southern Windsor County Regional Planning Commission 2014 Regional Plan Volume 2 of 2 (Transportation)

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### **Acknowledgements**

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## APPENDICES

- A. Southern Windsor County and the 2010 Census
- B. Ski Corridor Technical Bulletin
- C. Freight Travel in the Region
- D. Regional Travel Patterns
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- F. History of Transportation in Southern Windsor County
- G. 2013 Park and Ride Count Report
- H. 2012 Park and Ride Needs Assessment
- I. 2013 Bicycling and Pedestrian Count Annual Report
- J. Road Classification
- K. Traffic along major travel corridors
- L. Complete Streets
- M. Regional Transportation Plan Traffic Impact Study Guidelines
- N. Southern Windsor County Transportation Project Priorities (Completed February 2014 for FY2015 Project Prioritization and Town Highway Bridge Pre-Candidates)

All of these Appendices are adopted as part of this Regional Transportation Plan.

# INTRODUCTION

This Plan represents *Volume 2 of the Southern Windsor County Regional Plan* (also known as the Regional Transportation Plan, RTP) serves as the transportation element pursuant to 24 V.S.A., Chapter 117 §4348a(a)(4). It also represents a long-range transportation plan to guide transportation decision-making in support of the Region's Transportation Planning Initiative pursuant to 19 V.S.A., Chapter 1 §101. It documents a vision for transportation and serves as the basis for determining future transportation investments that are important for the Region. The Plan outlines specific steps that can be taken to improve the regional transportation network and provide for future transportation needs. The Plan addresses all modes of travel in order to provide for a safe, convenient, economic and energy efficient transportation system that respects the integrity of the natural environment and promotes a mutually supportive, balanced and integrated multi-modal network [24 V.S.A. §4302(c)(4)].

The RTP is intended to be used for the following purposes:

1. To serve as the transportation element of the Regional Plan;
2. To provide a wealth of information regarding the condition of the existing transportation system in the Region;
3. To provide a means to express the Region's transportation planning concerns and priorities at the State and local levels;
4. To guide public investment in transportation infrastructure;
5. To be consistent with state planning goals (24 V.S.A., Chapter 117 §4302);
6. To implement the Transportation Planning Initiative and fulfill the duties of regional planning commissions in accordance with 19 V.S.A., Chapter 1 §101(b); and,
7. To serve as a basis for evaluating transportation programs and projects that impact the Region.

This document is intended to guide the Southern Windsor County Regional Planning Commission (RPC) in evaluating public and private actions affecting the Region's transportation system and to serve as the foundation for the RPC's annual transportation work program. In 1992, the RPC entered into a partnership with the Vermont Agency of Transportation (VTTrans), entitled the Transportation Planning Initiative (TPI). The TPI seeks to decentralize transportation planning and encourage participation at the local level in setting transportation investment priorities. This Plan was developed based on the TPI process, and to conform to the general intent of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and subsequent reauthorizations, including Moving Ahead for Progress in the 21st Century (MAP-21).

The RTP is generally updated every five years or sooner in order to reflect the changing conditions of the transportation system and the changing demands of the Region.

## SOUTHERN WINDSOR COUNTY TRANSPORTATION ADVISORY COMMITTEE

The RPC established the Southern Windsor County Transportation Advisory Committee (TAC) to advise the RPC on regional transportation issues. Representation on the TAC consists of one representative from each community, an ex-officio representative of the Agency of Transportation and provision for four "at-large" members. The primary mission of the TAC is to develop and update the RTP and guide investments in the transportation network, as approved by the RPC.

## PLAN ADOPTION PROCESS

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The RTP was first developed and adopted by the RPC in 1995 and updated previously in 2005 and 2009. It was updated again and adopted by a vote of the RPC on November 18, 2014 following public hearings and a formal recommendation by the TAC. The Plan becomes effective on December 23, 2014.

## REQUIRED PLAN ELEMENTS

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This Plan was adopted as the transportation element of the Southern Windsor County Regional Plan pursuant to 24 V.S.A. §§4348 and 4348(a), including the following elements:

1. Inventory of existing, multi-modal transportation facilities are shown or summarized on the maps, tables and figures, and are described in the text found throughout the text of this document, including Appendices, Technical Bulletins and supporting plans that are adopted by reference.
2. Prospective transportation facilities:
  - a. A primary goal of this Plan is to prioritize maintenance of the existing transportation system over the construction of new network capacity, since the Region is not experiencing significant growth. New roads or new roadway capacity is generally not needed – except where strategically needed to address economic development goals or reduce congestion at key locations discussed in this Plan and the accompanying *North Springfield Truck Study*, *VT Route 103 Corridor Management Plan* and ski corridor planning efforts.
  - b. Expansions of existing facilities, such as additional park-and-ride lot capacity, are also addressed in this Plan, including Appendices, Technical Bulletins and supporting plans that are adopted by reference.
3. Recommendations to meet future needs are primarily addressed in two categories in this Plan:
  - a. A prioritized list of programmed projects is developed by the TAC and approved by the RPC Board annually. The most recent prioritized list is included as Appendix N, but is updated annually. The costs and methods of financing are addressed under VTTrans most recent annual Transportation Program.
  - b. Additional recommended needs are also identified in this Plan, but they are at such a stage in the project development process that they warrant further analysis at this time.

## PUBLIC PARTICIPATION PROCESS

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The RPC sought public participation in the 2014 update of the Regional Plan. In updating the RTP (Volume 2 of 2), the RPC began working with the TAC in 2012 to identify potential project needs and projects along the major travel corridors in the region. Outreach to road foremen, town selectboards and village trustees, members of the public and other entities started in January 2013 – primarily using the map created by the TAC as a starting point. The following groups and individuals participated in development or review of sections or all of the Regional Transportation:

- Southern Windsor County (SWC) Transportation Advisory Committee (TAC)
- SWC Town Road Foremen
- SWC Town Selectboards and Village Trustees
- Springfield Airport Commission
- Springfield Hospital Community Health Team
- Mt Ascutney Hospital Prevention Partnership
- Southern Windsor and Windham County Elders and Persons with Disabilities (E&D) Committee
- Connecticut River Transit
- Vermont Agency of Transportation – Main Office and District Maintenance Offices

Outreach methods included:

- Being on the agenda for discussion at scheduled meetings of groups (eg Selectboard meetings, Elders and Persons with Disabilities Committee meeting)
- Soliciting input from individuals in person, by phone or by email (eg Road Foremen, Chambers of Commerce)
- On-line needs mapping exercise & coordination with VTrans
- Draft documents posted for public review on SWCRPC website ([www.swcrpc.org](http://www.swcrpc.org))
- Coordination with the East Central Vermont Sustainability Consortium transportation planning effort
- Public Hearings on October 21, 2014 and November 18, 2014

Work completed by the East Central Vermont Sustainability Consortium, which includes Southern Windsor County Regional Planning Commission and the neighboring Two Rivers-Ottawaquechee Regional Commission, informs this plan – particularly the *Regional Traffic Impact Study Guidelines* and *East Central Vermont Housing and Transportation Affordability Technical Bulletin*.



# CHAPTER I – GOALS AND POLICIES

The following are the major goals and policies related to transportation for the Southern Windsor County Regional Planning Commission. All terms are explained more fully within the remaining text of the Regional Transportation Plan.

**GOALS:** Broad statements of what the Region ultimately wants to achieve.

**POLICIES:** Agreed-upon courses of action to achieve the goals. Policies contain the standards that shall guide the organization's development review and project development procedures.

**RECOMMENDATIONS/ NEEDS:** Specific projects or work program activities that are identified in order to implement the stated goals and policies. These are identified within the transportation network chapter.

## I.1. GOALS

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The southern Windsor County regional transportation system will:

1. Prioritize maintenance of the existing transportation system over the construction of new roadway network capacity.
2. Support a diverse economy and high quality of life for all residents.
3. Provide for the safe, secure, convenient, economic, and energy efficient movement of people, goods and services.
4. Address the mobility needs of all residents.
5. Offer diverse travel choices throughout the Region with an integrated multi-modal transportation system that encourages less travel by single-occupant vehicles and a reduction the consumption of fossil fuels.
6. Strive to provide transportation infrastructures that are resilient to changing weather patterns and that efficiently and safely handle traffic during natural hazard events and other emergency situations.
7. Respect the integrity of the natural environment, as well as historic, scenic and cultural resources.
8. Provide the infrastructure to support traditional settlement patterns of compact villages and downtowns separated by rural countryside.
9. Implement a transportation planning process that is responsive to local, regional and state needs, and seeks to engage the public in the decision making process.
10. Promote a funding strategy that seeks to maximize the use of all available resources to ensure adequate funding to address the Region's and towns' priority needs of the existing and future transportation system.
11. Promote sound land use planning that minimizes the need to expand the existing highway infrastructure, and maximizes transportation system efficiency and safety.

## I.2. POLICIES

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1. Maintenance of the existing highway system is our priority over new roadway construction or adding capacity. New state highway capacity shall not be constructed except as needed to improve safety, address capacity problems identified in this Plan or as warranted, or to facilitate local or regional economic development strategies.
2. Keep existing rights-of-way, including but not limited to class 4 roads and legal trails, for future use.

3. Promote an asset management approach to determine funding priorities.
4. Ensure the safety and security of users of highway, transit, bicycle, pedestrian, aviation, rail and freight systems. Safety shall be a priority criterion for the regional and state project development and prioritization processes.
5. The transportation system shall support local and regional economic development plans and strategies, as described in the most current Comprehensive Economic Development Strategy, North Springfield Truck Study, Route 103 Corridor Study and other relevant documents.
6. Incorporate “context sensitive design” principles in all aspects of transportation planning and project development activities in order to improve stewardship of environmental, cultural, historic and scenic resources.
7. Preservation of covered bridges and other historic structures shall be prioritized over replacement in order to maintain our Region’s history.
8. *Vermont State Design Standards* as further refined or clarified in the future land use category transportation descriptions shall apply to all projects and development proposals.
9. Roadway design speeds shall conform to future land use transportation standards in order to be consistent with the desired and appropriate speed of travel in all locations, and consistent with promoting traffic calming in villages and in residential neighborhoods.
10. New transportation construction, reconstruction or replacement projects shall be built according to standards that account for changing weather patterns and more severe flooding events:
  - a) The current *Vermont Town Highway Codes and Standards* shall be the minimum standard for achieving basic resiliency; however, additional measures may be required due to site conditions and flooding history.
  - b) Relocation of roads and bridges may be preferable in order to mitigate risk of future flooding hazards.
  - c) Projects shall be designed to conform with phase 2 stream geomorphic assessments and recommended river corridor protections (formerly known as Fluvial Erosion Hazard FEH areas) where applicable.
11. Maintenance of the existing transportation system shall minimize water pollution, in accordance with the current *Vermont Town Highway Codes and Standards*, State stormwater rules and other best management practices.
12. All projects shall seek to incorporate complete streets principals in accordance with the future land use category transportation requirement descriptions.
13. All projects that require Section 1111 (Access and Work within the Right-of-Way) permits shall meet VTrans *B-71 Standards for Residential and Commercial Drives* and the category design standards in the *Access Management Program Guidelines*. (Where these standards differ, the more restrictive shall apply.)
14. The SWCRPC shall coordinate with VTrans and municipalities on all applicable Section 1111 application reviews in order to promote consistency with local land use permit application procedures or conditions.
15. All developments shall meet sound access management principals in order to prevent or minimize strip commercial development, including:
  - a) One access per lot; explore all alternatives before creating new sole access
  - b) Commercial and industrial uses shall incorporate shared accesses, frontage roads, shared parking in order to avoid or mitigate strip development patterns. Right-of-way for future connections shall be required for future connections where compatible adjacent land uses or allowable uses under local zoning bylaws exist or are possible.
  - c) Safe and clear site circulation
  - d) Provide continuity and safety of pedestrian access and circulation.

- e) Adequate loading and unloading areas shall be provided, minimizing conflicts with other motor vehicles
  - f) Building orientation and location of parking to the building shall be as specified under the future land use transportation category descriptions
  - g) Minimize conflicts/Adequate throat length shall be provided
16. Substantial improvements (i.e. an investment of more than 50% of a building's market value) to existing non-residential structures in strip commercial areas shall make site improvements in order to meet the above standards.
  17. Development shall conform to Regional future land use categories and the corresponding transportation standards.
  18. Developments shall evaluate and mitigate transportation impacts in accordance with the *Regional Traffic Impact Study Guidelines*, including, but not limited to, evaluating existing conditions, cumulative impacts, analysis of impacts along the broader highway corridor, and mitigation required for negative impacts. Transportation demand management mitigation options are preferred over expanding highway capacity.
  19. Developments located outside of villages and downtowns and involve either the creation of 20 or more lots, and/or with 50 or more employees must provide mitigation, when warranted, that supports non-single occupant vehicle travel (i.e. contributions for transit services, or other TDM strategies per the *Regional Traffic Impact Study Guidelines*,).
  20. Developments along the ski corridor shall address existing ski country corridor plans in accordance with the *Regional Traffic Impact Study Guidelines*.
  21. The transportation system shall promote energy efficiency and driving less through the following initiatives:
    - a) Invest in bicycling and walking facilities (sidewalks, crosswalks, bus stops, bike lanes, bike racks) within villages and downtowns, and invest in bicycle and walking facilities that connect neighborhoods and commercial growth centers.
    - b) Continue investment in public transportation and rideshare programs to reduce the region's dependency on single-occupancy vehicle trips.
    - c) Support investments in park and ride lot improvements as identified in the Regional Park and Ride Needs Analysis.
    - d) Support transportation facility design enhancements that better accommodate bicycling, walking and transit services on the region's existing roads and bridges.
    - e) Require large-scale private land use development to invest in transportation infrastructure and services that promote bicycling, walking and transit or provide the necessary right-of-way to allow public investment in those facilities.
  22. All park and ride lot projects shall provide adequate bus circulation.
  23. Promote a robust public transportation system for the Region by promoting or supporting:
    - a) Funding to support public transportation strategic planning;
    - b) Sustainable funding for all services that meet or exceed State performance standards as well as for those services that are necessary to provide adequate mobility for all residents, including low-income individuals, elders, persons with disabilities, and other transit-dependent residents;
    - c) The continuation of existing transportation service to Boston Logan Airport and establishing new transportation service that connects to other airports (Manchester, Bradley, Burlington and Albany).
    - d) Increased capital funding in order to shift to more fuel efficient transit buses.
  24. Prioritize bicycle and pedestrian projects that:
    - a) Further the bicycle and pedestrian implementation strategies in this Plan;
    - b) Bring facilities into compliance with ADA Accessibility Guidelines (ADAAG); and

- c) Make connections between neighborhoods and destinations, such as schools, recreation facilities and villages.
  - d) Further the creation of Complete Streets.
25. Improve railroad facilities and services for moving people and goods, including:
- a) Maximize the use of rail for freight shipments as a means to improve efficiency and reduce truck traffic.
  - b) Maximize the use of the intermodal facilities that serve the Region (e.g. Bellows Falls).
  - c) Invest in continued railroad track upgrades in order to improve speeds along the GMRR and NECR.
26. Improve aviation facilities and services for moving people and goods, including:
- a. Support investments to the Hartness State Airport that enhance and expand utilization of this facility.
  - b. Support efforts by VTrans and the Springfield Airport Commission to improve the utilization of Hartness State Airport.
  - c. Support efforts by VTrans and the Springfield Airport Commission to improve the utilization of Hartness State Airport.
  - d. Support continued investments to the Hartness State Airport that enhance and expand utilization of this facility.
27. VTrans and the SWCRPC shall prioritize safety improvement projects that address identified crash problem areas.
28. Remove unnecessary streetlights and support LED retrofits for all existing streetlights in the Region.
29. Interstate interchange areas are subject to the following standards:
- a) Retail services shall be limited to visitor/traveler services only. All other retail and commercial services shall be directed to downtowns and compact villages.
  - b) New development shall not degrade the interchange function.
  - c) All new developments should use interior roads to limit the number of curb cuts on roads.
  - d) New and modified development shall not be carried out as “strip development”.
  - e) Proposed developments adjacent to the interchanges should preserve the aesthetic nature and open space that typifies Vermont as discussed in both the SWCRPC’s *Interstate Exits of the Region: Study and Policies* and the *Vermont Interstate Interchange Planning and Development Design Guidelines*.
  - f) The two-part Quechee Test will be used to determine if any project in the interchange areas will result in undue adverse impacts to the aesthetics.
    - 1) Will the proposed project be in harmony with its surroundings or, in other words, whether it will “fit” the context within which it will be located? This evaluation is based on the following factors:
      - i. Nature of the project's surroundings;
      - ii. Compatibility of the project's design with those surroundings;
      - iii. Suitability for the project's context of the colors and materials selected for the project;
      - iv. Locations from which the project can be viewed; and
      - v. Potential impact of the project on open space.
    - 2) If the project has adverse effect based on the above, then the following criteria will be used to determine if those adverse effects are undue:
      - i. Does the Project violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area?

- ii. Does the Project offend the sensibilities of the average person? Is it offensive or shocking because it is out of character with its surroundings or significantly diminishes the scenic qualities of the area?
- iii. Has the Applicant failed to take generally available mitigating steps which a reasonable person would take to improve the harmony of the Project with its surroundings?

30. The RPC shall support the principles of the Scenic Byway Program.

## CHAPTER 2 – REGIONAL TRENDS AND ISSUES

This chapter highlights notable trends and relevant considerations that impact the regional transportation network. Chapter 2 is organized into three distinct sections:

- 2.1 Regional Trends;
- 2.2 Certain Federal & State Legislation; and,
- 2.3 A Transportation Network to Support the Future Land Use Plan.

### 2.1. REGIONAL TRENDS

Chapter 2 of the Regional Plan (Volume I) consists of a profile of the Region. See that section for a more detailed description of this Region. The majority of this section draws upon a series of technical bulletins published by SWCRPC between 2011 and 2013 which have been slightly adapted for inclusion as appendices to this document. This section is intended as a short summary of the key themes that emerged from these technical bulletins that provide more detail and analysis to inform this Plan. The following also summarize how each trend relates to the transportation network.

**RURAL WITH SMALL VILLAGES:** Southern Windsor County is largely rural with 93% of the existing land area comprised of a patchwork of forests, farms and open fields<sup>1</sup>. Traditional downtown and village centers are surrounded by a mostly rural countryside. This area has not experienced significant levels of growth in the last seven years; however, recent development activity has largely been small in scale and located in rural areas. These recent trends are contrary to the future land use aspirations as expressed in Volume I of the Regional Plan, which calls for growth to locate in and around the traditional centers. With the exception of downtown Windsor and Springfield, the Region has low population densities and is very auto-dependent for daily travel needs. It is costly to provide public transportation at these low densities. The relative locations of where many residents currently live, work and recreate are generally of such distances that they do not easily facilitate travel by walking or bicycling. (See the Technical Bulletin on Housing and Transportation Affordability for more information on the impacts of the location of housing relative to jobs and services.) This situation limits affordable transportation options for independent travel by children, low income households, the elderly and persons with disabilities, as well as initiatives to reduce single-occupant vehicle travel.

**AGING POPULATION:** Southern Windsor County is comprised of ten towns with a total population of just under 25,000 year-round residents. The Region is aging, albeit at a slow rate over the last decade. According to 2010 Census data<sup>2</sup>, 18.9% of residents (or 4,670 people) are 65 years of age or older; only slightly higher than 18.2% (or 4,567) in 2000. The median age of the Region is 37.2 (2010), an increase of almost 2 years compared to 2000. For more information from Census about the Region see Appendix A.

Public transportation options for the elderly and persons with disabilities are critically important in order to provide adequate access to services and maintain a good quality of life. This is a challenge in such a rural area, but necessary to support successful aging-in-place.

<sup>1</sup> 2006 National Land Cover Dataset from Multi-Resolution Land Characteristics Consortium (MRLC) [http://www.mrlc.gov/nlcd06\\_data.php](http://www.mrlc.gov/nlcd06_data.php)

<sup>2</sup> US Census Bureau <http://factfinder2.census.gov/>

**DECLINING SCHOOL ENROLLMENT:** Recent declines in school enrollment correspond to a decrease in persons of those less than 18 years old from 5,629 in 2000 to 4,813 in 2010<sup>3</sup>. Recent travel-to-school trends include fewer students riding the morning bus and more parent drop-offs, which leads to traffic circulation problems at and near many school facilities. Smart Growth Principles, the Safe Routes to School program and the 2011 Vermont Complete Streets Law<sup>4</sup> are initiatives that, at least in part, seek to encourage or increase traveling to school by walking or bicycling. Recent discussions of school consolidation would lead to longer trip lengths to school.

**TRUCKING IS KEY FOR LOCAL EMPLOYMENT:** Manufacturing, trade, construction, warehousing and natural resource extraction operations are regionally important economic sectors that rely heavily on trucking. Truck volumes on state highways in this area – such as on VT Routes 10, 11, 103 and 106/River Street – are higher than the statewide averages for roads of similar functional classifications<sup>5</sup>. These relatively high truck volumes are due to freight for local businesses as well as shipments that originate and terminate outside of this Region. VT Routes 11 and 103 provide important connections over the Green Mountains with few alternative routes south of Interstate Route 89 (just US Route 4 and Vermont Route 9). The Region is predominantly served by two-lane roadways with constraints in many locations that pose challenges to safe, efficient truck travel. Projections by VTrans suggest significant increases in freight trips which may exacerbate the problems at these constriction points along the network<sup>6</sup>. Many of these locations are identified in the transportation needs listed in Chapter 3. For more information see Chapter 10 in *Volume 1 of the Regional Plan* and the *Comprehensive Economic Development Strategy for East Central Vermont*.

**TOURISM:** Tourism is an important part of the regional economy. Examples of tourism include people visiting the area for hiking, mountain bicycling, skiing, snowmobiling, boating, fishing, visiting museums and covered bridges, Scenic Byway tours, viewing autumn foliage, visiting Windsor's Artisan's Park and similar recreational activities. In order to support tourism, the transportation network needs to be not only oriented for residents, but also for occasional visitors that may need navigational assistance (e.g. directional signage, traveler information services, etc.). Seasonal traffic peaks (e.g. Sunday afternoons during the winter ski season) that exceed the highway capacity for very specific time periods are a significant factor for transportation planning. Since the late 1990s, the SWCRPC has been working with partners on the Ski Corridor Traffic Management Study, in order to mitigate traffic impacts from large developments at Killington and Okemo Mountain Resorts on a variety of corridors including VT Routes 100 and 103 in this Region. These traffic management efforts are included in Act 250 permit conditions. In 2013, Act 250 permits for Timber Creek II in Ludlow and Killington Village Master Plan (Phase I) included provisions to complete a new ski Corridor Management Plan in order to better manage traffic in the future. For more information see the *Ski Corridor Technical Bulletin* (Appendix B) for more information.

**LONG COMMUTES:** Historically, this area was a regional manufacturing center, notably in Springfield and Windsor. While manufacturing remains important, there were significant job losses in that economic sector beginning in the 1970s. Today, many residents now commute to jobs in locations

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<sup>3</sup> According to the US Census Bureau <http://factfinder2.census.gov/> For more information from Census about the Region see Appendix A.

<sup>4</sup> For more information see the *Complete Streets Technical Bulletin* (Appendix L).

<sup>5</sup> Often 11% or more of traffic carried on these routes are trucks. For specifics see the VTrans 2013 Automatic Vehicle Classification Report at <http://vtransplanning.vermont.gov/research/traffic/publications>

<sup>6</sup> Increases in truck traffic of more than 40% between 2007 and 2035 is expected on state highways such as VT-11 and VT-100 in the Southern Windsor County Region – according to the Vermont Statewide Freight Plan. May 2012. Revised August 2013. Prepared for VTrans by Cambridge Systematics <http://vtransplanning.vermont.gov/reports> . See Appendix C for more information.

outside of the Region, including but not limited to Lebanon, Hanover, Claremont, Rutland and Rockingham. Travel time to work has increased from 17 to 23 minutes between 1990 and 2010. Commuting trips are primarily done in personal motor vehicles, with nearly 78% of work trips made in single-occupant vehicles and 11% by carpooling. While Connecticut River Transit's commuter routes are very successful, only about 1% of work trips were made by public transportation. Park and ride lots are essential for supporting public transportation and carpooling, and the three lots along I-91 are at or near capacity. For more information see the *Regional Travel Patterns Technical Bulletin* (Appendix D), *Regional Park and Ride Count Report* (Appendix G), and *Regional Park and Ride Needs Analysis* (Appendix H).

**TRAVEL FOR GOODS AND SERVICES:** The larger towns in the Region have supermarkets, pharmacies, medical facilities and a variety of other goods and services available to residents. However, many residents travel outside of the Region for medical or shopping trips. Claremont is a regional hub for shopping. Lebanon is a common destination for medical care, especially specialized medical services at Dartmouth-Hitchcock Medical Center. Many residents also travel to Lebanon, Rutland or Keene for shopping for clothing, shoes and other goods, and services.

**HOUSING AND TRANSPORTATION AFFORDABILITY:** The availability of safe and decent affordable housing has long been a priority for this Region. As noted above, this area is not experiencing significant levels of growth. Recent residential housing is generally developed at very low densities and located in the rural areas. In a recent analysis<sup>7</sup>, housing costs exceed the 30% affordability target in most of our Region, but a few Census block group areas in Windsor, Weathersfield, Springfield and Chester fall below this affordability target. The analysis shows that the entire Region exceeds the 15% affordability target for transportation costs. In fact, transportation costs in this rural area are nearly as high as housing costs. The recent development trends generally worsen this transportation affordability problem. In order to address this situation and become more sustainable, the following are needed:

- More cost-effective transportation options (e.g. public transportation, highly fuel efficient vehicles, or other ways to drive less);
- Focus civic and retail uses and jobs to locate in and around community centers at higher, mixed use densities in order to better support daily travel by walking, bicycling and public transportation;
- A better jobs/housing location balance.

For more information see the *East Central Vermont Housing and Transportation Affordability Technical Bulletin* (Appendix E)

**AGING INFRASTRUCTURE:** The state highway network in the Region has not changed appreciably since 1970, and a substantial number of bridges are approaching the end of their useful life. Currently, many of the roads and bridges are aging and require investment. Maintaining our roads and bridges in safe and passable condition is essential for the safety of residents and health of the economy of the Region. Maintenance of the existing highway infrastructure is prioritized over the construction of new roads.

**FUNDING:** Funding levels have generally not allowed the State or towns to keep up with routine preventative maintenance. The status of certain key funding sources is summarized below:

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<sup>7</sup> Using the Location Affordability Index developed by the U.S. Departments of Transportation and Housing and Urban Development. For more information see the *East Central Vermont Housing and Transportation Affordability Technical Bulletin* (Appendix E)



- The current federal gasoline tax rate of 18.4-cents per gallon has not increased since 1993, and as a result Federal Highway Trust Fund (HTF) revenues are not keeping up with inflation<sup>8</sup>. The Fund may run out of money in 2014. While solutions to the unsustainability of this fund are being discussed, no clear answer has yet been enacted.
- The state gas tax accounts for over a quarter of state transportation revenues, and it continues to decline as residents drive less and shift to more fuel efficient vehicles.
- Local property taxes are the primary funding source for the management of municipal transportation systems. Towns often tend to level-fund their local road budgets as there is concern that local property taxes are as high as they can go. In general, local funding levels are not enough to keep up with needs for routine maintenance and infrastructure improvements. Town governments rely on grants and other funding mechanisms to help address these needs.

Recent efforts by VTrans, such as the Project Initiation and Innovation Team (PIIT) and Accelerated Bridge Program, are helping to address bridge needs more efficiently and effectively. Towns are taking much more interest in developing capital improvement plans to strategically address local road and bridge needs. While these improvements help, there simply is not enough money to address all of the needs, which highlights the need for an asset management or similar approach to target the expenditure of limited funds where they will have the greatest impact.

## 2.2. CERTAIN FEDERAL & STATE LEGISLATION

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The purpose of this section is to summarize how certain federal and state transportation legislation and initiatives influence the transportation decision making for the Region.

**SAFETY & SECURITY:** A primary objective of this Plan is to plan, design, build and maintain a transportation system that maximizes the safety of the traveling public. Safety shall be a priority criterion for the regional and state project development and prioritization processes. In 2012, Vermont established the Vermont Highway Safety Alliance (VHSA) as a public/private partnership to lead the effort to reduce crashes on the highways. Vermont’s Strategic Highway Safety Plan (SHSP) seeks to reduce major crashes, and is intended to follow the objectives of FHWA’s *Toward Zero Deaths*, a national effort to improve highway safety. Annually, the SWCRPC works with VTrans and partners to improve safety through a variety of programs, including the Highway Safety Improvement Program (HSIP), High Risk Rural Roads (HRRR) program, Road Safety Audit Reports (RSAR), and other efforts, such as regional safety forums. Security is also an important consideration for transportation planning, especially with consideration to airports, public transit and freight shipments.

**ENVIRONMENTAL STEWARDSHIP:** A State Planning Goal involves providing a transportation system that respects the integrity of the natural environment<sup>9</sup>. To further this goal, the regional transportation system is to be designed, built, operated and managed in an environmentally responsible manner<sup>10</sup>. As such, all transportation-related projects will be evaluated in order to improve water quality, and to avoid or mitigate negative impacts on sensitive ecological features, including:

- Wetlands and vernal pools;
- Concentrated black bear feeding habitat (mast stands);
- Rare, threatened, and endangered species habitat;
- Significant natural communities; riparian areas and surface waters;

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<sup>8</sup> Vermont Transportation Funding Options Section 40 Final Report, January 8, 2013 (per Act 153, 2012) & Transportation Funding and Financing Overview (ASSHTO, 2004): [http://www.transportation-finance.org/funding\\_financing/funding/](http://www.transportation-finance.org/funding_financing/funding/)

<sup>9</sup> 24 V.S.A. §4302(c)(4)

<sup>10</sup> VTrans Fact Book 2014

- Prime agricultural soils;
- Slopes greater than 25%;
- Ledge, talus, and cliff habitat;
- Land in excess of 2,500' in elevation; and
- Habitat as identified by the Vermont Department of Fish and Wildlife as either significant wildlife habitat or necessary wildlife habitat in accordance with 10 V.S.A. § 6086(a)(8)(A).

**RESILIENT TRANSPORTATION SYSTEM:** Climate projections for the next 35 years indicate more intense precipitation, more frequent flash flooding, and increased speed and volume of water in rivers and streams during flood events. If projections hold true, our transportation system will be significantly impacted. Most of our major roadways closely parallel streams and rivers, many culverts and bridges are sized too small, many of the rivers and streams in this Region are susceptible to fluvial erosion hazards, and many of our buildings and infrastructure are built alongside of these same roadways that are in harm's way.

In August 2011, Tropical Storm Irene caused significant, wide spread erosion-related damage to our transportation system (i.e. up to \$250 million in damages to state highways, 450 sections of local roads damaged, 25 bridges damages, and countless culverts damaged or destroyed). In July 2013, flash flooding caused erosion in numerous locations surrounding Mount Ascutney. All transportation planning and projects need to be evaluated based on river geomorphology and reasonable efforts taken to mitigate against the likely threat of flooding and erosion hazards. Steps that can be taken to improve resilience, include:

- Identify flood hazard and fluvial erosion hazard areas based on river corridor maps provided by the Secretary of the Vermont Agency of Natural Resources (ANR);
- Avoid (or minimize) further encroachment of transportation infrastructure into river corridors (i.e. fluvial erosion hazard areas);
- New road crossings and recreational paths may be allowed in river corridors, but they must not exacerbate flooding and fluvial erosion;
- Build and maintain local roadways consistent with the most recent model local highway codes and standards;
- Adapt or relocate roadways to be more resilient to flood and erosion damage, and consider strategic disinvestment of roadways as appropriate;
- Size bridges and culverts per VTrans Hydraulics Manual and VT ANR Stream Alteration Rules;
- Ensure that adequate storm water provisions are made for new developments in order to avoid or mitigate flood or erosion risk to roadways or other public infrastructure;
- Protect and restore river corridors, floodplains, wetlands, and upland forested areas that function to mitigate flooding and fluvial erosion risks;
- Develop specific strategies to protect the transportation infrastructure identified to be at risk from flood and fluvial erosion hazard areas, and to mitigate risks to public safety and critical infrastructure.

**A BETTER BALANCED AND INTEGRATED TRANSPORTATION SYSTEM:** A State Planning Goal seeks a mutually supportive, balanced and integrated transportation system<sup>11</sup>. At this point, our system heavily favors travel by automobile, at the expense of other modes that are more energy efficient and better provide for mobility for all residents. In order to support this, a variety of things need to happen, such as investments in sidewalks in community centers, job growth in our community centers, land use patterns and densities that make transit more efficient and cost-effective, and a better jobs/housing location balance.

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<sup>11</sup> 24 V.S.A. §4302(c)(4)(A)

## 2.3. A TRANSPORTATION NETWORK TO SUPPORT THE FUTURE LAND USE PLAN

Transportation and land use are inextricably linked, each effecting how the other functions. This section will focus on the interrelationship between land use and transportation, and the role transportation has in facilitating the desired future land use patterns for southern Windsor County.

Our existing transportation system is heavily focused on travel by the automobile. (See the Technical Bulletin on the history of our Region's transportation system.) While that is to be expected in a rural area, an overly auto-oriented transportation system is not ideal as discussed in the East Central Vermont Transportation Plan<sup>12</sup>. To move toward a more sustainable future, we need a transportation system that increases transportation options, reduces vehicle miles traveled, and promotes more efficiency. This can only be done with a corresponding change in land use based on our new understanding of land use and transportation connections.

### FUTURE LAND USES

Desired future land use for southern Windsor County is described in more detail in Chapter 3 of *Volume 1 of the Regional Plan*. In general, the desired future land uses are intended to further the State Planning Goals of maintaining the historic settlement patterns of compact community centers to be surrounded by a rural working landscape, and providing a safe, convenient, economic and energy efficient multi-modal transportation system that respects the integrity of the natural environment.

This section summarizes desired future land use conditions within three generalized category groupings. The bulleted future land use categories correspond to the descriptions in Chapter 3 in *Volume 1 of the Regional Plan* and the Future Land Use Map. The following pages describe the desired future transportation system conditions in order to support the desired future land use conditions and to further the State Planning Goals.

**COMPACT COMMUNITY CENTERS:** Traditional settlement areas are intended to be the location of the most intensive development, which include a mix of retail, civic and residential uses, which consist of the specific categories listed below. The transportation system in these areas, not only provides mobility and access to adjacent properties, but largely forms the critically important public space within the core areas of our communities. Therefore, a pedestrian-oriented streetscape is desired in these areas with the accompanying sidewalks, bicycle lanes and transit stops.

- Regional Centers
- Town Centers
- Village Centers and Hamlets
- Medium-Density Neighborhoods

**OTHER AREAS OF CONCENTRATED DEVELOPMENT:** These areas are intended to allow for more intensive development for the following land uses. Characteristics for the desired transportation facilities differ for each of the following specific uses. Industrial sites should provide safe, easy access for workers and freight (rail and truck). Special efforts to protect water quality are desired in the Lakes District, as determined by the Lakes Association and Town of Ludlow. Transportation issues are complex for resort centers. Seasonally variable traffic conditions are necessary in order to sustain the ski industry. However, ongoing ski corridor planning initiatives are needed to adequately measure

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<sup>12</sup> East Central Vermont Transportation Plan [http://ecvermont.org/wp/wp-content/uploads/2014/01/Trans-Plan-Final\\_11-13-13.pdf](http://ecvermont.org/wp/wp-content/uploads/2014/01/Trans-Plan-Final_11-13-13.pdf)

impacts and identify strategies to safely and efficiently accommodate the seasonal fluctuations of traffic (i.e. Sunday PM peak hour)<sup>13</sup>.

- Resort Centers and Recreation Areas
- Industrial Sites

**RURAL COUNTRYSIDE:** These areas are intended to maintain low- to very low-densities, encourage working landscape activities and residential uses, and to protect certain important natural resources areas. Transportation infrastructure in these areas is generally limited to rural two-lane roads. Primary considerations for these roads include safely accommodating all users and maintaining rural character. These areas include the following categories:

- Rural Areas
- Resources Areas

**FUTURE TRANSPORTATION-LAND USE NETWORK:** The following section is intended to describe the desired characteristics of the transportation system and future land use categories. VTrans *State Design Standards*, the most recently adopted town road and bridge standards, and other applicable standards will apply to all applicable roadway work. However, the following desired characteristics seek to clarify or modify the above standards in order to further the future land use plan, State Planning Goals and the intent of the Complete Streets Law. Flexibility (i.e. “context sensitive design”) will be needed in implementing the following desired transportation system characteristics based upon the scale and function of each individual core area, and constraints, such as right-of-way limitations, historic structures, flood resilience strategies and other constraints.

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## REGIONAL AND TOWN CENTERS

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*Springfield and Windsor Main Streets*

Regional and Town Centers were combined here since the desired transportation characteristics are very similar.

Generalized Locations	Core areas of Ludlow, Springfield, Windsor, Chester-Chester Depot, Cavendish, Proctorsville and North Springfield. Ascutney is encouraged to grow as a town center.
Primary Roadways	"Main Street" sections include state highways and Class 1 sections of VT Routes 11, 103, 106 and 131 and US Route 5; Functional Classification: varies from Rural Principal

<sup>13</sup> For more information see the *Ski Corridor Technical Bulletin* (Appendix B).

	Arterial to Major Collector
Traffic Volume of Primary Roadways	<ul style="list-style-type: none"> <li>- Moderate to High traffic volumes (AADTs of 3,000 to 10,000+).</li> <li>- Relatively high truck volumes.</li> <li>- Can experience commuter peak hour congestion.</li> <li>- Ski traffic congestion conditions along the VT 103 corridor.</li> </ul>
Desired Future Land Use Characteristics	<ul style="list-style-type: none"> <li>- Larger traditional settlement areas in the Region that have a range of governmental services and institutions including hospitals, schools, libraries, and fire and police protection.</li> <li>- Served by a public water and sewer system. A mix of land uses is desired, including residential, commercial, and civic, at the highest densities. Multi-story, vertically mixed use buildings typical of a downtown are desired.</li> </ul>
Desired Attributes for "Main Streets"	<ul style="list-style-type: none"> <li>- Typical urban transportation facilities that accommodate commuters, tourists, industry, commerce, pedestrians, bicyclists, and public transit providers.</li> <li>- Pedestrian-oriented streetscapes with wide sidewalks, on-street parking, bicycle lanes, bus stops.</li> </ul>
	<ul style="list-style-type: none"> <li>- Capable of supporting higher traffic volumes.</li> <li>- Support non-motorized travel while providing safe and reliable links to outside markets and resources.</li> <li>- Maintain or achieve desired Regional or Town Center character.</li> </ul>
	<ul style="list-style-type: none"> <li>- Narrow travel lanes to encourage slower driving and improve safety for pedestrians.</li> <li>- Low design speeds (20-30mph).</li> <li>- Intermodal connections encouraged (i.e. bicycle parking, bus stops).</li> <li>- Flexible roadway standards in order to maintain historic and cultural integrity.</li> <li>- Prioritize on-street parking, off-street parking located to the rear of the building.</li> <li>- Pedestrian friendly environment with wide sidewalks, crosswalks, and few curb cuts.</li> <li>- Buildings built close to the sidewalk/street.</li> <li>- Provide bicycle lanes.</li> </ul>
Access Management	<ul style="list-style-type: none"> <li>- Access Category 6. Few curb cuts.</li> <li>- Additional curb cuts should not be encouraged.</li> <li>- Lot access from a side street or from rear of property.</li> </ul>
Other Streets	<p>The above articulates the generalized desirable conditions for the major roads within the future land use areas. Because each community is different, the standards will need to be applied as appropriate for each area. The other streets in these areas should aspire to a lesser degree of these same standards as appropriate for the functional classification of each roadway and the surrounding land area that it serves. For example, small residential streets located in these areas will have similar desired characteristics to the Medium Density Residential category.</p>

## VILLAGE CENTERS AND HAMLETS



*Felchville and Brownsville*

Generalized Locations	Villages of Brownsville, Perkinsville and Felchville, and hamlets of Downer’s Corners, Gassetts, Peasville, Simonsville, South Reading and Weathersfield Bow. Grahamsville is encouraged to grow to become a village center.
Primary Village Roadways	Major streets are mostly State Highways and include VT Routes 44 and 106; Functional Classification: Major Collector
Traffic Volume of Primary Roadways	<ul style="list-style-type: none"> <li>- Low to moderate traffic volumes (AADTs of 500 to 6,000)</li> <li>- Relatively high truck volumes</li> <li>- Ski traffic congestion conditions along the VT 103 corridor</li> </ul>
Desired Future Land Use Characteristics	<ul style="list-style-type: none"> <li>- Traditional settlement areas of medium density residential with civic and limited commercial uses that serve a more localized area.</li> <li>- Many of these areas do not currently have public water or sewer systems.</li> </ul>
Desired Attributes for Primary Village Roadways	<ul style="list-style-type: none"> <li>- Typical village transportation facilities that accommodate a mix of users, including cars, trucks, pedestrians, bicyclists, and public transit providers.</li> <li>- Pedestrian-oriented streetscapes with wide sidewalks, bicycle lanes, bus stops. Where sidewalks are not feasible, widened roadway shoulders can accommodate pedestrians and bicyclists.</li> </ul>
	<ul style="list-style-type: none"> <li>- Capable of supporting moderate traffic volumes.</li> <li>- Support non-motorized travel while providing safe and reliable links to outside markets and resources.</li> <li>- Maintain or achieve desired village character.</li> <li>- Limited financial resources for infrastructure (i.e. public water and sewer systems, sidewalks).</li> </ul>
	<ul style="list-style-type: none"> <li>- Narrow travel lanes to encourage slower driving and improve safety for pedestrians.</li> <li>- Low design speeds (25-35mph).</li> <li>- Modify roadway standards to maintain historic and cultural integrity.</li> <li>- Prioritize on-street parking, off-street parking located to the rear or side of the building.</li> <li>- Pedestrian friendly environment with sidewalks in pedestrian-traveled areas.</li> <li>- Widen shoulders for on-street parking or bicycle lanes.</li> <li>- Buildings built close to the street with short driveways.</li> </ul>

Access Management	<ul style="list-style-type: none"> <li>- Access Category 6. Some curb cuts</li> <li>- While additional curb cuts are not encouraged, this is a preferred location for road access, unless access from a side street is available.</li> </ul>
Other Streets	<p>The above articulates the generalized desirable conditions for the major roads within the future land use areas. Because each community is different, the standards will need to be refined as appropriate for each area. The other streets in these areas should aspire to a lesser degree of these same standards as appropriate for the functional classification of each roadway and the surrounding land area that it serves. For example, small residential streets located in these areas will have similar desired characteristics to the Medium Density Residential category.</p>

### MEDIUM DENSITY NEIGHBORHOODS



*Pleasant Street in Ludlow (Photo by Tom Johnson) and Tyson Road in Felchville*

Generalized Locations	Residential neighborhoods that immediately surrounding regional and town centers (i.e. parts of Chester, Ludlow, Springfield and Windsor).
Applicable Roadways	Smaller residential streets (public or private); Functional Classifications are mostly Local
Traffic volume	<ul style="list-style-type: none"> <li>- Mostly very low traffic volumes (AADTs below 500).</li> <li>- Truck volumes predominately limited to residential deliveries.</li> </ul>
Desired Future Land Use Characteristics	<ul style="list-style-type: none"> <li>- Medium density residential areas surrounding the larger traditional settlement areas.</li> <li>- Limited civic and small-scale commercial uses may be appropriate (primarily on busier Class 2 and 3 roads) as long as they are compatible with the area.</li> </ul>
Desired Attributes for Small Residential	<ul style="list-style-type: none"> <li>- Quiet residential streets that allow access to properties by car, foot and bicycle.</li> <li>- Allows for easy walking access to school bus and/or public transportation services.</li> </ul>
	<ul style="list-style-type: none"> <li>- Sidewalks may be provided.</li> <li>- Pedestrians and bicycles share the roadway.</li> </ul>

Streets	<ul style="list-style-type: none"> <li>- Narrow travel lanes to encourage slower driving and improve safety for pedestrians.</li> <li>- Low design speeds (20-25mph).</li> <li>- Interconnected street network, avoiding cul-de-sacs.</li> <li>- Buildings set close to the street with short driveways and small front yards.</li> <li>- Streetscape to include street trees and sidewalks to create a pleasant pedestrian environment.</li> <li>- New roads (public or private) to be built to adopted town road standards.</li> <li>- New developments to provide logical connections to the street and sidewalk networks.</li> </ul>
Access Management	<ul style="list-style-type: none"> <li>- Subject to local access permits or subdivision/zoning review.</li> <li>- Primary function of local residential street is for access to properties / many curb cuts.</li> </ul>
Other Streets	<p>The above articulates the generalized desirable conditions for small residential streets within this future land use area. Because each community is different, the standards will need to be refined as appropriate for each area. The other streets in these areas should aspire to a lesser or greater degree of these same standards as appropriate for the functional classification of each roadway and the surrounding land area that it serves. For example, busy Class 2 roadways will need to incorporate aspects of the Village Center primary road attributes.</p>

## RURAL AND RESOURCES AREAS



*VT-131 and South Reading Road in Cavendish*

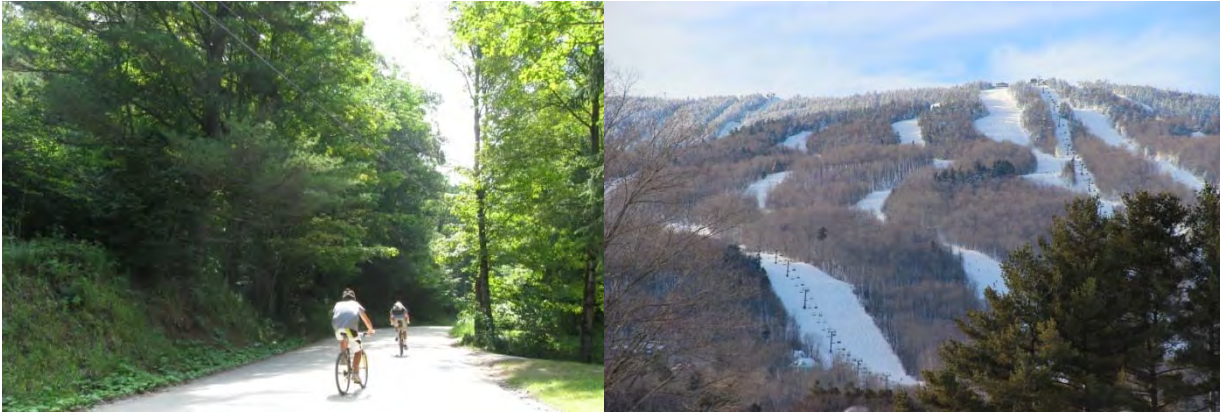
Rural & Resource Future Land Use Areas are combined here because the desired transportation characteristics are similar

	<b>Paved / Major Roads</b>	<b>Unpaved / Minor Roads</b>
Generalized Locations	Rural countryside areas that surround the settlement areas. This is the majority of the Region where there is no discernible concentration of development.	
Applicable Roadways	<ul style="list-style-type: none"> <li>- State and Town Highways.</li> <li>- Functional classifications of Collector or Local.</li> </ul>	<ul style="list-style-type: none"> <li>- Mostly local unpaved roads (Class 3 town highways or private development roads).</li> <li>- Local or no functional classifications.</li> </ul>
Traffic Volume	- Moderately high traffic volumes	- Very low traffic volumes (AADTs often



	<b>Paved / Major Roads</b>	<b>Unpaved / Minor Roads</b>
	(AADTs above 3,000 on state highways) - High to moderate truck volumes.	below 500) - Low truck volumes.
Desired Future Land Use Characteristics	- Rural working landscape (i.e. farms, forestry, earth extraction), low- to very-low density residential uses, conserved or resource areas which should be protected. - Generally no governmental or institutional uses in these areas.	
Desired Attributes of Applicable Roadways	- Maintain rural, scenic two-lane roads. Generally modestly widened shoulders can accommodate bicyclists and more occasional pedestrian activity.	
	- Capable of supporting higher traffic volumes/facilitating mobility. - Minimize impacts on natural resources. - Accommodate working landscape activities.	- Minimize impacts on natural resources. - Accommodate working landscape activities.
	- Variable design speeds (40-50 mph). - Widened shoulders for cyclists. - Maintain rural character. - Avoid steep new roads and driveways over 12% average grade. - Avoid long new roads or driveways.	- Moderate design speeds (35mph / unposted speed limit). - Minimum width for safety and to allow two cars to pass at low speeds. - Avoid long, dead-end roads that serve only a few houses. - Maintain rural character. - Shared roadway for motor vehicles, horses, bicyclists and pedestrians. - New roads (public or private) to be built to adopted town road standards. - Avoid steep new roads and driveways over 12% average grade. - Avoid long new roads or driveways.
Access Management	- Access Category 3 & 4 along state highways; local roads subject to town access permits. - Curb cuts minimized in order to prioritize mobility along the state highways.	- Subject to town access permits. - Subject to A-76 & B-71 Standards. - Curb cuts are appropriate to provide safe access to adjacent properties.
Other Streets	The above articulates the generalized desirable conditions for certain roads within this future land use area. Because each community is different, the standards will need to be refined as appropriate for each area.	

## SPECIAL USE – RESORT AND RECREATION AREAS



*East Lake Road and the Okemo Mountain Ski Trails in Ludlow*

Generalized Locations	Okemo Mountain Resort in Ludlow, Ascutney Mountain Resort in Brownsville (ski resort currently closed) and the Lakes Region in Ludlow. Resorts are an important economic sector
Applicable Roadways	<ul style="list-style-type: none"> <li>- Class 2 or 3 municipal highways</li> <li>- Private roads</li> </ul>
Traffic volume	<ul style="list-style-type: none"> <li>- Variable traffic volumes (AADTs of less than 500 to 2,000).</li> <li>- Seasonal peak traffic during winter ski season, fall foliage or summer lake season.</li> </ul>
Desired Future Land Use Characteristics	<ul style="list-style-type: none"> <li>- Second homes/condominiums</li> <li>- Outdoor recreation facilities and ski resorts with related recreation-related commercial uses.</li> </ul>
Desired Attributes of Transportation Facilities	<ul style="list-style-type: none"> <li>- Roadways to be shared by automobiles, public transit services, pedestrians and bicyclists.</li> <li>- Wayfinding for visitors is an important consideration.</li> <li>- Sidewalks may be warranted within the resort base lodge areas and connecting to resort residential facilities.</li> <li>- Provide pedestrian or bicyclist connections to adjacent community center areas if feasible.</li> </ul>
	<ul style="list-style-type: none"> <li>- Capable of supporting seasonally high traffic volumes</li> <li>- Mitigation for traffic congestion on affected state highway corridors as warranted.</li> <li>- Support public transit services and non-motorized travel.</li> <li>- Steep terrain and scenic river valleys.</li> <li>- Take reasonable efforts to minimize water quality threats from the roads in the Lakes District.</li> </ul>
	<ul style="list-style-type: none"> <li>- Mostly lower design speeds (20-30mph).</li> <li>- New roads (public or private) to be built to adopted town road standards.</li> <li>- Avoid steep new roads and driveways over 12% average grade.</li> <li>- Avoid long new roads or driveways.</li> </ul>
Access Management	<ul style="list-style-type: none"> <li>- Mostly subject to municipal access permits or subdivision review.</li> <li>- Curb cuts are generally suitable for low volume, low speed local roads.</li> <li>- Subject to B-71 Standards.</li> </ul>

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## SPECIAL USE – INDUSTRIAL SITES

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Generalized Locations	Dean Industrial Park in Ludlow, North Springfield Industrial Park, Windsor Industrial Park and other industrial sites shown on the Future Land Use Map
Roadways	<ul style="list-style-type: none"> <li>- Mostly paved local roads (Class 2 or 3) with access off state highways.</li> <li>- Variety of functional classifications.</li> </ul>
Traffic volume	<ul style="list-style-type: none"> <li>- Low to moderate traffic volumes (AADT for the North Springfield Industrial park is 1,000).</li> <li>- High volume of trucks.</li> </ul>
Desired Future Land Use Characteristics	<ul style="list-style-type: none"> <li>- Locations where industrial and related commercial uses are encouraged to provide local jobs and increase the tax base.</li> <li>- Generally served by municipal water and sewer.</li> </ul>
Desired Attributes of Transportation Facilities	<ul style="list-style-type: none"> <li>- Providing adequate access for cars and trucks is the primary consideration.</li> <li>- Provide adequate wayfinding information for freight, deliveries and visitors.</li> <li>- Improve access for public transportation services.</li> </ul>
Access Management	<ul style="list-style-type: none"> <li>- Mostly subject to local access permits.</li> <li>- Subject to A-76 and B-71 Standards.</li> <li>- Intersections and curb cuts to accommodate large trucks.</li> </ul>
Special Considerations	<ul style="list-style-type: none"> <li>- Minimize negative impacts on adjacent non-industrial land uses. Important economic driver.</li> </ul>
Desired Road Characteristics	<ul style="list-style-type: none"> <li>- Take advantage of rail freight, where available. Growth is encouraged but providing adequate access for cars and trucks between sites and the major transportation network is a primary concern. Take steps to minimize impacts or provide alternative access where primary access passes through residential areas.</li> </ul>

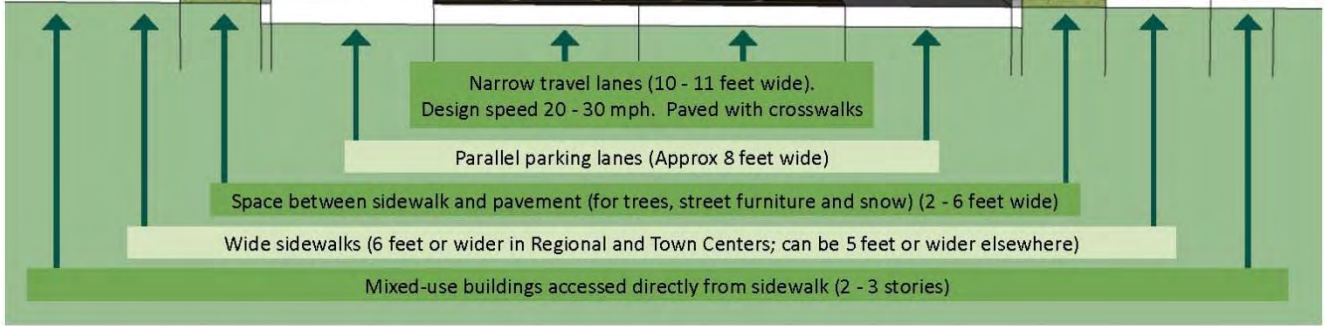
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## ROAD CROSS SECTIONS

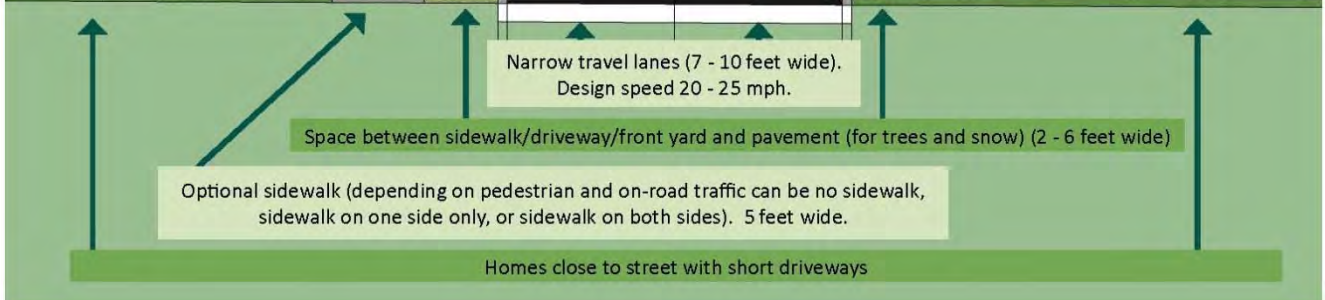
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The following cross sections are provided only to illustrate the concepts described in this section. Application of these concepts will differ based on the unique conditions for each road and location, and the functional purpose of the roadway.

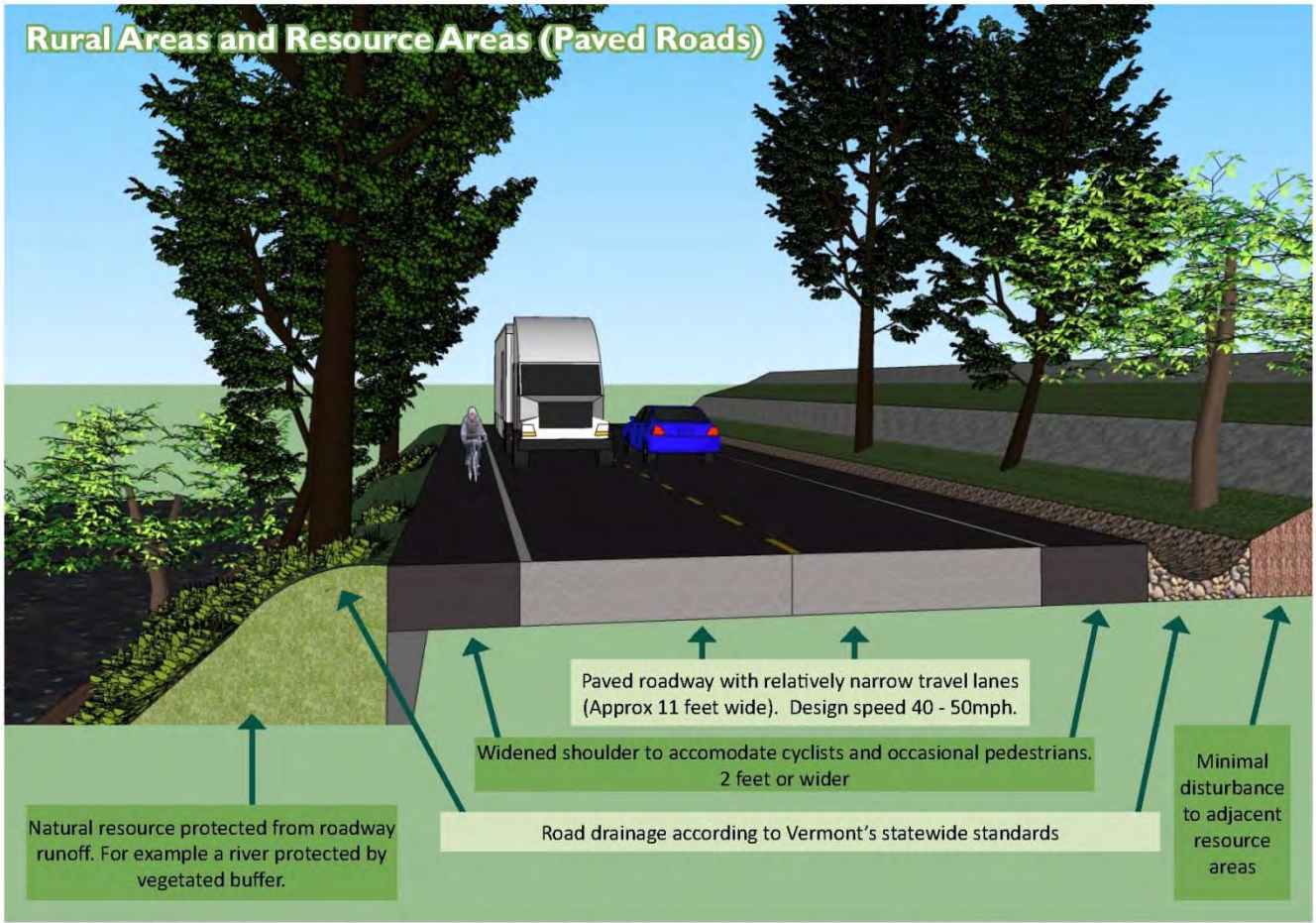
## Regional Centers and Town Centers (Major Villages)



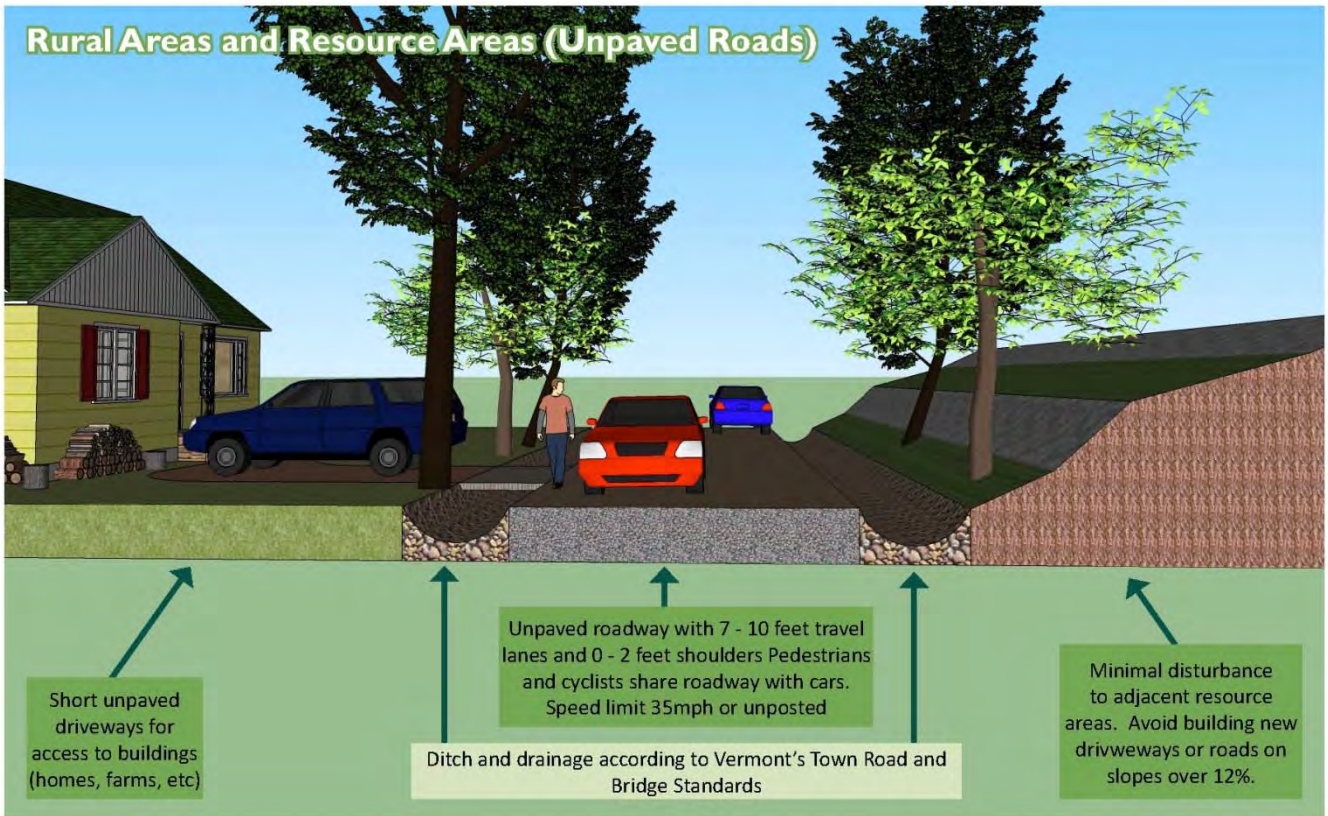
## Medium Density Neighborhoods



## Rural Areas and Resource Areas (Paved Roads)



## Rural Areas and Resource Areas (Unpaved Roads)

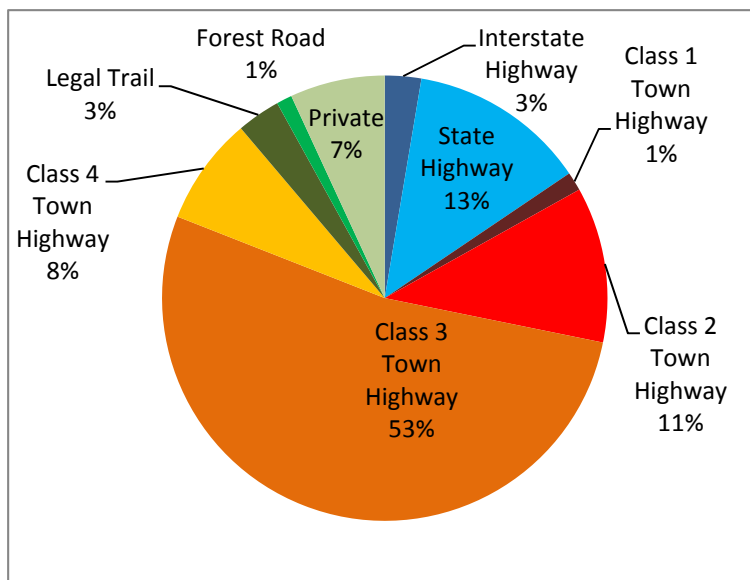


## CHAPTER 3 – TRANSPORTATION NETWORKS

While the roadway system is the primary transportation infrastructure in the Region, other modes of transportation are vitally important for the economy and for the mobility of residents and travelers. (See Maps A through H that depict this regional transportation network.) A primary goal of the RTP is to encourage a multimodal network that is consistent with the State Planning Goals in 24 V.S.A. §4302 and strives to meet the mobility needs of all residents and businesses.

### 3.1. ROAD NETWORK

Roadways form the backbone of the Region's transportation system. This section will look at the existing characteristics of the road network. Recommendations for the Region's road network will focus on specific areas in the main regional travel corridors where possible.



Breakdown of Region's road mileage Source: VTrans Mileage Report 2013 and VTrans GIS Roads Layer 2013

Our roadways are classified in several ways in Vermont as described in the *Road Classifications Technical Bulletin* (Appendix J). On a national level roads are often referred to by their Functional Classification. Functional classification designations of Rural Major Collector and higher are required to be eligible for certain federal funding programs. In Vermont, they are often referred to using the Vermont's Town Highway Classification method – which focuses on the significance of each roadway for mobility and access, and who is responsible for maintenance (town, state, private or federal). This Regional Transportation Plan primarily refers to Vermont's classification of roads rather than the federal classification.

While the Region's road network has not appreciably changed in the last decade, a few notable changes have occurred:

- The weight limit of the Interstate highway network in Vermont has been increased to match the weight limits of the state highway network – thereby allowing trucks weighing over 80,000 pounds to travel on Interstate highways rather than the state road network (Federal Bill HR 2112, signed into law November 2011).
- The Vermont State Truck Network was eliminated about five years ago. Permits for trucks between 68' and 75' are only needed for US Route 4 in Vermont. As a result of this change, VT Route 103 is no longer a preferred trucking route due to permitting considerations.
- Tropical Storm Irene causes damaged resulting in significant roadway repair on the regional road network (bridges, culverts, roads, drainage systems).

- Since 2009, VTTrans has repaved 8.2 miles of roadway, replaced/ significantly repaired 5 bridges in this Region (independently of Tropical Storm Irene related repairs), and installed 1 municipal park and ride lot (as of May 2014).

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### 3.1.1. REGIONAL ROAD CORRIDORS

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The following section describes the major road corridors within the region. This section serves as an inventory of existing conditions as well as identifying anticipated future improvements and needs identified through public outreach. Each section refers to:

- Road Corridor Maps which locate identified needs, high crash and high risk locations and other useful information. An abbreviated list of projects and needs can be found with each map and a complete listing of projects and needs can be found in Chapter 4;
- Appendix K which has detailed traffic volume information<sup>14</sup>; and
- Information in several other Technical Bulletins and Maps, including the Ski Corridor Technical Bulletin (Appendix B), Regional Freight Travel Technical Bulletin (Appendix C); and Daily Traffic Volumes Map (Map G).

Road corridor maps show a variety of projects or recommended needs:

- Recently completed projects – major projects completed in the Region since the last Regional Transportation Plan Update (2009)
- Projects which are programmed in the VTTrans budget – projects which have some or all funding needed to proceed with scoping, design, engineering and construction. Some projects do not yet have a fixed construction date, but are likely to happen within the next ten years
- Other project needs – broadly split over four categories of
  - o Roadway (including safety, access management, traffic, hazard mitigation, etc.)
  - o Bridge
  - o Transit and Park & Ride
  - o Pedestrian and Bicyclist

The following are some needs/ considerations which would apply to the broader roadway network across the entire region, or multiple highway corridors:

1. Add higher hand rails to all bridges. These rails are useful for pedestrian safety and allow for easier maintenance.
2. Where possible add sidewalks or widen shoulders on bridges.
3. Support transportation-related projects of the Connecticut River Byway (US Route 5, and parts of VT Routes 11, 44A and 44).
4. Support transportation-related projects of the Scenic Route 100 Byway (VT Route 100, and part of VT Route 103).
5. Support efforts to implement the VT-131 Scenic Highway Corridor Management Plan.
6. Work to implement the 2004 SWC Regional Interstate Exits Study.
7. Implement the *Ski Corridor Management Plan*.
8. Improve access management on River St (VT-106) in Springfield per local zoning provisions

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<sup>14</sup> Note: all traffic volumes are listed as “vehicles per day” – i.e. Annual Average Daily Traffic (AADT).

## US ROUTE 5 CORRIDOR (SPRINGFIELD, WEATHERSFIELD AND WINDSOR)



US-5 in Ascutney

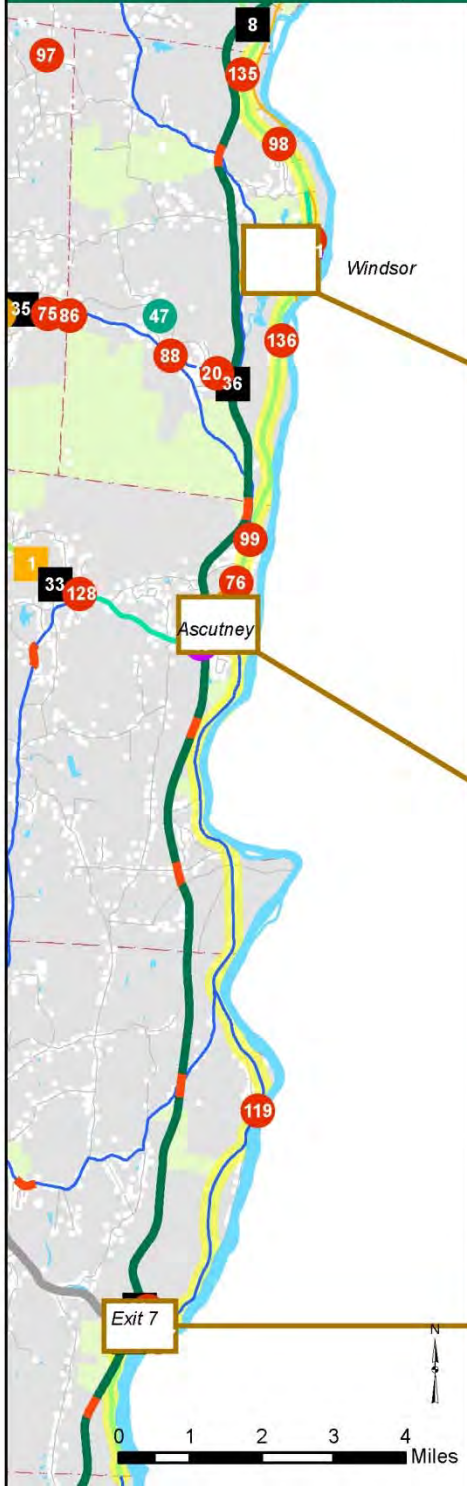


US Route 5 is a north-south connector which runs on the western side of the Connecticut River. The majority of US-5 within the Region is maintained by the State with the exception of the Class I Town Highway section downtown Windsor. The route is a two lane highway for the majority of its length in the Region, although some stretches have turning lanes. US-5 has a functional classification of Rural Major Collector within the Region, primarily because the road closely parallels the Rural Principal Arterial of I-91. US-5 is part of the Connecticut River Byway, a national scenic byway which runs from South Hadley, Massachusetts to the Quebec/Canadian border in Pittsburg, New Hampshire (see Byway Map).

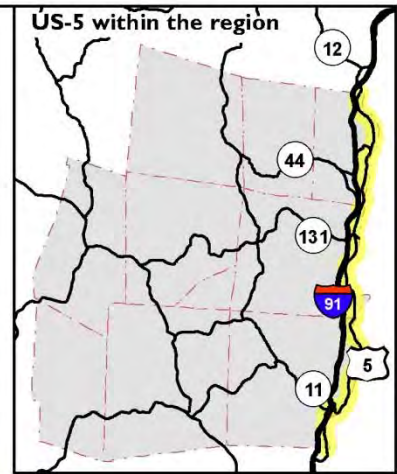
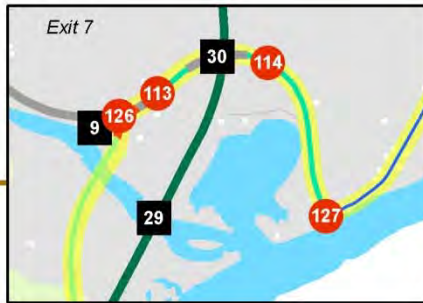
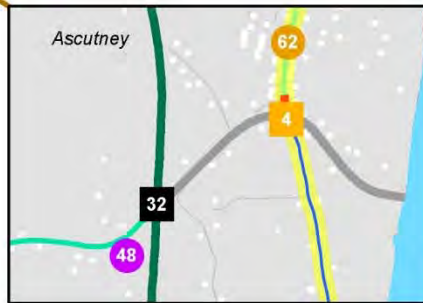
The US-5 Corridor Map highlights current conditions and issues along the corridor and recommendations for the future. As shown in Appendix K, over the last 20 years traffic along US-5 has been relatively stable for most sections with the lowest volumes in Springfield except around I-91 exit 7 (below 2,000 vehicles per day) and the highest volumes around exit 7 in Springfield (above 9,000) and Windsor Main Street (around 7,000). The roadway sections with the highest volumes of traffic have seen the most variation in traffic over time – Windsor Main Street and around exit 7 – varying between 6,000 and 10,000 vehicles per day – with no particular patterns. There is limited truck traffic on US-5 due to I-91 running closely parallel to the roadway for the entire length of the Region. The roadway is due for re-paving in the next five years, including class I town highway in Windsor.



# US Route 5 Corridor Map



- Needs and Potential Projects**
- Recently completed
  - Programmed in VTrans Budget
- Other needs**
- Bridge
  - Roadway
  - Bicycle and Pedestrian
  - Transit and Park & Ride



- US-5
- High Crash Location
- Up to 2,500 vehicles per day
- 2,600 - 5,000 vehicles per day
- 5,100 - 7,500 vehicles per day
- 7,600 - 10,000 vehicles per day
- Over 10,000 vehicles per day
- All other roads
- Railroad
- Major River
- Building
- Conserved public land
- Town

Data sources: Road centerline (VTrans 2013), AADT (Annual Average Daily Traffic) for major roads only (VTrans 2010), High Crash Locations 2006-2010 (VTrans 2012), Town boundary (VCGI 2012), Conserved Public Land (VCGI 2010), Major River (VT Hydrography Data 2008), Buildings - E911 sites (VCGI 2013), Railroad (VTrans 2003)

Map for planning purposes only.  
Not for regulatory interpretation.  
Map drawn April 28, 2014



Needs with specific location (see map for location):

ID	Short description	Type
6	Sidewalk improvements ~ Windsor	Recently completed
8	US-5 ~ Improve condition of Exit 9 Park & Ride Lot ~ Hartland	Programmed

ID	Short description	Type
		Project
21	Repave Class 1 town highway ~ Windsor	Programmed Project
76	US-5 in Ascutney between VT-131 and VT-44 ~ Weathersfield ~ Widen shoulders to improve bicycle safety	Roadway
84	VT-44 & US-5 ~ Windsor ~ Improve intersection safety	Roadway
98	US-5 near Country Club ~ Windsor ~ Widen shoulders to improve safety	Roadway
99	US-5 and VT-44A ~ Weathersfield ~ Improve intersection geometry to improve safety	Roadway
119	US-5 and Putnam Road ~ Springfield ~ Improve safety	Roadway
134	US-5 in Windsor downtown ~ Windsor ~ Improve access to Industrial area	Roadway
135	US-5N around Ruth Carney Drive ~ Windsor ~ Improve safety	Roadway
136	US-5S ~ Windsor ~ Improve safety on curve	Roadway
51	US-5 ~ Windsor ~ Improve public transit access	Transit and P&R
62	US-5 ~ Weathersfield ~ Plan for pedestrian facilities in Ascutney	Pedestrian and Bicyclist
65	US-5 ~ Windsor ~ Maintain and improve sidewalk network in Windsor downtown and nearby residential neighborhoods	Pedestrian and Bicyclist

## VERMONT ROUTE 106 (SPRINGFIELD, WEATHERSFIELD, CAVENDISH AND READING)



VT-106 in Felchville

Vermont Route 106 is a north-south connector from VT-11 in Springfield to US-4 in Woodstock. The entirety of VT-106 within the Region is a two-lane highway maintained by the State. The road has a functional classification of Rural Major Collector. The roadway is primarily rural in character, with the

exception of where it coincides with River Road in Springfield (from VT-11 to VT-10), and in the villages of Perkinsville and Felchville.

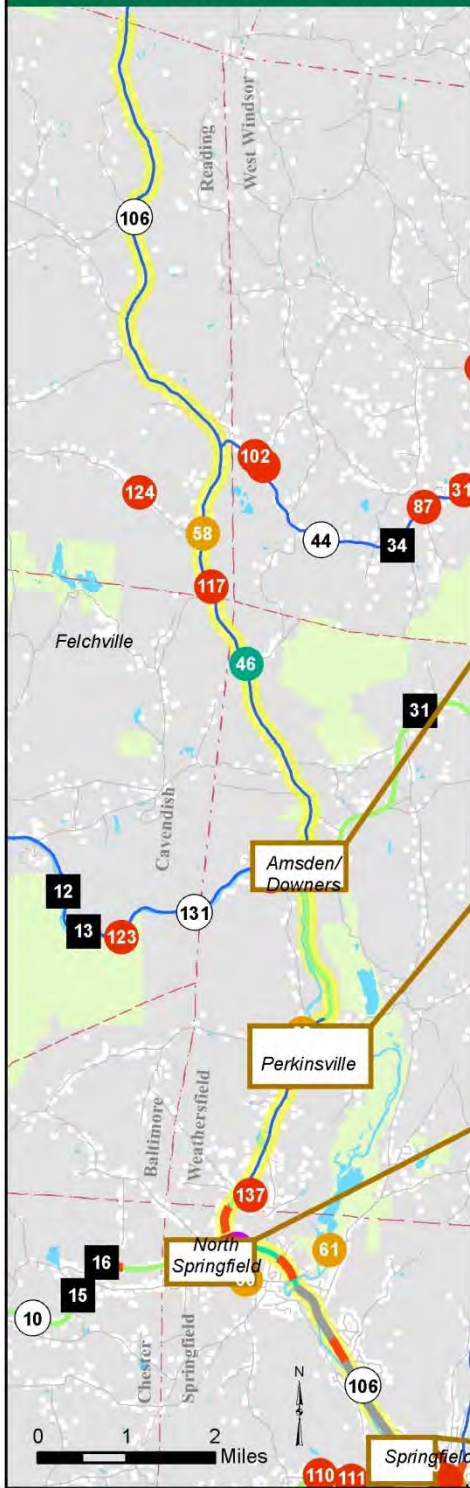
The route runs parallel to the Black River (main stem and north branch) for the majority of its length in the Region. During Tropical Storm Irene the roadway experienced considerable flash flooding with erosion damage to several sections of roadway, including around Niagara Street in Felchville and between Downers Corners and Perkinsville where approximately 450 feet of roadway was lost.

The VT-106 Corridor Map highlights current conditions and issues along the corridor and recommendations for the future. As shown in Appendix K, traffic along VT-106 has remained relatively stable over the last twenty years, with the exception of the section on River Road between Reservoir Road and Main Street in North Springfield where there was a sudden increase in traffic between 2002 and 2004 (no known reason). River Road in Springfield between VT-11 and North Main Street now has one of the highest traffic volumes in the Region – with over 10,000 vehicles travelling over the roadway per day. Traffic volumes generally decrease on the roadway as it heads north – down to a low of just above 1,000 vehicles per day in Reading from VT-44 to the Woodstock town line.

Needs with specific location (see map for location):

<b>ID</b>	<b>Short description</b>	<b>Type</b>
7	VT-131 & VT-106 ~ Install Downers Corners Park & Ride lot ~ Weathersfield	Recently completed
22	Reconstruct Maple St ~ Weathersfield	Programmed Project
79	VT-106 & VT-10 in North Springfield ~ Springfield ~ Improve intersection safety	Roadway
80	VT-131 & VT-106 in Downers Corners ~ Weathersfield ~ Improve access management to improve safety	Roadway
96	VT-106 in Perkinsville ~ Weathersfield ~ Widen shoulders to improve bicyclist safety	Roadway
115	VT-106 & Maple St/ Quarry St in Perkinsville ~ Weathersfield ~ Improve sight distances at interection/ add advanced warnings on VT-106	Roadway
117	VT-106 & Felchville Gulf Road ~ Reading ~ Improve sight distances to improve intersection safety	Roadway
137	Airport Rd ~ Weathersfield ~ Improve paving	Roadway
46	Repair/ Replace Bridge 63 ~ Weathersfield	Bridge
50	VT-106 & VT-10 in North Springfield ~ Springfield ~ Potential new Park & Ride lot location	Transit and P&R
58	VT-106 in Felchville ~ Reading ~ Plan for pedestrian facilities in Felchville	Pedestrian and Bicyclist
60	Near VT-106 ~ Springfield ~ Maintain sidewalks and improve pedestrian connections in North Springfield	Pedestrian and Bicyclist
63	VT-106 ~ Weathersfield ~ Plan pedestrian facilities in Perkinsville	Pedestrian and Bicyclist

# Vermont Route 106 Corridor Map

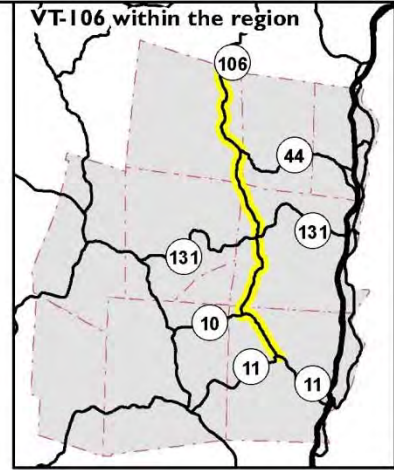
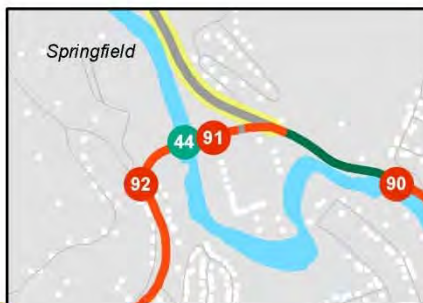
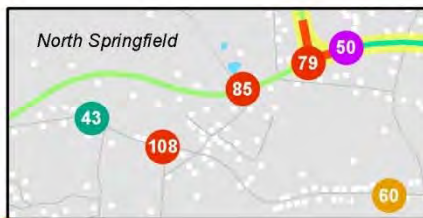


## Needs and Potential Projects

- Recently completed
- Programmed in VTrans Budget

## Other needs

- Bridge
- Roadway
- Bicycle and Pedestrian
- Transit and Park & Ride



Data sources: Road centerline (VTrans 2013), AADT (Annual Average Daily Traffic) for major roads only (VTrans 2010), High Crash Locations 2006-2010 (VTrans 2012), Town boundary (VCGI 2012), Conserved Public Land (VCGI 2010), Major River (VT Hydrography Data 2008), Buildings - E911 sites (VCGI 2013), Railroad (VTrans 2003)

Map for planning purposes only.  
Not for regulatory interpretation.  
Map drawn April 28, 2014



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## VERMONT ROUTE 103 (CHESTER, CAVENDISH AND LUDLOW)

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*VT-103/ VT-100 in Ludlow, north of the village*

Vermont Route 103 is a vital connector which crosses the Green Mountains and runs between US-5/ I-91 in Rockingham and US-7 in Clarendon. The majority of VT-103 within the Region is maintained by the State with the exception of areas of Class I Town Highway sections in Chester and Ludlow villages. The route is a two lane highway for the majority of its length in the Region, although some stretches have turning lanes. VT-103 has the highest functional classification in the region of Rural Principal Arterial (also carried by I-91) as it is a key truck route across the mountains. The road is part of the Scenic Route 100 Byway (a Vermont Byway) in Ludlow, from the Cavendish town line to the VT-100 north intersection in Smithville.

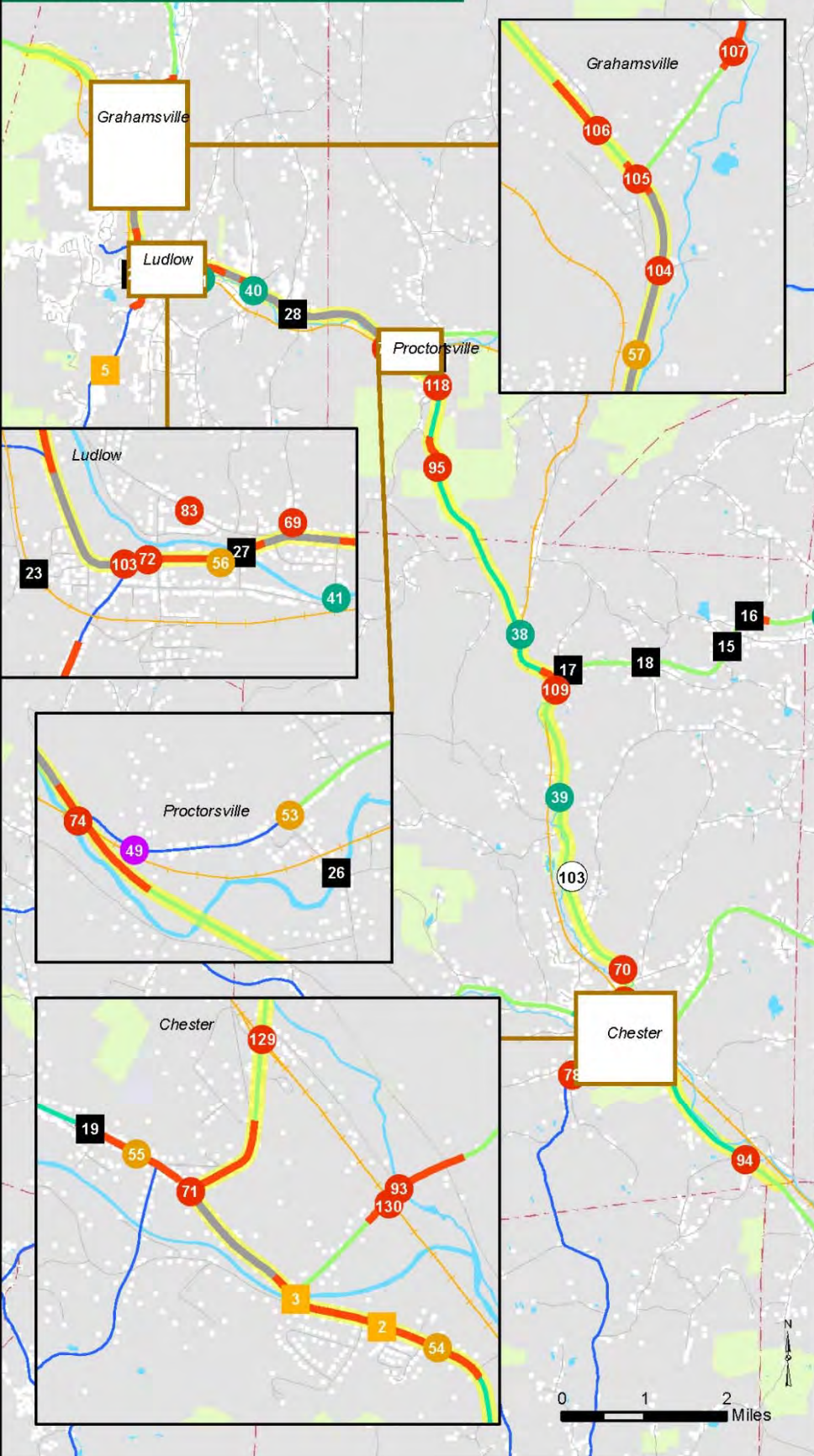
Vermont 103 runs parallel to two major rivers in the region – the Black River in Ludlow and Cavendish and the Williams River (North Branch and Main Stem) in Chester. During Tropical Storm Irene the roadway experienced notable flash flooding and inundation around both the Black River and Williams River.

The VT-103 Corridor Map highlights current conditions and issues along the corridor and recommendations for the future. There are a few structurally or functionally deficient bridges on VT-103. In 2011 two structurally deficient bridges in Chester just south of the VT-11 north intersection were replaced and a structurally deficient bridge in Ludlow (Walker Bridge) is due to be replaced in 2015/16. In 2010 VTrans stabilized the rock face along the roadway between Gassetts and Proctorsville.

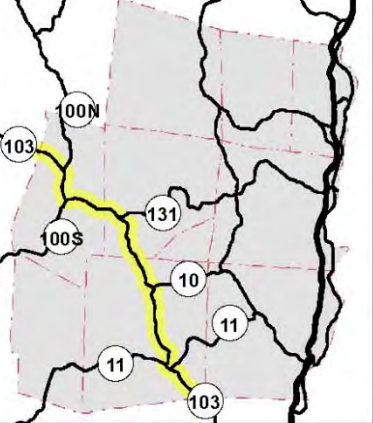
As shown in Appendix K, over the last 20 years traffic along VT-103 has varied considerably, although generally traffic levels have been increasing. Traffic is generally higher in Ludlow (with the exception of north of VT-100N) at 8,000 vehicles per day or more, while in Chester the traffic is generally between 4,000 and 6,000 vehicles per day, with the exception of the short stretch of Main Street (between Maple Street and VT-11N) where it is above 8,000 vehicles per day.

VT-103 also tends to carry a high percentage of truck traffic, generally above 11%. As highlighted in the 2013 Vermont Freight Plan and summarized in Appendix C of this plan, truck traffic is expected to increase on VT-103 over time – by over 20% over the next 30 years. The roadway is expected to have sufficient capacity to be able to accommodate this increase, but impacts on affected communities need to be evaluated and mitigated as appropriate.

# Vermont Route 103 Corridor Map



## VT-103 within the region



### Needs and Potential Projects

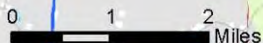
- Recently completed
- Programmed in VTrans Budget
- Other needs**
- Bridge
- Roadway
- Bicycle and Pedestrian
- Transit and Park & Ride

- ~ High Crash Location
- Up to 2,500 vehicles per day
- 2,600 - 5,000 vehicles per day
- 5,100 - 7,500 vehicles per day
- 7,600 - 10,000 vehicles per day
- Over 10,000 vehicles per day
- All other roads
- Railroad
- Major River
- Building
- Conserved public land
- Town

Data sources: Road centerline (VTrans 2013), AADT (Annual Average Daily Traffic) for major roads only (VTrans 2010), High Crash Locations 2006-2010 (VTrans 2012), Town boundary (VCGI 2012), Conserved Public Land (VCGI 2010), Major River (VT Hydrography Data 2008), Buildings - E911 sites (VCGI 2013), Railroad (VTrans 2003)

Map for planning purposes only.  
Not for regulatory interpretation.

Map drawn April 28, 2014



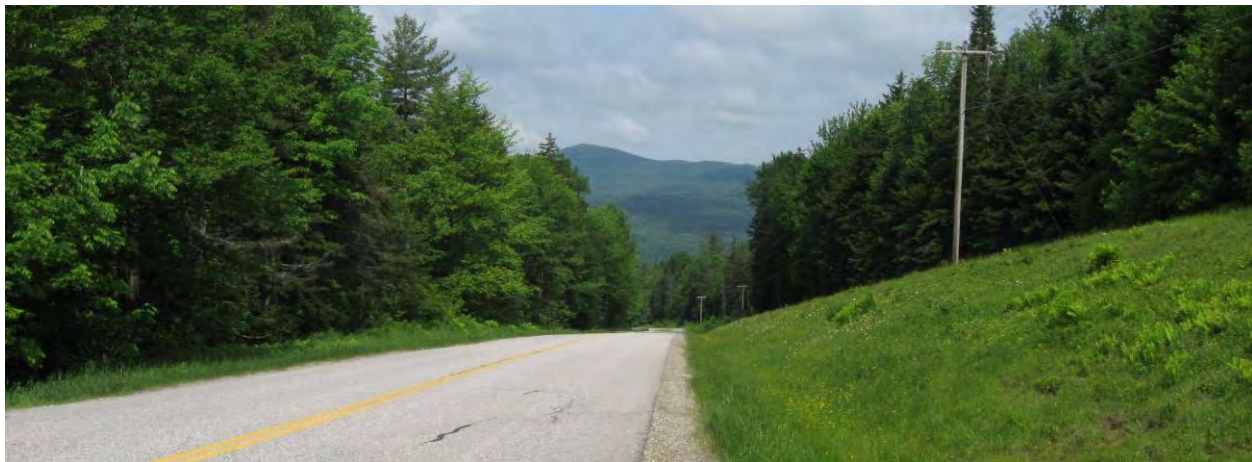
Traffic in this corridor is also impacted considerably by the Okemo and Killington ski resorts as far south as Chester. For further information about planning for ski traffic along this corridor see the *Ski Corridor Technical Bulletin*.

Needs with specific location (see map for location):

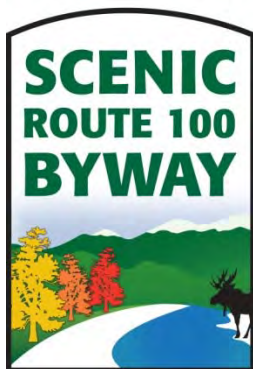
<b>ID</b>	<b>Short description</b>	<b>Type</b>
2	Replaced Bridge 8 ~ Chester	Recently completed
3	Replaced Bridge 9 ~ Chester	Recently completed
23	Upgrade Railroad Crossing ~ Ludlow	Programmed Project
27	Replace Bridge 25 (Walker Bridge) ~ Ludlow	Programmed Project
28	Smithville Roadway Project ~ Ludlow and Cavendish	Programmed Project
69	VT-103 and Commonwealth Ave ~ Ludlow ~ Hazard mitigation needed	Roadway
70	VT-103 in Stone Village ~ Chester ~ Mitigate truck traffic issues	Roadway
72	VT-103 ~ Ludlow ~ Manage and mitigate traffic congestion during peak travel	Roadway
74	VT-131 & VT-103 in Proctorsville ~ Cavendish ~ Study intersection and improve safety	Roadway
83	VT-103 ~ Ludlow ~ Provide safer alternative bicycling route to VT-103 along Dug Road	Roadway
94	VT-103S around Peck Rd ~ Chester ~ Add advanced warning signs for intersections to improve safety	Roadway
95	VT-103 from VT-131 to Chester town line ~ Cavendish ~ Widen shoulders and improve safety	Roadway
103	VT-100S & VT-103 ~ Ludlow ~ Improve intersection geometry and traffic flow	Roadway
104	VT-103 between village and VT-100N ~ Ludlow ~ Improve roadway safety	Roadway
105	VT-103 & VT-100N ~ Ludlow ~ Improve safety at high crash intersection	Roadway
106	VT-103N and Buttermilk Falls Rd and Jackson Gore entrance ~ Ludlow ~ Improve intersection geometry to improve safety	Roadway
109	VT-103 & VT-10 ~ Chester ~ Improve intersection configuration and safety	Roadway
118	VT-103 and Depot St ~ Cavendish ~ Improve intersection geometry to improve safety	Roadway
129	VT-103 (Depot St) at railroad crossing ~ Chester ~ Improve pavement conditions	Roadway
38	Repair/ Replace Bridge 14 ~ Chester (Gassetts)	Bridge
39	Repair/ Replace Bridge 62 ~ Chester	Bridge
40	Repair/ Replace Bridge 17 ~ Ludlow	Bridge
41	Repair/ Replace Bridge 57 ~ Ludlow	Bridge
54	VT-103 ~ Chester ~ Construct sidewalk connection from Chester village to high school	Pedestrian and Bicyclist
56	VT-103 ~ Ludlow ~ Maintain sidewalks in Ludlow village area and plan pedestrian connections to other major walking destinations	Pedestrian and Bicyclist

ID	Short description	Type
57	VT-103/VT-100 ~ Ludlow ~ Improve pedestrian connections from Ludlow Village to Lakes region	Pedestrian and Bicyclist

## VERMONT ROUTE 100 (ANDOVER AND LUDLOW)



Okemo Mountain from top of VT-100 in Ludlow



Vermont Route 100 is a north-south connector which runs along the center of Vermont along the eastern edge of the Green Mountains. VT-100 within the Region is mainly maintained by the State with the exception of the Class I Town Highway section in Ludlow village. VT-100 is a two lane highway for the majority of its length in the Region, although it does have a turning lane for access to Okemo Mountain Road. The road predominantly has a functional classification of Rural Minor Arterial, with the exception of the section which it shares with VT-103 where it is a Rural Principal Arterial. In 2011 VT-100 between Andover and Pittsfield became a Vermont Byway known as the Scenic Route 100 Byway and in 2013 the Byway expanded to reach the Mad River Byway in Granville, VT-131 Scenic Highway in Cavendish and the Massachusetts border in Stamford (see

Byway Map).

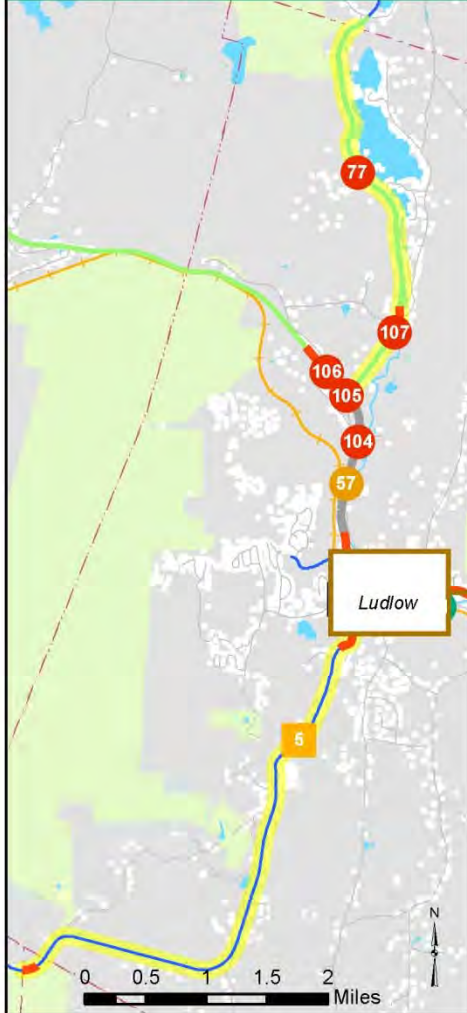
The VT-100 Corridor Map highlights current conditions and issues along the corridor and recommendations for the future. Over the last 20 years traffic along VT-100 has remained fairly consistent below 4,000 vehicles per day, with a small reduction in traffic volumes, as shown in Appendix E. This roadway experiences some ski corridor traffic – see chapter 2 for a more detailed discussion of the issues faced.

Needs with specific location (see map for location):

ID	Short description	Type
5	VT100S repaved ~ Andover & Ludlow	Recently completed
77	VT-100N from VT-103 to Plymouth town line ~ Ludlow ~ Widen shoulders and improve sight distances to improve safety	Roadway
107	VT-100N at Rod and Gun Club Road ~ Ludlow ~ Improve Safety	Roadway



# Vermont Route 100 Corridor Map

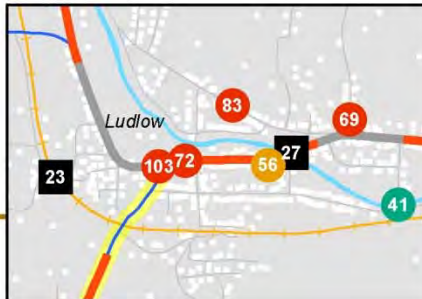


## Needs and Potential Projects

- Recently completed
- Programmed in VTrans Budget

## Other needs

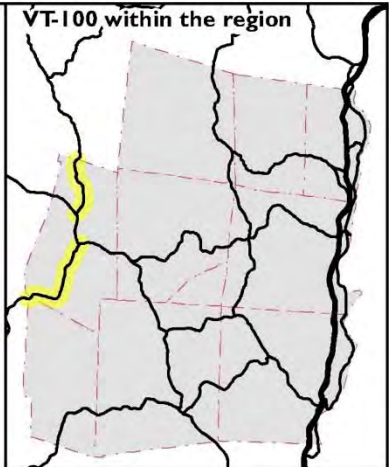
- Bridge
- Roadway
- Bicycle and Pedestrian
- Transit and Park & Ride



Data sources: Road centerline (VTrans 2013), AADT (Annual Average Daily Traffic) for major roads only (VTrans 2010), High Crash Locations 2006-2010 (VTrans 2012), Town boundary (VCGI 2012), Conserved Public Land (VCGI 2010), Major River (VT Hydrography Data 2008), Buildings - E911 sites (VCGI 2013), Railroad (VTrans 2003)

Map for planning purposes only. Not for regulatory interpretation.

Map drawn April 28, 2014



- VT-100
- High Crash Location
- Up to 2,500 vehicles per day
- 2,600 - 5,000 vehicles per day
- 5,100 - 7,500 vehicles per day
- 7,600 - 10,000 vehicles per day
- Over 10,000 vehicles per day
- All other roads
- Railroad
- Major River
- Building
- Conserved public land
- Town

## VERMONT ROUTE 11 CORRIDOR (SPRINGFIELD, CHESTER AND ANDOVER)



*VT-11 (Main Street) in Springfield*

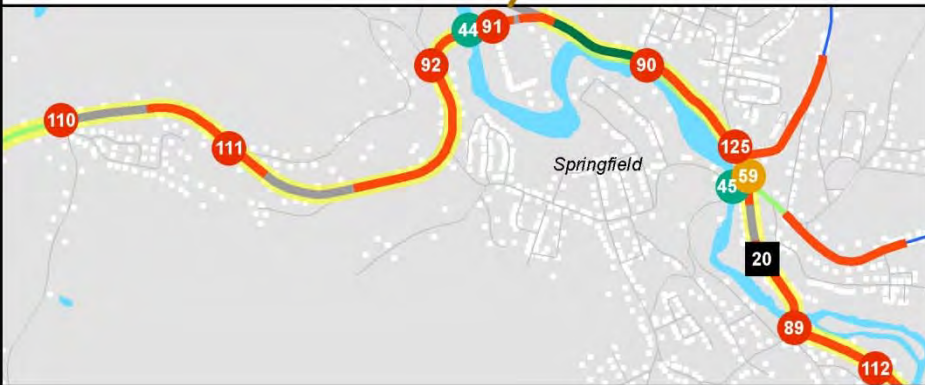
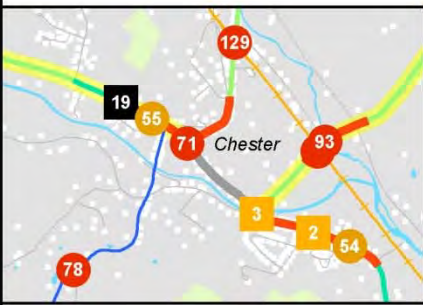
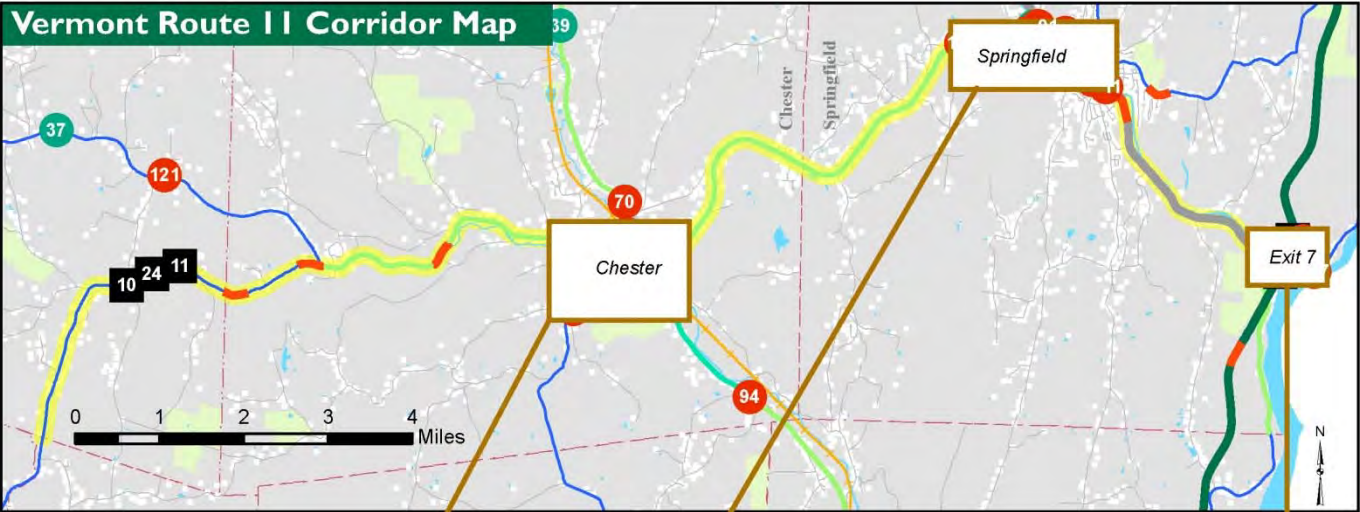
Vermont Route 11 is a key east-west connector which crosses the Green Mountains and runs between US-5/ I-91 in Springfield and VT-7A in Manchester. The majority of VT-11 within the Region is maintained by the State with the exception of areas of Class I Town Highway in downtown Springfield and the center of Chester village which are maintained by the Towns. VT-11 is a two lane highway for the majority of its length in the Region, except for the section between South Street and I-91 in Springfield where the Road is a four-lane highway. The road has a variety of designations in the functional classification system ranging from Rural Principal Arterial to Rural Major Collector. VT-11 between US-5 and VT-106 (River Street) in Springfield are part of the Connecticut River Byway (a National Scenic Byway).

Vermont 11 runs parallel to two major rivers in the region – the Black River in Springfield from the Riverside Middle School to US-5 S and the Williams River (Middle Branch) between the Windham town line in Andover and VT-103 S west of Chester village. During Tropical Storm Irene the roadway experienced notable flash flooding and inundation around the Williams River. The Black River south of the North Springfield dam did not experience flooding at that time.

The VT-11 Corridor Map highlights current conditions and issues along the corridor and recommendations for the future. There are several structurally deficient bridges on VT-11 – including Bridge 62 (McDonalds) in Springfield. VT-11 tends to carry a high percentage of truck traffic, generally above 10%.

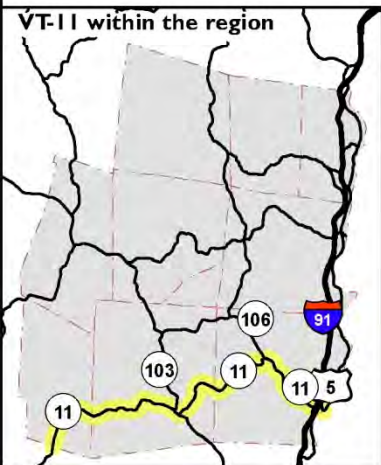
Over the last 20 years traffic along VT-11 has varied considerably, as shown in Appendix E. Traffic in downtown Springfield (between Fairground Road and Valley Street) has remained the highest – generally above 9,000 vehicles per day, although it has fluctuated significantly over the years with a general decline from a high of around 14,000 vehicles per day in 1990. Traffic volumes on VT-11 in Andover and Chester have remained more stable and most segments carry 3,000 to 6,000 vehicles per day. The lowest volumes on VT-11 are in Andover as it heads west to Windham/ Londonderry – with under 3,000 vehicles per day.

# Vermont Route 11 Corridor Map



**Legend**

- VT-II
- High Crash Location
- Up to 2,500 vehicles per day
- 2,600 - 5,000 vehicles per day
- 5,100 - 7,500 vehicles per day
- 7,600 - 10,000 vehicles per day
- Over 10,000 vehicles per day
- All other roads
- Railroad
- Major River
- Building
- Conserved public land
- Town



## Needs and Potential Projects

- Recently completed
- Programmed in VTrans Budget

## Other needs

- Bridge
- Roadway
- Bicycle and Pedestrian
- Transit and Park & Ride

Data sources: Road centerline (VTrans 2013), AADT (Annual Average Daily Traffic) for major roads only (VTrans 2010), High Crash Locations 2006-2010 (VTrans 2012), Town boundary (VCGI 2012), Conserved Public Land (VCGI 2010), Major River (VT Hydrography Data 2008), Buildings - E911 sites (VCGI 2013), Railroad (VTrans 2003)

Map for planning purposes only.  
Not for regulatory interpretation.

Map drawn April 28, 2014



SOUTHERN WINDSOR COUNTY  
REGIONAL PLANNING COMMISSION  
PO Box 320, Ascutney, VT 05030  
www.swcrpc.org

Needs with specific location (see map for location):

<b>ID</b>	<b>Short description</b>	<b>Type</b>
9	VT-11 ~ Improve Exit 7 Park & Ride Lot ~ Springfield	Programmed Project
10	Repave VT-11 ~ Andover and Chester	Programmed Project
11	VT-11 between Weston-Andover Road and Windham town line ~ Chester & Andover ~ Widen shoulders to improve safety	Programmed Project
19	Repave Class 1 town highway ~ Chester	Programmed Project
20	Repave Class 1 town highway ~ Springfield	Programmed Project
24	Replace Bridge 41 ~ Andover	Programmed Project
30	Repair/ Replace I-91 Bridges 28N&S ~ Springfield	Programmed Project
71	VT-11 & VT-103 ~ Chester ~ Improve traffic flow during peak times and improve road geometry	Roadway
89	VT-11 at Clinton/Main/South St ~ Springfield ~ Improve intersection geometry to improve safety	Roadway
90	VT-11 (River St) ~ Springfield ~ Address access management issues to improve safety	Roadway
91	VT-11 (Chester Rd) near Plaza ~ Springfield ~ Improve intersection safety at high crash location	Roadway
92	VT-11 (Chester Rd) near Riverside School ~ Springfield ~ Improve intersection safety	Roadway
93	VT-11 (Pleasant St) & Elm St ~ Chester ~ Improve sight distances at intersection near bridge	Roadway
110	VT-11 (Chester Rd) ~ Springfield ~ Improve roadway safety in high crash location	Roadway
111	VT-11 (Chester Rd) ~ Springfield ~ Improve roadway safety	Roadway
112	VT-11 (Clinton Street) ~ Springfield ~ Improve safety and access management	Roadway
113	Exit ramp from I-91 southbound to VT-11 westbound ~ Springfield ~ Improve geometry as feeds into VT-11 to improve safety	Roadway
114	Exit ramp from I-91 northbound to VT-11 westbound and eastbound ~ Springfield ~ Improve signage or priorities to improve safety	Roadway
125	VT-11 (River St/ Main St) & Elm Hill St ~ Springfield ~ Reconfigure intersection to improve safety	Roadway
126	VT 11 & US-5S ~ Springfield ~ Improve intersection configuration to improve safety	Roadway
127	VT-11 & US-5N ~ Springfield ~ Improve sight distances at intersection	Roadway
130	VT-11 (Pleasant St) at railroad crossing ~ Chester ~ Improve pavement conditions	Roadway
44	Repair/ Replace Bridge 62 (McDs) ~ Springfield	Bridge
45	Repair/ Replace Bridge 79 ~ Springfield	Bridge

<b>ID</b>	<b>Short description</b>	<b>Type</b>
<b>55</b>	VT-11 ~ Chester ~ Improve sidewalks in Chester village	Pedestrian and Bicyclist
<b>59</b>	VT-11 ~ Springfield ~ Maintain and upgrade sidewalks to retain pedestrian network in Springfield downtown and nearby residential neighborhoods	Pedestrian and Bicyclist

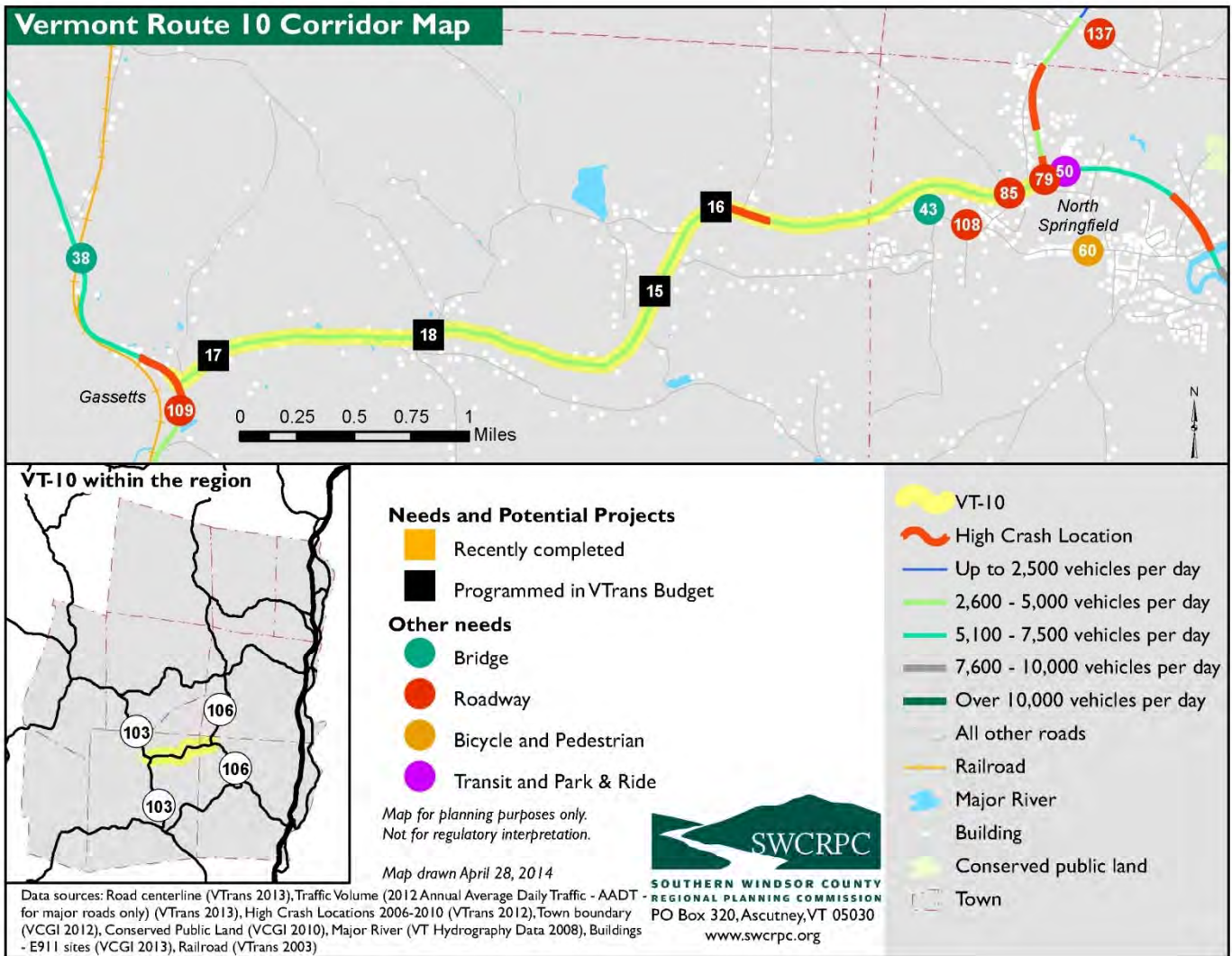
### VERMONT ROUTE 10 CORRIDOR (CHESTER AND SPRINGFIELD)

Vermont Route 10 is a short connector between VT-106 in Springfield and VT-103 in Chester. VT-10 is entirely maintained by the State and forms a Rural Minor Arterial connection in the functional classification system with VT-11 to connect I-91 exit 7 in Springfield to VT-103. The road is a two lane highway which runs parallel to tributaries to both the Williams and Black Rivers.

The VT-10 Corridor Map highlights current conditions and issues along the corridor and recommendations for the future. VT-10 is due to be repaved around 2015. Over the last 20 years traffic along VT-11 has steadily increased, as shown in Appendix E, but is generally between 2,000 and 4,000 vehicles per day, depending on the road segment. This road corridor experiences significant truck traffic – see chapter 2 for a more details discussion of the issues faced.

Needs with specific location (see map for location):

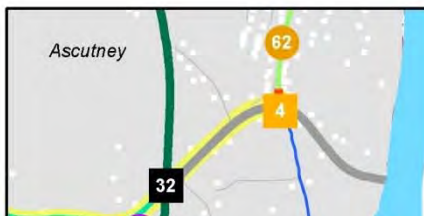
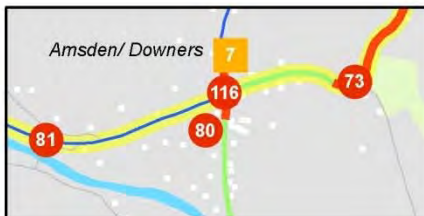
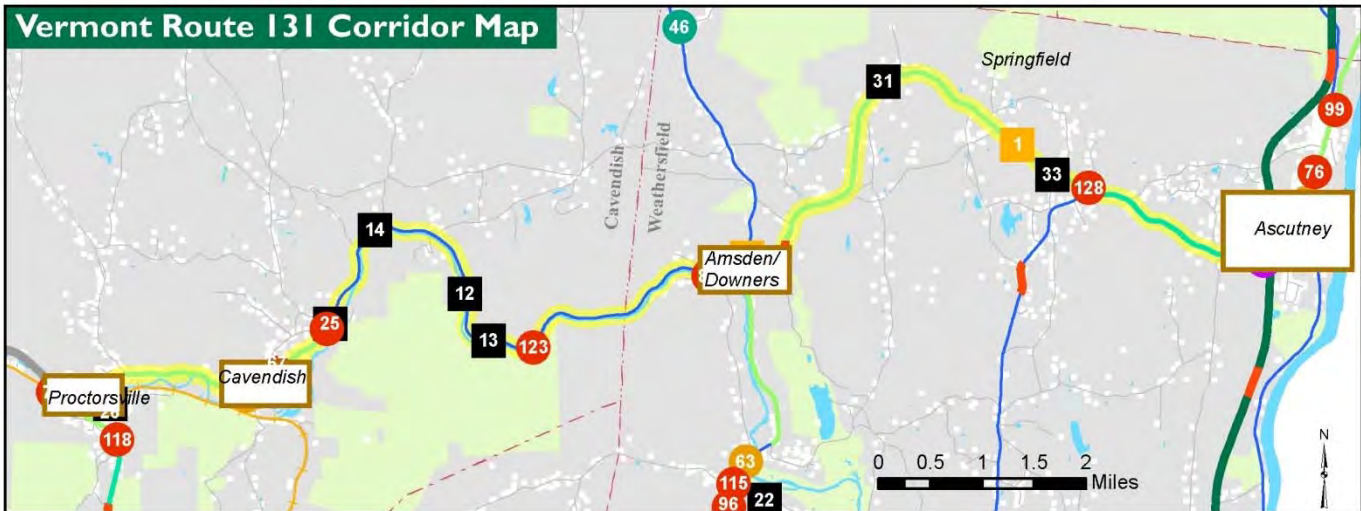
<b>Draft ID</b>	<b>Short description</b>	<b>Type</b>
<b>15</b>	Repave VT-10 ~ Chester & Springfield	Programmed Project
<b>16</b>	VT-10 ~ Chester ~ Modify super elevation to improve safety	Programmed Project
<b>17</b>	VT-10 from Gassetts to North Springfield ~ Chester & Springfield ~ Widen shoulders to improve safety	Programmed Project
<b>18</b>	VT-10 from Gassetts to North Springfield ~ Chester & Springfield ~ Improve advanced warning signs for intersections to improve safety	Programmed Project
<b>85</b>	VT-10 and Baltimore Rd ~ Springfield ~ Improve intersection safety	Roadway
<b>108</b>	Improve industrial site access in North Springfield ~ Springfield	Roadway
<b>43</b>	Repair/ Replace Bridge 56 ~ North Springfield	Bridge



### VERMONT ROUTE 131 CORRIDOR (WEATHERSFIELD AND CAVENDISH)

Vermont Route 131 is a key east-west connector between I-91 in Weathersfield and VT-103 in Cavendish. The entire route is owned and maintained by the State. With the exception of the stretch of highway between I-91 and the New Hampshire border, VT-131 is a two lane highway. It is a state Scenic Highway for its length in the Town of Cavendish, according to V.S.A. §425 and has a Corridor Management Plan. As highlighted in Tropical Storm Irene much of VT-131 runs parallel and often directly adjacent to the Black River. Several sections of the highway were severely damaged during the flash flooding, highlighting a need in the future to evaluate options for future post-flood reconstruction along the river. This is particularly true of the section just east of Cavendish village where the river avulsion created the “Cavendish Canyon” which destroyed the roadway.

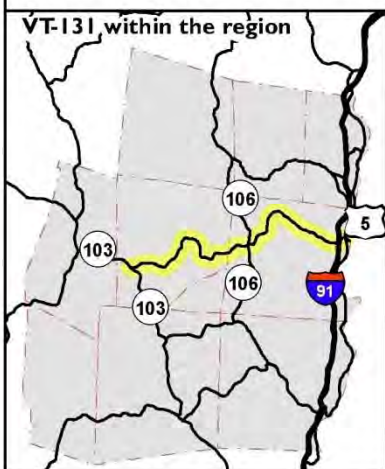
The VT-131 Corridor Map highlights current conditions and issues along the corridor and recommendations for the future. VT-131 has one structurally deficient bridge which is due to be replaced in 2014 (Bridge 1 in Cavendish) and is also due to be re-paved in Cavendish in 2015 - with both of these projects funded using disaster recover funds since they were affected by Tropical Storm



Data sources: Road centerline (VTrans 2013), AADT (Annual Average Daily Traffic) for major roads only (VTrans 2010), High Crash Locations 2006-2010 (VTrans 2012), Town boundary (VCGI 2012), Conserved Public Land (VCGI 2010), Major River (VT Hydrography Data 2008), Buildings - E911 sites (VCGI 2013), Railroad (VTrans 2003)

Map for planning purposes only.  
Not for regulatory interpretation.

Map drawn April 28, 2014



**Needs and Potential Projects**

- Recently completed
- Programmed in VTrans Budget
- Other needs**
  - Bridge
  - Roadway
  - Bicycle and Pedestrian
  - Transit and Park & Ride



Irene. The Weathersfield section of VT-131 was repaved over the summer of 2013 between VT-106 and the New Hampshire border. Over the last 20 years traffic along VT-131 has increased slowly, as shown in Appendix E. Traffic volumes are at their highest in Ascutney east of I-91 – having risen from just under 7,000 vehicles per day in 1990 to over 9,000 per day in 2007. Traffic volumes decrease as the

roadway travels westward – from just above 5,000 vehicles per day just west of I-91 to a low of 2,000 to 4,000 vehicles per day in Cavendish and Proctorsville.



VT-131 near Cavendish/ Weathersfield townline.

Needs with specific location (see map for location):

<b>ID</b>	<b>Short description</b>	<b>Type</b>
1	Repaved VT-131 and VT-12 ~ Weathersfield	Recently completed
4	VT-131 & US-5 in Ascutney ~ Weathersfield ~ Intersection geometry improved	Recently completed
12	Repave VT-131 ~ Cavendish	Programmed Project
13	VT-131 from Upper Falls Road to Whitesville ~ Cavendish & Weathersfield ~ Widen shoulders, improve sight distances and improve drainage where possible	Programmed Project
14	VT-131 ~ Cavendish ~ Improve drainage around Chubb Hill Ledges	Programmed Project
25	Replace Bridge 1 ~ Cavendish	Programmed Project
26	Repair/ Replace Bridge 58 ~ Cavendish	Programmed Project
31	Repair/ Replace Culvert 11B ~ Weathersfield	Programmed Project
33	Repair/ Replace Culvert 15 ~ Weathersfield	Programmed Project
67	VT-131 west of Cavendish village ~ Potential hazard mitigation site	Roadway
73	VT-131 in Amsden ~ Weathersfield ~ Improve roadway safety	Roadway
81	VT-131 & Upper Falls Rd ~ Weathersfield ~ Improve intersection layout	Roadway
82	VT-131 in Cavendish village ~ Cavendish ~ Improve drainage	Roadway



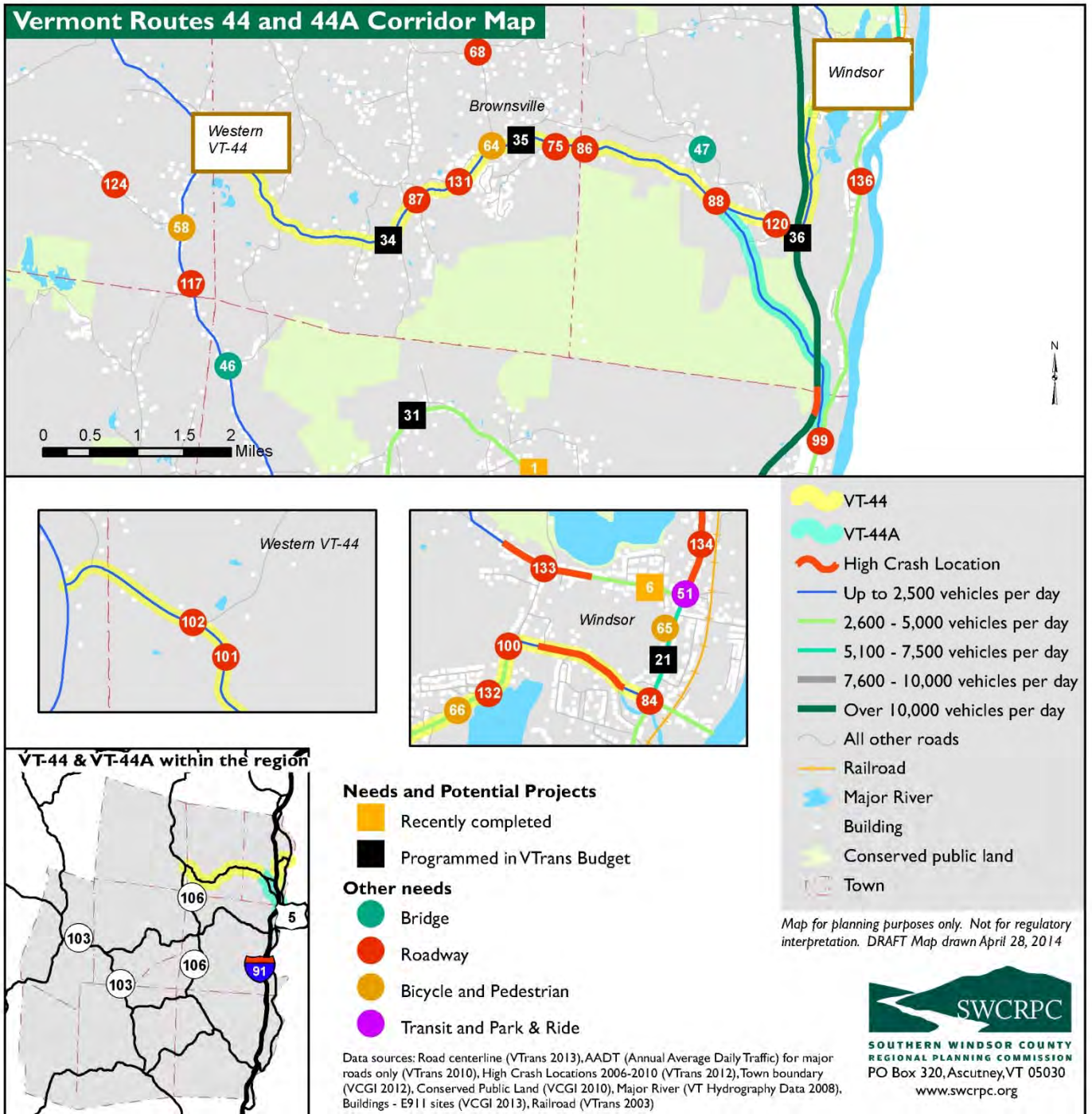
ID	Short description	Type
116	VT-131 & VT-106 in Downers ~ Weathersfield ~ Improve intersection safety	Roadway
122	VT-131 in Whitesville ~ Cavendish ~ Improve sight distances at intersection near bridge	Roadway
123	VT-131 ~ Weathersfield ~ Address safety issues at steep curve	Roadway
128	VT-131 & Weathersfield Center Rd ~ Weathersfield ~ Improve sight distances at intersection	Roadway
48	VT-131 ~ Increase Exit 8 Park & Ride lot capacity ~ Weathersfield	Transit and P&R
49	VT-131 & VT-103 in Proctorsville ~ Cavendish ~ Potential new Park & Ride lot location	Transit and P&R
52	VT-131 ~ Maintain/ Improve sidewalks in Cavendish village (Cavendish)	Pedestrian and Bicyclist
53	VT-131 ~ Maintain and upgrade sidewalks in Proctorsville village (Cavendish)	Pedestrian and Bicyclist

### VERMONT ROUTE 44 AND 44A CORRIDORS (WINDSOR, WEATHERSFIELD, WEST WINDSOR AND READING)



*VT-44 at the “Narrows” before interstate bridge replacement in 2013 and 2014*

Vermont Route 44 and 44A are east-west connectors between US-5 in Weathersfield and Windsor, and VT-106 in Reading. VT-44 runs under I-91 in the area locally known as the “Narrows”. VT-44 is maintained by the State between VT-106 in Reading and VT-44A in Windsor. The remainder of VT-44 between VT-44A and US-5 is a Class I Town Highway which is maintained by the Town of Windsor. VT-44A is entirely owned and maintained by the State. VT-44 and VT-44A are a two lane highways which are “Rural Major Collectors” on the National Highway System. VT-44A and VT-44 between US-5 and Brownsville are part of the Connecticut River Byway (a National Scenic Byway). Some of VT-44 runs parallel to the Mill Brook which in 2011 experienced some flash flooding and inundation as part of Tropical Storm Irene.



The road provides access to several notable recreation opportunities within the region, particularly around Mount Ascutney, including Mount Ascutney State Park, Mt Ascutney Resort (ski resort closed in 2010) and West Windsor Town Forest Trails.

The VT-44 and VT-44A Corridor Map highlights current conditions and issues along the corridor and recommendations for the future. Over the last 20 years traffic along VT-44 has remained relatively stable, as shown in Appendix E. In the built up area of Windsor traffic volumes have been relatively

stable around 4,000 vehicles per day since 1998, and the remainder of VT-44 and VT-44 experience 1,000-2,000 vehicles per day.

Needs with specific location (see map for location):

<b>ID</b>	<b>Short description</b>	<b>Type</b>
34	Replace deck on Bridge 4 ~ West Windsor	Programmed Project
35	Replace deck on Bridge 7 ~ West Windsor	Programmed Project
75	VT-44 between Brownsville and Ski Tow Rd ~ West Windsor ~ Widen shoulders to improve safety	Roadway
86	VT-44 around Windsor/ West Windsor townline ~ West Windsor & Windsor ~ Widen shoulders to improve safety	Roadway
87	VT-44 near Coaching Lane ~ West Windsor ~ Install crossing for pedestrians and bicyclists	Roadway
88	VT-44 & VT-44A ~ Windsor ~ Improve Safety	Roadway
100	VT-44 & Union St/ Ascutney St ~ Windsor ~ Improve sight distances at intersection	Roadway
101	VT-44 near Shattuck Hill Rd ~ West Windsor ~ Remove ledge to improve road safety	Roadway
102	VT-44 near Shattuck Hill Rd ~ West Windsor ~ Improve sight distances	Roadway
120	VT-44 from Brownsville to Windsor ~ West Windsor & Windsor ~ Widen shoulder and improve sight distances to improve bicyclist safety	Roadway
131	VT-44 & Johnson Rd ~ West Windsor ~ Improve sight distances	Roadway
132	VT-44 near Cherry St and Mill Pond ~ Windsor ~ Improve sight distances and reduce pedestrian crossing issues to improve safety	Roadway
64	VT-44 ~ West Windsor ~ Maintain sidewalk network and improve connections to major pedestrian destinations around Brownsville village	Pedestrian and Bicyclist
66	VT-44 ~ Windsor ~ Improve pedestrian connections from Union St to playing fields	Pedestrian and Bicyclist

### OTHER ROADS OF REGIONAL SIGNIFICANCE

The following roads are of regional importance but generally fall outside of the realm of most work by the Regional Planning Commission. I-91 is part of a national network and is generally within VTrans' realm for improvements. The smaller roads of regional significance are not maintained by the VTrans or its Maintenance Districts, but have importance on a regional and local level, and are important as part of a redundant network, especially as alternative routes during disaster events. Some of those roadways have a slightly higher federal highway classification and are "Federal Aid" highways, but are otherwise fully maintained and operated like any other local town road.

## INTERSTATE 91 CORRIDOR (SPRINGFIELD, WEATHERSFIELD AND WINDSOR)



*I-91 looking north toward Mount Ascutney*

Interstate 91 runs north-south through the region parallel to the Connecticut River and provides limited access highway connections to New England. Along I-91 between New Haven, CT and the Quebec border in Derby Line, VT, the interstate provides connections to other major interstates such as I-89, I-84 and I-95 which connect to cities like Springfield MA, Boston MA and New York City. Traffic volumes on the interstate through the region ranges from 10,000 to 14,400 vehicles per day<sup>15</sup>.

With the majority of the interstate being completed in the 1970s, many of the interstate bridges in the Region and in Vermont in general are nearing the end of their lifespan. Bridges 8 north and south in Windsor over VT-44 are being replaced using Design-Build project and construction techniques in the 2013 and 2014 construction seasons. Several other interstate bridges are starting to appear in the statewide priority lists (such as the Governor's Recommended Transportation Budget for FY2015) and will most likely be replaced in the next decade.

Three **INTERSTATE EXITS/ INTERCHANGES** serve the Region:

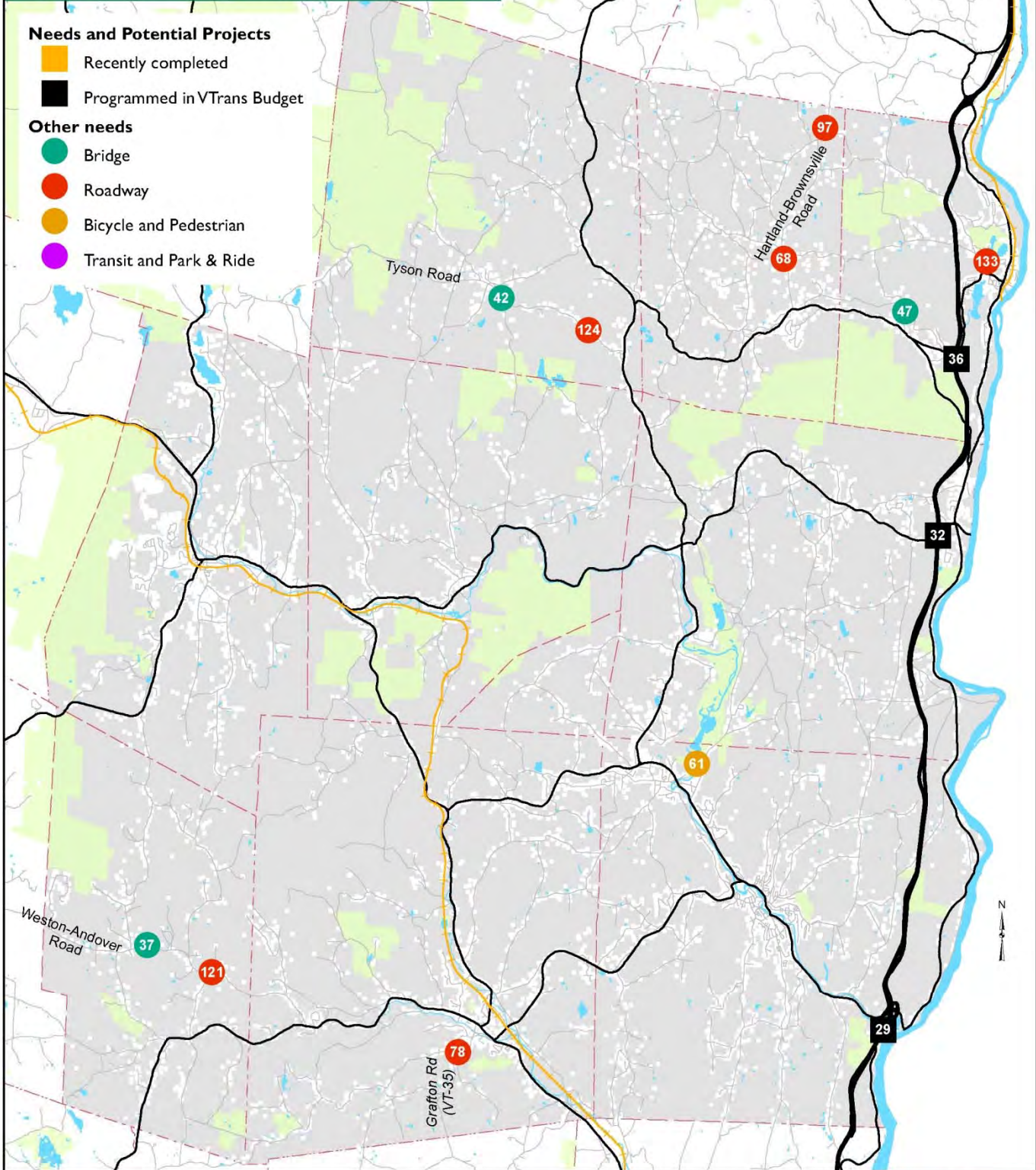
- Springfield (Exit 7)
- Weathersfield (Exit 8)
- Hartland (Exit 9) (just outside region, serving Windsor)

In 2004 the RPC completed a study of the Region's interstate interchanges: *Interstate Exits of the Region: Study and Policies*. While interstate interchange areas are often magnets for development due to their high traffic volumes and easy access to the interstate highways, these areas can compete with traditional villages and downtowns in Vermont (2001 Vermont Executive Order on Interchange Development). In Southern Windsor County, it is important 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. Any commercial land uses at interchanges shall, therefore, be restricted to visitor/ traveler services only.

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<sup>15</sup> Annual Average Daily Traffic (AADT) from the VTTrans Automatic Traffic Recorder Station History 2004-2013 at <http://vtransplanning.vermont.gov/research/traffic/publications>

# Other Corridors of Regional Significance



Interstate	Major River
Major roads	Building
All other roads	Conserved public land
Railroad	Town

Data sources: Road centerline (VTrans 2013), Town boundary (VCGI 2012), Conserved Public Land (VCGI 2010), Major River (VT Hydrography Data 2008), Buildings - E911 sites (VCGI 2013), Railroad (VTrans 2003)

Map for planning purposes only. Not for regulatory interpretation.

Map drawn April 28, 2014

**SWCRPC**  
SOUTHERN WINDSOR COUNTY  
REGIONAL PLANNING COMMISSION  
PO Box 320, Ascutney, VT 05030  
www.swcrpc.org

## MAJOR LOCAL ROADS

**TYSON ROAD** is a local road which forms a notable east-west connection from Felchville (Reading) to the Lakes District in Plymouth and northern Ludlow. The road is particularly scenic as it rises over the hill and into Plymouth.

**GRAFTON ROAD (VT-35)** is a local road which forms a north south connection from Chester to Grafton. The road is a class 2 town highway and therefore maintained by the town despite having being a numbered state route. The majority of the road within Chester winds in a steep valley next to the South Branch of the Williams River.

**WESTON-ANDOVER ROAD** is a local road which forms an east-west connection around Terrible Mountain between Chester and Weston. It is the primary road for Andover other than VT-11.

**BROWNSVILLE-HARTLAND ROAD** is a local road which forms a north-south connection between Brownsville and Hartland Four Corners. The road is particularly scenic with impressive views of Mount Ascutney.

**COUNTY ROAD** is a local road which connects Windsor to Hartland and provides access to the Mt. Ascutney Hospital and Health Center.

**SKITCHEWAUG TRAIL (VT-43)** is a local road that connects downtown Springfield to US-5.

**WEATHERSFIELD CENTER ROAD AND VALLEY STREET** is a local road that connects from VT-131 in Weathersfield to downtown Springfield through the residential area of Weathersfield Center.

**OKEMO MOUNTAIN ROAD** is the main access road to the Okemo Ski Resort which feeds onto VT-103 just north of Ludlow village. It experiences high traffic during ski season peaks.

Needs with specific location (see map for location):

ID	Short description	Type
29	Repair/ Replace I-91 Bridges 26 N&S ~ Springfield	Programmed Project
32	Repair/ Replace I-91 Bridges 30 N&S ~ Weathersfield	Programmed Project
36	Replace I-91 Bridges N&S ~ Windsor	Programmed Project
68	Hartland-Brownsville Rd near Coon Club Road ~ West Windsor ~ Hazard mitigation needed	Roadway
78	Grafton Road ~ Chester ~ Address issues of roadway and stream bank stabilization	Roadway
97	Brownsville-Hartland Rd near Hartland town line ~ West Windsor ~ Improve bicyclist safety	Roadway
121	Weston-Andover Rd ~ Andover ~ Address speeding issues	Roadway
124	Repave Tyson Road	Roadway
133	State St & Ascutney St ~ Windsor ~ Improve intersection safety	Roadway
37	Replace/ Repair Bridge 9 ~ Andover	Bridge

42	Repair/ Replace Bridge 28 ~ Reading	Bridge
47	Repair/ Replace Bridge 24 ~ Windsor	Bridge

### 3.1.3. MULTIPLE USERS OF THE ROADWAY NETWORK

The Region’s roadway network is used by a variety of users, including trucks, passenger cars, public transit buses, bicyclists, pedestrians and other users. Travel lane and shoulder widths vary significantly as do traffic speeds, traffic volumes and number of trucks, all which greatly influence the safety and suitability of each road for all user groups.

Recreational and commuting bicyclists use local and state roads for travel. There is only one multi-use path in the region – the Toonerville Trail in Springfield – although 2013 planning efforts are evaluating additional multi-use paths in Ludlow and North Springfield. There are currently no designated bicycle lanes on any roads, so bicyclists share the road with motorized vehicles. In some cases there are wider shoulders which enable a safer ride as discussed in more detail in the *2006 Regional Bicycling and Walking Plan*. Bicyclist needs and considerations are identified both in that 2006 Plan and are shown on the road corridor maps in Section 3.1.1. In most cases, only modest increases in shoulder width are desired to provide safer on-road bicyclist facilities; 5-8 foot wide shoulders are expensive and not feasible in many locations. Multi-use paths or other off-road bicycling facilities are generally desirable to support tourism and for less experienced bicyclists and children.

Like the *East Central Vermont Regional Transportation Plan*, this Plan strives to implement “Complete Streets” principles, which involves consideration of accommodations for all users in the planning, design, construction and maintenance of all roadways. On July 1, 2011, Vermont’s Complete Streets Act (H.198, Act 34) came into effect. The principle underlying the Complete Streets concept is that streets should safely accommodate all transportation system users, regardless of age, ability, or what mode of transportation they prefer – walking, biking, driving, or use of transit. The purpose the Bill was “to ensure that the needs of all transportation system users are considered in all state and municipally managed transportation projects and project phases, including planning, development, construction, and maintenance, except in the case of projects or project components involving unpaved highways. These ‘complete streets’ principles shall be integral to the transportation policy of Vermont.” This law applies to both state and town paved roads. Making a street “complete” could involve a variety of activities, including widening shoulders, installing/ maintaining sidewalks, creating multi-use paths and improving intersection geometry. More information about Complete Streets and its application can be found in the Complete Streets Technical Bulletin (Appendix L).

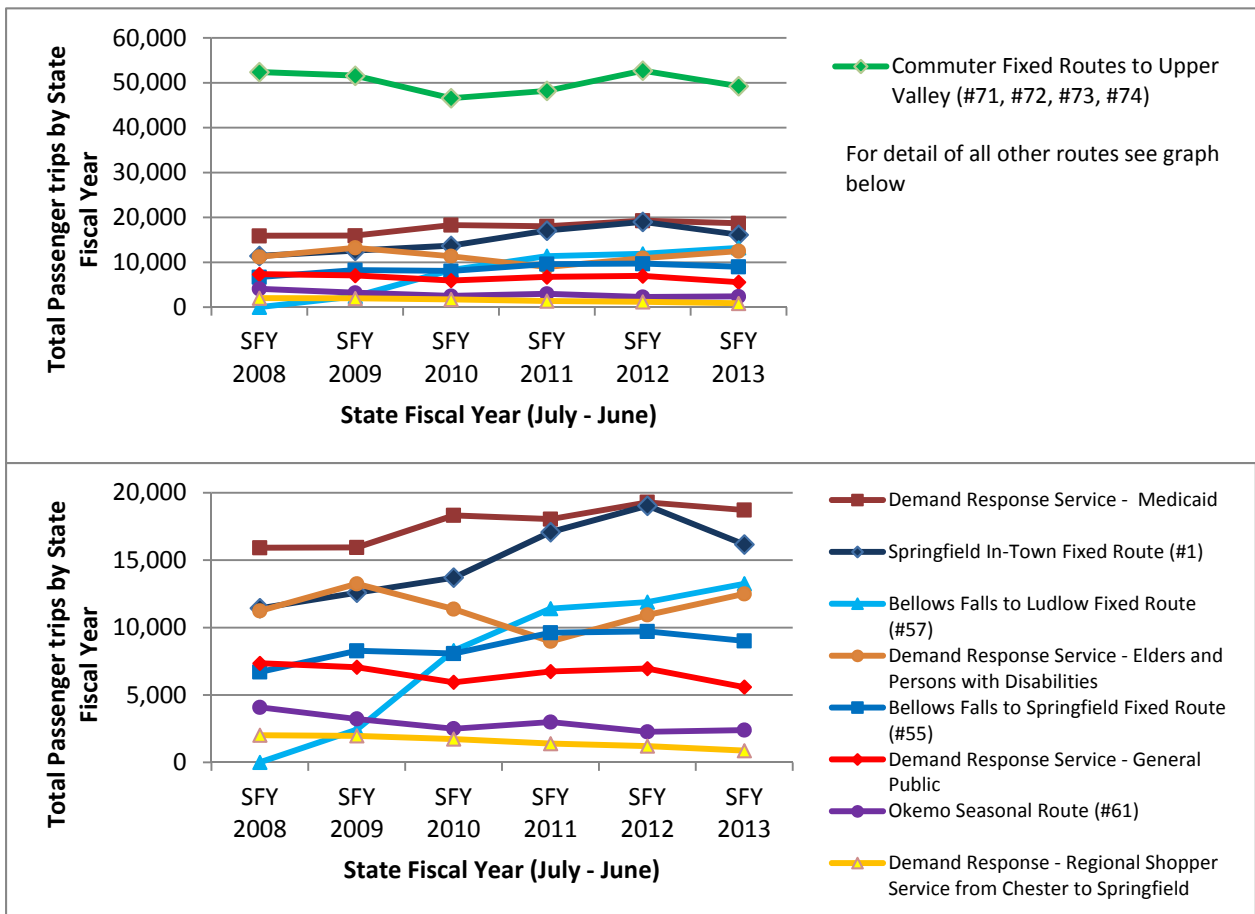
### 3.1.4. PARK AND RIDE FACILITIES

Park and ride facilities are an integral component of the transportation system in southern Windsor County, as they support both ridesharing as an alternative to single-occupant vehicle travel and public transportation services by providing convenient park-and-ride options. The RPC periodically assesses existing and future park and ride facilities that serve the Region, with the most recent *Regional Park and Ride Site Assessment* completed in 2010, with a needs assessment addendum in 2012 (see Appendix H). These needs assessments are informed by data from our monthly park and ride lot counts as well as local information. For more information about the public transportation services that serve the park and ride lots, see section 3.2 on the Public Transportation Network.

### 3.2. PUBLIC TRANSPORTATION NETWORK



As shown in the Regional Profile Chapter, the Region is expecting to have an increasing percentage of its population as “transit dependent” in the future – particularly as the percentage of the population over 65 increases. Given the rural character of the Region, it can be challenging to provide public transportation that will meet the needs of all transit dependent populations in a cost- and time-efficient manner. Traditional urban models of depending on buses to meet needs do not work – thus the public transportation includes a wider range of options in the Region.



Public transportation usage for services provided by Connecticut River Transit (CRT)<sup>16</sup>.

Connecticut River Transit (CRT) is the primary transit provider within the Region and to connect it to the Upper Valley. The main type of service CRT provides is **DIAL-A-RIDE SERVICE**<sup>17</sup>. On these routes buses stop at particular locations at particular times, with an ability to stray (deviate) from the

<sup>16</sup> Connecticut River Transit. Passenger trips on services from State Fiscal Year 2008 thru 2013. Emailed by Cathy Bullock.

<sup>17</sup> Also known as fixed route and deviated fixed route services.



fixed route by a certain distance if requested by a rider in advance. Ridership numbers from CRT show that approximately 49,000 commuter trips were made by public transit in from July 2012 thru June 2013 (see table above). The main commuter route runs from the I-91 park and ride lots (exits 7, 8 and 9 service the SWC Region) to the Upper Valley and its major employers. CRT operates fixed route service in Springfield, rural service between Bellows Falls and Springfield and between Bellows Falls and Ludlow, and seasonal service to Okemo Mountain Resort in Ludlow. In addition to CRT's service, Ludlow municipal transit operates within Ludlow and Marble Valley Transit meets the CRT bus in Ludlow to provide a connection to Rutland.

CRT also provides **DEMAND RESPONSE SERVICE** for Medicaid clients and elders and persons with disabilities for the Region. These services transport people from their homes to medical appointments and are provided by a combination of CRT buses, volunteer drivers (who use their own cars and are reimbursed for mileage only), and local taxi/ ambulance services. Several community groups such as Volunteers in Action (Windsor) and Chester Cares (Chester and Andover) also help fill in gaps in the transportation network – such as getting people from their homes to places where they can shop and meet other daily (non-medical) needs.

The Region is currently not served directly by **INTERCITY BUS SERVICE**, although it is close to the hubs of White River Junction VT (for Greyhound) and Lebanon NH (for Dartmouth Coach).

**CARPOOLS, VANPOOLS AND RIDESHARING** are other options available for those wishing to minimize the number of trips or miles they travel alone in their vehicle. These arrangements can be set up informally amongst personal networks or through formal networks such as Go Vermont and Upper Valley Rideshare<sup>18</sup>.

The Region currently has very limited service from **TAXI** providers to fill any additional gaps in transportation options. The Region also does not have any rental car services – closest are Claremont, NH, White River Junction, VT and Lebanon, NH.

For the last five years SWCRPC has been involved in the annual Vermont commuter challenge called Way To Go – in an effort to improve awareness of travel options in the Region that do not involve riding alone in a car. Since 2012 the two hospitals within the Region – Mount Ascutney and Springfield – have been actively trying to improve access to public transportation. There are a variety of ways in which they have pursued this goal, including:

- seeking grants to fill funding gaps and service gaps
- completing surveys to identify gaps in needs and knowledge of local services
- educating location medical and social service providers about what services are available and how to be more transit-friendly (eg appointment times)
- designing signage, posters and leaflets to educate the public on what is available.

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## PUBLIC TRANSPORTATION NEEDS

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The following are potential needs and upcoming projects concerning public transportation:

1. Monitor arising public transportation needs and carry out studies to assess needs for new, expanded or reduced routes and schedules regularly.
2. Support adequate bus circulation in all facilities designed to accommodate public transit, including Park and Ride lots

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<sup>18</sup> Go Vermont ([www.connectingcommuters.org/](http://www.connectingcommuters.org/)) and Upper Valley Rideshare ([www.uppervalleyrideshare.com/](http://www.uppervalleyrideshare.com/))

3. Continue to support provision of demand-response services for elders and persons with disabilities
4. Where possible, to reduce the need for demand-response services, encourage the coordination of existing fixed-route and deviated fixed route public transportation schedules with medical and non-medical service providers, to reduce the need for more expensive demand-response services.
5. Support the provision of inter-city bus services as identified in the *2013 Statewide Intercity Bus Study Update*.
6. Consider public transportation as an option to mitigate traffic impacts in major development proposals.
7. Improve public awareness of public transportation options within the Region.
8. Develop a plan for public transportation services within the Region which includes references to private transportation services that fill in gaps in transportation needs.
9. Assist Connecticut River Transit to evaluate existing routes, and make improvements where needed.

### 3.3. SIDEWALKS AND MULTI-USE PATH NETWORK



*Toonerville Trail in Springfield*

Walking is not a key transportation alternative in most of the region – particularly since most people do not work in the town in which they live. Walking is, however, popular in some village centers and downtowns, particularly where sidewalks are provided. Since 2007 SWCRPC has been conducting annual bicyclist and pedestrian counts in the region on Ludlow, Springfield and Windsor Main Streets, and Springfield’s Toonerville Trail (see Appendix I). The counts show a steady usage of pedestrian facilities (sidewalks and multi-use paths) in most seasons. Summer counts on Ludlow Main Street average around 500-600 people per day. Toonerville Trail usually gets between 130 and 160 users per day.

The table below and the *Bicycling and Pedestrian Network Map* summarizes existing off-road bicycle and pedestrian facilities in the region. Widened shoulders are not listed.

Town	Location	Facility Type	Approx. Mileage	Recent Study or Inventory
Springfield	Downtown and some residential areas	Sidewalk	20 miles	Sidewalk Inventory 2013
Springfield	North Springfield	Sidewalk	2 miles	Sidewalk Inventory 2013
Springfield	Toonerville Trail	Multi-Use Path	3 miles	
Windsor	Downtown and some residential areas	Sidewalk	8 miles	
Windsor	Connects rec fields on Ascutney St to Fairview/Enright Ave	Bike Path	Less than 0.1 miles	
Ludlow	Village and some residential areas	Sidewalk	5 miles	Sidewalk Inventory 2010

West Windsor	Brownsville village	Sidewalk	0.5 miles	Sidewalk Inventory 2013
Chester	Chester and Chester Depot	Sidewalk	3.5 miles	Road Surface Management Plan 2011, including sidewalks
Cavendish	Proctorsville village	Sidewalk	0.6 miles	Sidewalk Inventory 2011
Cavendish	Cavendish village	Sidewalk	1.6 miles	Sidewalk Inventory 2011

Within the last five years, two scoping reports have been completed for new multi-use paths in the Region – in Ludlow from the village to the Lakes District and Jackson Gore (2013) and in Springfield from the downtown to North Springfield (2013).

### PEDESTRIAN NEEDS

The following are potential needs and upcoming projects concerning pedestrians:

1. Upgrade existing sidewalks to meet current Americans with Disabilities Act of 1990 (ADA) Accessibility Guidelines in village centers and downtowns.
2. Expand road shoulders for pedestrians in smaller village centers or higher pedestrian usage areas where sidewalks are not installed.
3. Enhance sidewalks to better support state planning goals, including Complete Streets.
4. Make small sidewalk and multi-use path network expansions to make logical connections between destinations.
5. Resolve river-related issues for multi-use paths.
6. Implement the *2006 Regional Bicycling and Walking Plan*.
7. Update the *Regional Bicycling and Walking Plan*.

### 3.4. RAIL NETWORK



*Rail in Windsor.*

Rail service, as discussed in this section, is comprised of both passenger rail and freight services. Each is respectively discussed below. Without freight rail service there would be no passenger rail service – the tracks are maintained by the freight rail since passenger rail cannot afford to take on maintenance costs of the tracks and infrastructure on their own<sup>19</sup>.

<sup>19</sup> Overview of Freight and Passenger Rail in Vermont. Presentation by Costa Pappis, VTrans to the SWC Transportation Advisory Committee. July 17, 2013.

Vermont is highly dependent on the rail network in its surrounding states and provinces – as freight and passengers often cross the borders. Vermont wants to stay ahead in rail so ready when surrounding states have done their upgrades.

### 3.4.1. PASSENGER RAIL

Southern Windsor County is currently served by two passenger rail services: Amtrak’s “Vermont” and the Green Mountain Railroad’s “Green Mountain Flyer”.

**AMTRAK PASSENGER SERVICE** currently passes through the Region twice daily along the New England Central Railroad tracks. The “Vermont,” with service between St. Albans, VT and Washington D.C., currently stops in Windsor, as well as in nearby White River Junction, Bellows Falls, and Claremont, NH (see Regional Transportation System Map). This daytime service, which replaced the Montrealer in 1995, is geared more to the needs of tourists rather than business travelers. The track has had significant upgrades over the last five years which have improved travel speeds between New York City and the Region. The travel times will further improve once track upgrades in Massachusetts and Connecticut are completed. The State of Vermont currently subsidizes the Vermont to maintain services in this portion of the State.

Rail users can access the region from Windsor Rail Station. In 2014 there were 1,126 boardings and alightings from the Windsor station (see table below<sup>20</sup>).

	2013	2012	2011	2010	2009	2008	2007
Bellows Falls	4,774	4,620	4,364	4,652	4,092	4,050	3,427
Claremont NH	2,123	1,944	1,240	1,967	1,773	1,799	1,498
White River Junction	15,480	15,125	14,109	16,352	15,686	16,033	14,317
Windsor	1,126	962	687	1,154	1051	1020	823
<b>Total for Vermont</b>	<b>100,829</b>	<b>96,974</b>	<b>91,942</b>	<b>97,256</b>	<b>82,667</b>	<b>82,216</b>	<b>72,822</b>

The **GREEN MOUNTAIN RAILROAD** provides tourist-oriented passenger service on the “Green Mountain Flyer” between Bellows Falls and Chester, VT. This special scenic excursion service is available from early summer through the fall.

### 3.4.2. FREIGHT RAIL

Freight rail is an important mode for shipping commodities, and can offer greater economies of scale than trucking for certain commodities. In Vermont, rail carries approximately 100,000 carloads of freight each year. Freight carriers are trying to diversify from their traditional dependence in Vermont on lumber, with top commodities today including fuel, feed grains, limestone, salt, and lumber. There is opportunity to expand the use of rail for such freight that is not time-sensitive for delivery (ie not “Just-In-Time” delivery that is used for things like food and stocking most retail stores) - such as Liquefied

<sup>20</sup> Amtrak Fact Sheet, Fiscal Year 2013. State of Vermont. <http://www.amtrak.com/pdf/factsheets/VERMONT13.pdf>; Fiscal Year 2012 <http://www.amtrak.com/pdf/factsheets/VERMONT12.pdf>; etc through Fiscal Year 2007 <http://www.amtrak.com/pdf/factsheets/VERMONT07.pdf>. Amtrak Fact Sheet, Fiscal Year 2013. State of New Hampshire. <http://www.amtrak.com/pdf/factsheets/NEWHAMPSHIRE13.pdf>; Fiscal Year 2012 <http://www.amtrak.com/pdf/factsheets/NEWHAMPSHIRE12.pdf>; etc through Fiscal Year 2007 <http://www.amtrak.com/pdf/factsheets/NEWHAMPSHIRE07.pdf>

Petroleum Gas (LPG), sand, gravel, talc, limestone slurry, livestock feed, and logs and lumber. Rail has the advantage with heavy shipments – weight limit of up to 286,000 pounds far above the limit of 100,000 on most interstate highways<sup>21</sup>.

Southern Windsor County is served by two railroads – New England Central Railroad (NECR) and Green Mountain Railroad (GMR). The **GREEN MOUNTAIN RAILROAD (GMR)** became affiliated with the Vermont Rail System in 1997 and provides freight service through a lease agreement with the State of Vermont. Its service area lies between North Clarendon, VT and Cold River, NH with stops in Chester and Ludlow. The Green Mountain Railroad links with the New England Central Railroad in Bellows Falls and VT Railway in Rutland. The **NEW ENGLAND CENTRAL RAILROAD (NECR)** is a higher speed line than the GMR, and provides access north towards White River Junction VT, south towards Springfield MA, and beyond. Recent improvements to the clearance of the Bellows Falls tunnel increased the freight capacity of both the NECR and GMR lines.

Freight rail service is available in Windsor’s downtown industrial area, and is a preferred alternative to local industrial trucking activity in the downtown. Chester Depot is an existing transfer point on the GMR. Increased use of the GMR and the NEC tracks for both freight and passenger service has the potential to alleviate some of the traffic, truck and safety issues on US Route 5 and VT Route 103.

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### RAIL NEEDS

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The following are potential needs and upcoming projects concerning the rail network:

1. Support the location of businesses that could use freight rail transportation near existing rail lines and transfer points where possible.
2. Support improvements to the tracks and service to allow for higher speeds (eg Knowledge Corridor<sup>22</sup> and New England Intercity Rail Initiative<sup>23</sup>).
3. Investigate ways to improve passenger rail service.

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### 3.5. AIR NETWORK

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The Region is currently served by numerous commercial and general aviation airports. Air service is important for business and personal travel as well as for emergency responders, medical services and air cargo. All but one airport is located outside of this Region, making easy access to the larger commercial airports an important consideration of this Plan. Maximizing the use of the Hartness State Airport is a primary objective for this Region.

**COMMERCIAL FLIGHTS** are available at large airports including Manchester-Boston Regional (NH), Bradley International (CT), Boston Logan

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<sup>21</sup> Overview of Freight and Passenger Rail in Vermont. Presentation by Costa Pappis, VTTrans to the SWC Transportation Advisory Committee. July 17, 2013.

<sup>22</sup> Knowledge Corridor – Restore the Vermonter Project <http://www.massdot.state.ma.us/knowledgecorridor/>

<sup>23</sup> New England Intercity Rail Initiative <https://www.massdot.state.ma.us/planning/Main/CurrentStudies/NorthernNewEnglandRailStudy.aspx>

International (MA), and Burlington International (VT). These airports provide service for domestic and international flights. In addition, Lebanon Municipal Airport and Rutland-Southern Vermont Regional Airport provide limited commuter service within New England and the Northeast, as well as general aviation.

**HARTNESS STATE AIRPORT**, located in Springfield and Weathersfield, provides general aviation for the Region and beyond. It is owned by the State of Vermont. It has two runways, one of which is the second longest in the State (5,498ft), after Burlington. Hartness is the oldest airport in Vermont. In 1927, Charles Lindbergh landed at the airport and visited Governor James Hartness, for whom the airport was named. VTrans contracts out fixed-base operator services for this airport, including aircraft maintenance, storage, fuel, charters, and flight instruction. In addition to providing flying lessons, Hartness is also center for glider activity.

In addition to providing general aviation services, Hartness State Airport also serves important functions for hospitals, National Guard and Civil Air Patrol (CAP) operations. It is also important for economic development. VTrans' *Aviation Program-Wide Business Plan*<sup>24</sup> estimates the total economic impact of the Hartness State Airport was over \$1.8 million in 2010. Hartness Airport is in close proximity to ski areas, golf courses and many other tourist destinations and/or special resources. Hartness State Airport is underutilized, but the State of Vermont has several plans to improve utilization of Hartness alongside other Vermont airports.

**AIRPORT PERMITTING.** All airports are important to maintain since building new air facilities is difficult and expensive. Airport related projects are subject to a variety of permits and approvals. Recent hangar expansion projects at Hartness Airport are subject to Act 250 permits. The Town of Springfield adopted an airport overlay district in their zoning bylaws in order to protect encroachments into the flight path of the airport. New landing strips and helicopter pads are subject to approval from the State Transportation Board as a "restricted landing area". Municipal approval (usually under municipal zoning provisions or an ordinance) is a requirement of the state permit application in accordance with 5 V.S.A. §207.

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## AVIATION NEEDS

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The following are potential needs and upcoming projects concerning the Hartness State Airport, which would be carried out in conjunction with the Springfield Airport Commission:

1. Establish aviation easements around Hartness State Airport
2. Clear trees that encroach upon the Hartness State Airport flight paths
3. Improve the quality of the Airport Road
4. Explore opportunities for cooperative maintenance of Airport Road between Towns of Weathersfield and Springfield, and VTrans
5. Improve utilization of the airport
6. Improve marketing of the airport, including creation of a website for the airport
7. Continue perimeter fencing project as listed in VTrans 5 Year Aviation Capital Improvement Plan
8. Conduct an obstruction study and removal project as listed in VTrans 5 Year Aviation Capital Improvement Plan
9. Complete the hazard beacon replacement project as listed in VTrans 5 Year Aviation Capital Improvement Plan
10. Establish charter services

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<sup>24</sup> Aviation Program-Wide Business Plan 2011. January 2012 <http://aviation.vermont.gov/maps>

11. Provide ground transportation (e.g. car rentals, public transportation, shuttle bus, courtesy car, etc.) at the airport
12. Explore options for a park-and-ride lot to service both Connecticut River Transit and the Hartness State Airport
13. Build new hangar on the “Graves property”
14. Improve cellular telephone service at the airport.
15. Develop a purpose and needs survey for a precision (ILS) approach.

## CHAPTER 4 – IMPLEMENTATION

The purpose of this chapter is to articulate how the SWCRPC intends to implement this *Regional Transportation Plan*. Chapter 11 of *Volume 1 of the Regional Plan* identifies plan implementation measures. This chapter of *Volume 2 of the Regional Plan* is intended to supplement *Volume 1* with respect to implementation measures specific to transportation-related requirements as specified below:

1. According to the *Transportation Planning Initiative (TPI) Manual & Guidebook* (VTrans, 2007), the Regional Transportation Plan should include implementation strategies consistent with the following statement: “Transportation needs should be determined and investments identified to meet those needs. This can take the form of a regional transportation plan &/or update, together with the annual project prioritization list.”
2. Statutory requirements for the elements of a regional plan under 24 V.S.A. §4348a specify that the transportation element may include a description of “present and prospective transportation and circulation facilities” and “recommendations to meet future needs for such facilities, with indications of priorities of need, costs, and method of financing”.
3. 24 V.S.A. §4348a also requires that the plan include “[a] program for the implementation of the regional plan’s objectives, including a recommended investment strategy for regional facilities and services”.

In order to address the above requirements, this document is tended to serve as both a policy document as well as a planning guide for future transportation system investments. The goals and policies listed in Chapter 1 (*Volume 2*) are primarily intended to guide future investments in the transportation system and shape how subsequent land use development affects the safety, functionality and efficiency of the transportation network. The needs listed throughout Chapter 3 identify both programmed projects that will be addressed through the annual VTrans capital transportation budgets, and future needs that will need additional planning and scoping before implementation can occur. Some of the identified needs will also serve as the basis for the SWCRPC’s annual work programs, as we work to implement these projects over time.

SWCRPC intends to implement *Volume 2 of the Regional Plan* in the following ways. For the purposes of this document, implementation measures are discussed in four broad categories.

### 4.1 PUBLIC PARTICIPATION & COORDINATION

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As discussed in the introduction section of *Volume 2*, public participation was a critically important aspect of developing this document, especially with respect to developing policy statements, and identifying and prioritizing transportation needs. Similarly, the successful implementation of this document will require significant levels of additional public participation and coordination. All reasonable efforts will be made to maintain a clear, transparent implementation process that seeks meaningful levels of public involvement during the entire subsequent implementation processes. This will be accomplished through a variety of means, including, but not limited to the programs and strategies highlighted in this section.

#### 4.1.1. TRANSPORTATION ADVISORY COMMITTEE

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SWCRPC has a **TRANSPORTATION ADVISORY COMMITTEE** (TAC) that advises on regional transportation issues with representatives from each community in southern Windsor County, an ex-



officio representative from VTrans and up to four “at-large” members. Part of their work includes an annual prioritization of regional transportation projects which helps VTrans to prioritize their work across the state. More information about the TAC’s meetings, agendas and work can be found on their webpage at <http://swcrpc.org/tac/>.

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#### 4.1.2. COORDINATION EFFORTS BETWEEN DIFFERENT PARTNERS

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Over the years, the SWCRPC has become a vital connection between a variety of partners involved in or who would be affected by changes to transportation in the region. The SWCRPC enables coordination between federal, state and local governments, the general public and other interested parties. Coordination with these partners is important for planning as well as implementation of transportation-related projects and programs.

The SWCRPC participates in or coordinates with a variety of transportation-related committees and groups that meet regularly including, but not limited to,:

- Vermont Transportation Planning Initiative (TPI)
- Southern Windsor County (SWC) Transportation Advisory Committee (TAC)
- Orange and Windsor Counties Town Road Foremen
- Springfield Airport Commission
- Springfield Medical Care System Community Health Team
- Mt Ascutney Hospital Prevention Partnership
- Southern Windsor and Windham County Elders and Persons with Disabilities (E&D) Committee

Other typical partners which the SWCRPC coordinates with on transportation-related issues include:

- Vermont Agency of Transportation
- Connecticut River Transit
- Chambers of Commerce
- Town Selectboards and Village Trustees
- Town Managers
- Town Clerks
- Town Zoning Administrators
- Emergency Services Personnel – particularly Police and Fire

For more information about the partners and particular coordination efforts of the SWCRPC, see the most recent *Transportation Planning Initiative (TPI) Work Plan*.

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#### 4.1.3. COMMUNICATION METHODS

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In order to improve public access to information related to the implementation of this Plan, the SWCRPC uses a variety of media and communication methods to disseminate information:

- SWCRPC webpage <http://swcrpc.org/>
- SWCRPC facebook page <https://www.facebook.com/SWCRPC>
- SWCRPC newsletter <http://swcrpc.org/publications/>
- Town listservs, blogs and websites
- Email lists of interested parties
- Newspaper advertisements and press releases
- Paper copies of all reports and plans are available upon request
- Local public access television

As technology continues to improve and popular social media changes, the above means of communication will need to be altered in order to utilize the most effective and easily accessible formats for residents of this Region.

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#### 4.1.4 TITLE VI PLAN

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In 2013, the SWCRPC adopted a Title VI Plan which outlines how the RPC plans to address the requirements of Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987 and related Federal and State statutes<sup>25</sup>. A key element for addressing Title VI at the planning phase is having an effective public involvement process. That process must be proactive and provides complete information, timely public notice, full public access to key decisions and an opportunity for early and continuing involvement. A public involvement process should also include a process for seeking out and considering the needs of those who are traditionally ignored or underserved (e.g. by existing transportation systems). The *Title VI Plan* outlines as a system of procedures and mechanisms to assure nondiscrimination in all of the SWCRPC's programs, activities and services, whether Federally -funded or not<sup>26</sup>.

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#### 4.2 ANNUAL WORK PROGRAM

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A significant amount of the transportation work done by the SWCRPC is carried out through participation in Vermont's **TRANSPORTATION PLANNING INITIATIVE (TPI)** which represents a formal collaboration between the VTrans and the eleven Vermont Regional Planning Commissions. Each federal fiscal year (Oct – Sept) an RPC Transportation Work Program is established, which details all of the work that will be carried out in Southern Windsor County under this initiative. This work program seeks to implement both programmed projects and needs as identified in the Regional Transportation Plan. It also includes special projects and other activities needed in order to implement this Plan, such as Corridor Studies, modal plans, Regional Safety Forums, and other transportation planning activities. The most current Transportation Work Program is available online at <http://swcrpc.org/transportation/>.

Additional funding may be necessary to conduct identified planning efforts identified in this Plan. For example, SWCRPC is currently applying with neighboring RPCs for TIGER funding to plan for a more flood resilient transportation system that will adapt to our changing climate conditions. Other additional funding sources may also be needed in order to conduct robust, meaningful modal plans or corridor studies also identified in this Plan.

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#### 4.3 TARGETED TRANSPORTATION INVESTMENTS

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Recommendations to meet future needs can generally be classified into two major types: programmed projects and identified future needs. Programmed projects have construction funding included in the State Transportation Program and are included in the STIP, as discussed in Section 4.3.1. Identified needs represent a list of regional transportation needed investment, but at this time do not have implementation money identified (see Section 4.3.2). Some of these needs may be easily address through regular roadway maintenance activities. Some other needs may be able to be addressed through local funding or through smaller grant programs, such as Better Backroads, Structures, or the Class 2 Town Highway Programs. While other needs may require significant funding for future

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<sup>25</sup> Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, and related Federal and State statutes and regulations, prohibits discrimination and provides that no person in the United States shall, on the grounds of race, color, national origin, gender, age, low income status, or mental or physical disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

<sup>26</sup> For more information see SWCRPC's Title VI and Civil Rights webpage <http://swcrpc.org/title-vi-and-civil-rights/>

implementation. There is clearly not enough money in the State Transportation Program to address all of these needs. Implementation of these needs will happen only as future funding allows. These needs will be evaluated on a regular basis, at least every five years, as both transportation infrastructure and funding conditions change.

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#### 4.3.1 PROGRAMMED PROJECTS

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Programmed projects include transportation investments that are included in VTrans' FY 2015 Transportation Budget and are as prioritized by the SWCRPC (see Appendix N). SWCRPC evaluates and prioritizes programmed projects on an annual basis. Therefore, this document recognizes that these programmed projects represent a snap-shot-in-time that will be re-evaluated on an annual basis and regularly posted on the SWCRPC website. In order to guide the ongoing implementation of this effort, our project prioritization process is summarized below.

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#### PROJECT PRIORITIZATION

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Each year the SWCRPC and its TAC prioritize regional transportation projects which help to inform how VTrans prioritizes their work across the state. Southern Windsor County's **PROJECT PRIORITIZATION LIST** is published online at <http://swcrpc.org/transportation/>. SWCRPC and the TAC have been evaluating and prioritizing transportation projects in the Region for more than 15 years based on an established evaluation process. SWCRPC made some revisions to their evaluation process in 2005 following passage of the state Transportation Bill (H.523) which required the Agency of Transportation (VTrans) to develop a project prioritization system to serve as a basis for the annual transportation capital programming process. This legislation included a requirement for VTrans to use RPC priorities as a criterion in the state prioritization system.

The process used by the RPC includes the following criteria in evaluating programmed transportation projects: impact on congestion & mobility, alternative routes, importance for economy, social / cultural importance, conformance with local & regional plans, and local support. The following additional criteria are only used to determine priorities if two projects are tied: sufficiency ratings, traffic (AADT) and high crash location. For a more detailed methodology see Appendix N – Project Prioritization 2014.

For the purposes of implementing this document, the most recent project prioritization list is included in this document, which includes regional priorities and funding information. However, since this is an annual process, this document recognizes that this project listing will be out-of-date as soon as next year. Please note however, that the most recent annual project prioritization list is posted online at <http://swcrpc.org/transportation/>.

For a more detailed methodology see Appendix N – Project Prioritization 2014 or online at <http://swcrpc.org/transportation/> with the most recent year's prioritization list.

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#### TOWN HIGHWAY BRIDGE PRE-CANDIDATES

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In 2009, the RPC was asked by VTrans to help to identify and prioritize "**PRE-CANDIDATE PROJECTS FOR THE TOWN HIGHWAY BRIDGE PROGRAM**". Following VTrans guidance, the RPC worked with the TAC, town highway departments and other town officials to develop a list of the top pre-candidate town bridge projects. Town Highway Bridge "pre-candidate" needs are then added to the overall project prioritization list as a separate category. Criteria used to evaluate Town Highway Bridge "pre-candidate" needs are similar to the above criteria, with a few modifications: structure condition, traffic (AADT), high crash location, impact on congestion & mobility, alternative routes, importance for economy, conformance with local & regional plans, and local support.

For a more detailed methodology see Appendix N – Project Prioritization 2014 or online at <http://swcrpc.org/transportation/> with the most recent year’s prioritization list.

For both the Project Prioritization and Town Highway Bridge Pre-Candidate lists discussed above, the SWCRPC follows an extensive consultative process. RPC staff contacted all town managers or other town representatives to get input into the regional evaluation process, to determine local support and to re-evaluate last years’ priorities. The TAC then meets to determine priorities based on the above criteria, goals and policies of the Regional Transportation Plan, and local knowledge. Then the RPC Board of Commissioners accepted the TAC priorities based on the TAC’s recommendations.

The Project Prioritization and Town Highway Bridge Pre-Candidate lists are then fed into VTrans’ statewide prioritization process for transportation projects.

## ONGOING EVALUATION AND COORDINATION CONCERNING PROGRAMMED PROJECTS

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Each year, the annual **VTRANS TRANSPORTATION PROGRAM** is approved by the State Legislature and posted online at <http://vtrans.vermont.gov/>. In addition, the **STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)** is developed by VTrans. The STIP lists how VTrans intends to spend funding from the Federal Highway Administration and the Federal Transit Administration over the next four year period. SWCRPC staff review both funding documents to evaluate the status of programmed projects. Where questions arise, the SWCRPC will coordinate with town, state and federal levels regarding the status of these programmed projects. Staff also assists VTrans with outreach for annual STIP hearings, attend the hearings, and provide comments to the STIP coordinator.

### 4.3.2. IDENTIFIED FUTURE NEEDS

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A list of needs and potential projects were identified with the assistance of a variety of regional stakeholders – as listed in the Introduction of this Plan. These needs and potential projects are briefly referenced within the relevant road corridor description in chapter 3 alongside a reference map for each Corridor. The following page includes a full listing of all the projects by project type.

In general, the identified regional needs and potential projects are summarized as described below:

- Topics include, but are not limited to, safety improvements, hazard mitigation, pedestrian and cyclist-related improvements, byways, traffic flow and access management, transit and park & ride.
- Short range and long range needs. While some needs may be met in the next few years as they are incorporated into routine maintenance and small transportation projects, many projects may not be completed for many years, if at all. However, it is useful to get a comprehensive idea of the major needs across the region so needs and priorities can be prioritized as funding and opportunities become available.
  - o High – Within next five years. Project either relatively easy fix or can be addressed in a capital project that is already programmed
  - o Medium – Within next five to fifteen years.
  - o Low – Most likely will not be addressed for at least another fifteen years, unless circumstances change.
- The primary entity who would be responsible for the project or to address the potential need is identified. Note: Distinction is made between efforts of the VTrans Main Office (“State”) and

the VTrans Maintenance District Offices (“District”) due to different personnel and funding mechanisms.

Potential project costs and funding sources are not identified for most projects, as detailed scoping or project cost estimates are not available. It is intended that this list of needs and priorities be used to inform the annual transportation work program of SWCRPC and that where possible SWCRPC will assist Towns and the VTrans to seek funding and opportunities to address these needs.

Examples of funding and opportunities that may be relevant for implementation include:

- High Risk Rural Roads Program – Assessment and implementation of low cost safety improvements to rural roads in Vermont (most roads which are not state highway or Class I Town Highways)
- Better Back Roads grants – awarded annually to address transportation issues related to water quality issues
- Municipal Park and Ride grants
- Transportation Alternatives Program grants – awarded annually using federally defined eligibility through VTrans. Particularly useful for pedestrian and bicycling projects.
- Vermont Bicycling and Pedestrian grants – awarded annually by VTrans for Bicycling and Pedestrian projects
- Hazard Mitigation Grant Program (HMGP) grants

Paving and maintenance projects through VTrans may be able to address minor needs without significantly increasing scope (and cost) of programmed project

#### 4.4. DEVELOPMENT REVIEW

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The SWCRPC takes an active role in reviewing development proposals (e.g. permit applications for Section 1111, Act 250, Section 248) to ensure that projects are in conformance with this document and do not result in undue impacts on the transportation system or public investments in the transportation system. Such projects are evaluated based on the goals and policies listed in Chapter 1 (*Volume 2*), regional *Traffic Impact Study Guidelines* (Appendix M), existing permit findings and conditions, and consistency with other planning documents (e.g. *VT 103 Corridor Management Plan*, *North Springfield Truck Study*, *Ski Corridor Traffic Management Plan*, etc.). See Chapter 11 of *Volume 1* of the *Regional Plan* for more information on development review and substantial regional impact determinations.

#### 4.5. NEEDS AND PRIORITIES IDENTIFIED IN THIS PLAN

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The following is a list of all the recently completed and programmed projects, as well as potential needs, as identified in each of the Corridor Maps.

#### 4.5.I. RECENTLY COMPLETED AND PROGRAMMED PROJECTS

This list is current as of May 2014. Known or estimated costs are given for recently completed and programmed projects – where known and as reported in the most recent Transportation Budget<sup>27</sup>.

ID	Short description	Type	More Information	Priority	Responsibility	Known or estimated Cost
1	Repaved VT-131 and VT-12 ~ Weathersfield	Recently completed	VT-131 and VT-12 between VT-106 and the New Hampshire border repaved in 2013.		State	\$6.9 million
2	Replaced Bridge 8 ~ Chester	Recently completed	Bridge reconstructed in 2011.		State	\$2.8 million
3	Replaced Bridge 9 ~ Chester	Recently completed	Bridge replaced in 2011.		State	\$4.3 million
4	VT-131 & US-5 in Ascutney ~ Weathersfield ~ Intersection geometry improved	Recently completed	Identified High Crash Intersection in 2006-2010 data from VTrans. Intersection geometry improved (including moving islands back) during 2013 paving project.		State	Part of larger project
5	VT100S repaved ~ Andover & Ludlow	Recently completed	VT-100 from VT-103 to Weston over Terrible Mountain. Completed in 2013. SB.		District	Unknown
6	Sidewalk improvements ~ Windsor	Recently completed	TCSE Funding. Sidewalks replaced and upgraded to ADA standards on Union St in 2013.		Town	\$782,000
7	VT-131 & VT-106 ~ Install Downers Corners Park & Ride lot ~ Weathersfield	Recently completed	Identified in 2012 SWC Park and Ride Needs Assessment. Constructed as municipal park and ride lot in 2013.		Town	Unknown
8	US-5 ~ Improve condition of Exit 9 Park & Ride Lot ~ Hartland	Programmed Project	Outside region, but supports region. Improve quality and capacity of Park & Ride lot. Identified in 2012 Park and Ride Needs Assessment. Reconstruction and expansion due in 2014 under State Park & Ride Program. TAC.		State	\$635,000
9	VT-11 ~ Improve Exit 7 Park & Ride Lot ~ Springfield	Programmed Project	2012 Park and Ride Needs Assessment Addendum. Reconstruction due in 2015 under State Park & Ride Program. TAC, SB.		State	\$1.1 million
10	Repave VT-11 ~ Andover and Chester	Programmed Project	Repaving due in 2014.		State	\$9.7 million

<sup>27</sup> For most projects this comes from the Governor's Recommended FY2015 Transportation Budget as available on May 2, 2014 at <http://vtrans.vermont.gov/about-us/capital-programs>

ID	Short description	Type	More Information	Priority	Responsibility	Known or estimated Cost
11	VT-11 between Weston-Andover Road and Windham town line ~ Chester & Andover ~ Widen shoulders to improve safety	Programmed Project	Narrow shoulders need to be widened. TAC, SB, RF. Should be addressed 2015 repaving project.	High	State	Part of larger project
12	Repave VT-131 ~ Cavendish and Weathersfield	Programmed Project	Repaving due in 2015. From VT-103 to VT-106.		State	\$13.1 million
13	VT-131 from Upper Falls Road to Whitesville ~ Cavendish & Weathersfield ~ Widen shoulders, improve sight distances and improve drainage where possible	Programmed Project	Narrow shoulders, poor sight distances, poor road drainage near ledges. Identified in 2006 SWC Bicycling and Pedestrian Plan. TAC. Should be addressed in 2015 VT-131 repaving project.	High	State	Part of larger project
14	VT-131 ~ Cavendish ~ Improve drainage around Chubb Hill Ledges	Programmed Project	Poor drainage, especially in mud season. Chubb Hill Road intersection with VT-131 recently moved to improve some of the safety issues. TAC, RF, SB. Should be addressed as part of the 2015 repaving project.	High	State	Part of larger project
15	Repave VT-10 ~ Chester & Springfield	Programmed Project	Currently scheduled for construction in FY2015.		State	\$4.1 million
16	VT-10 ~ Chester ~ Modify super elevation to improve safety	Programmed Project	Improve super elevation of roadway (bank it into the curve instead of out). Should be addressed with the VT-10 paving project in 2015. TAC, SB.	High	State	Part of larger project
17	VT-10 from Gassetts to North Springfield ~ Chester & Springfield ~ Widen shoulders to improve safety	Programmed Project	Narrow, hazardous road sections poor pavement conditions, truck traffic increased anticipated from the North Springfield Industrial Park. Repaved/ reconstruct roadway and widen shoulders a few feet to improve safety for motorists and bicyclists. Used by bike tour groups. TAC, SB. Should be addressed in 2015 VT-10 repaving project.	High	State	Part of larger project
18	VT-10 from Gassetts to North Springfield ~ Chester & Springfield ~ Improve advanced warning signs for intersections to improve safety	Programmed Project	Improve advanced warning signs for all the road intersections. TAC, SB. Should be addressed in 2015 paving project.	High	State	Part of larger project
19	Repave Class 1 town highway ~ Chester	Programmed Project	Repaving Class 1 sections of VT-103 and VT-11 due in 2015.		Town	Unknown

ID	Short description	Type	More Information	Priority	Responsibility	Known or estimated Cost
20	Repave Class 1 town highway ~ Springfield	Programmed Project	Repaving of class 1 sections of Main St/ Chester Rd due in 2015.		Town	Unknown
21	Repave Class 1 town highway ~ Windsor	Programmed Project	Repaving class 1 sections of US-5 due in 2015.		Town	Unknown
22	Reconstruct Maple St ~ Weathersfield	Programmed Project	Reconstruction of Maple Street through VTrans Roadways Program. Construction due in 2014.		Town	\$636,000
23	Upgrade Railroad Crossing ~ Ludlow	Programmed Project	West Hill Road Railroad Crossing. Construction due in 2014.		State	\$240,000
24	Replace Bridge 41 ~ Andover	Programmed Project	VT-11 east of Howard Hill Rd. State Highway Bridge project. Scoping completed early 2013 with Regional Concerns meeting in March 2013. Construction currently due in 2015 or 2016.		State	\$863,000
25	Replace Bridge 1 ~ Cavendish	Programmed Project	State bridge project scoped in 2013. Due for construction in 2014.		State	\$2.6 million
26	Repair/ Replace Bridge 58 ~ Cavendish	Programmed Project	Town Highway Bridge project at Development and Evaluation stage.		State, Town	Costs not yet known
27	Replace Bridge 25 (Walker Bridge) ~ Ludlow	Programmed Project	Walker Bridge. Scoping and regional concerns meeting in spring 2012. Construction currently due in 2015 or 2016.		State, Town	\$1.7 million
28	Smithville Roadway Project ~ Ludlow and Cavendish	Programmed Project	Project being re-worked. Front of Book Roadway Project.		State	Costs not yet known
29	Repair/ Replace I-91 Bridges 26 N&S ~ Springfield	Programmed Project	Received funding for Development & Evaluation of bridges 30 north and south. Construction will not occur for several years.		State	Costs not yet known
30	Repair/ Replace I-91 Bridges 28N&S ~ Springfield	Programmed Project	2013 Governor's Budget included funding for I-91 bridges 28 north and south to be Candidate Interstate Bridge Projects. Construction will not occur for several years.		State	Costs not yet known
31	Repair/ Replace Culvert 11B ~ Weathersfield	Programmed Project	Large culvert on VT-131 just east of Henry Gould Rd. State Highway Bridge Program - Development & Evaluation stage. Unknown construction date.		State	\$404,000
32	Repair/ Replace I-91 Bridges 30 N&S ~ Weathersfield	Programmed Project	Received funding for Development & Evaluation of bridges 30 north and south. Construction will not occur for several years.		State	Costs not yet known



ID	Short description	Type	More Information	Priority	Responsibility	Known or estimated Cost
33	Repair/ Replace Culvert 15 ~ Weathersfield	Programmed Project	Large culvert on VT-131 just west of Jarvis Rd. State Highway Bridge Program - Development & Evaluation stage. Unknown construction date.		State	Costs not yet known
34	Replace deck on Bridge 4 ~ West Windsor	Programmed Project	VT-44 Bridge 4. Deck due for replacement (major maintenance project) in 2014.		State, District	\$400,000
35	Replace deck on Bridge 7 ~ West Windsor	Programmed Project	VT-44 Bridge 7. Deck due for replacement (major maintenance project) in 2014.		State, District	\$500,000
36	Replace I-91 Bridges N&S ~ Windsor	Programmed Project	Replacement of I-91 bridges 33 north and south over the VT-44 narrows in Windsor. Construction in 2013 and 2014.		State	\$23.9 million

#### 4.5.2. OTHER IDENTIFIED TRANSPORTATION NEEDS

The following is a list of all transportation needs identified in this Plan that have specific locations. This list is identical to those listed under each roadway corridor in Chapter 3. The ID numbers correspond with Corridor Maps also found in Chapter 3. This table includes some additional information about each of the needs, priority and responsibility. A description of how this list was compiled can be found in Chapter 4.3.2. Other needs without specific locations can be found within Chapter 3.

ID	Short description	Type	More Information	Priority	Responsibility
67	VT-131 west of Cavendish village ~ Potential hazard mitigation site	Roadway	Road lost in 1927 and 2011 when Black River avulsion ran next to the roadway. "Cavendish Canyon". TAC. VTrans District says issue pretty well addressed.		State
68	Hartland-Brownsville Rd near Coon Club Road ~ West Windsor ~ Hazard mitigation needed	Roadway	Hazard mitigation needed near intersection with Coon Club Road. RF.	High	Town
69	VT-103 and Commonwealth Ave ~ Ludlow ~ Hazard mitigation needed	Roadway	Need hazard mitigation work done. SB, RF. Town going to try to coordinate work so done at the same time as traffic interruptions from replacement of Walker Bridge.	Medium	Town
70	VT-103 in Stone Village ~ Chester ~ Mitigate truck traffic issues	Roadway	Heavy truck volumes along VT-11 and VT-103 have wear and tear on roads and there is concern for the impacts on the historic Stone Village. SB.	Low	State, RPC, Town
71	VT-11 & VT-103 ~ Chester ~ Improve traffic flow during peak times and improve road geometry	Roadway	Chester triangle (Maple St/ South Main St/ Depot St). Ski traffic congestion, hard for trucks to make the corner. Explore improvements as identified in 2008 VT 103 Corridor Management Plan, including improving the geometry for trucks. Identified High Crash location in 2006-2010 data from VTrans. 1999 State Truck Network study. TAC, SB.	Medium	State, RPC, Town
72	VT-103 ~ Ludlow ~ Manage and mitigate traffic congestion during peak travel	Roadway	Experiences congestion caused by peak hour tourist travel. Identified in VT-103 Corridor Management Plan 2009.	High	State, RPC, Town
73	VT-131 in Amsden ~ Weathersfield ~ Improve roadway safety	Roadway	"Deadman's Corner". Tight corner. Issues start from Cerassimo and end at VT-106. Identified High Crash Location in 2006-2010 data from VTrans. Would be a big project to address. TAC, SB.	Low	State
74	VT-131 & VT-103 in Proctorsville ~ Cavendish ~ Study intersection and improve safety	Roadway	Study to find improvement. Railroad tracks distracting. Too much happening at once. Issues with traffic flow. Identified High Crash Intersection in 2006-2010 data from VTrans. TAC. Town Plan.	Low	State
75	VT-44 between Brownsville and Ski Tow Rd ~ West Windsor ~ Widen shoulders to improve safety	Roadway	Narrow roadway width. No paved shoulders for majority. Limited sight distance. Identified in 2006 Bicycle and Pedestrian Plan. TAC. SB.	Medium	State
76	US-5 in Ascutney between VT-131 and	Roadway	Improve safety for cyclists. Narrow roadway, few shoulders, storm drain	Medium	State

ID	Short description	Type	More Information	Priority	Responsibility
	VT-44 ~ Weathersfield ~ Widen shoulders to improve bicycle safety		grates present hazard. Identified in 2006 Bicycling and Pedestrian Plan. TAC. Could address in a future paving project.		
77	VT-100N from VT-103 to Plymouth town line ~ Ludlow ~ Widen shoulders and improve sight distances to improve safety	Roadway	Through the Lakes District. Improve safety for motorists and bicyclists. Identified in 2006 Bicycling and Pedestrian Plan. TAC, RF, SB. Geographic and lake constraints would make it hard to do.	Low	State
78	Grafton Road ~ Chester ~ Address issues of roadway and stream bank stabilization	Roadway	Roadway significantly damaged in Irene - roadway is falling into the stream and needs rip rap/ stream stabilization. Hazard mitigation. Close to stream. State is doing some work with the roadway to improve safety through the HSIP program. TAC, SB. Clay soils make work in the area hard. Need to armor banks over time.	Medium	Town
79	VT-106 & VT-10 in North Springfield ~ Springfield ~ Improve intersection safety	Roadway	Issues with safety. People don't stop from VT-106. Install rumble strips in next re-paving? TAC, SB. Return intersection to a T-intersection without feeder lanes. Likely outside limits of 2015 VT-10 paving project so will have to wait until a future VT-131 repaving project.	Medium	State
80	VT-131 & VT-106 in Downers Corners ~ Weathersfield ~ Improve access management to improve safety	Roadway	Improve access management especially at gas station - which would mean waiting for an access management permit to be triggered. TAC.	Low	State
81	VT-131 & Upper Falls Rd ~ Weathersfield ~ Improve intersection layout	Roadway	Wide and confusing intersection near covered bridge. TAC. District to talk with town about altering the pull-off (which is town-owned) which makes the intersection too wide.	Low	State, Town
82	VT-131 in Cavendish village ~ Cavendish ~ Improve drainage	Roadway	Improve drainage on VT-131 through village of Cavendish, particularly in areas where the sidewalk is now below grade. Originally the sidewalks were above road grade. Roadway and sidewalks have drainage issues. SB. Might be addressed in 2015 VT-131 repaving project.	Low	State
83	VT-103 ~ Ludlow ~ Provide safer alternative bicycling route to VT-103 along Dug Road	Roadway	Provide alternative, low traffic volume route for bicyclists on High St and Dug Road? Issues with speed. Used to be a common detour route. 2006 Bicycling and Walking Plan. TAC.	Low	Town
84	VT-44 & US-5 ~ Windsor ~ Improve intersection safety	Roadway	Union/Bridge/Main St. Identified High Crash Location in 2006-2010 data from VTrans. TAC.	Low	Town
85	VT-10 and Baltimore Rd ~ Springfield ~ Improve intersection safety	Roadway	Improve safety. Change speed limit and add intersection warning signs? High speeds through the area - especially as come around the corner from VT-106/ River St. Baltimore SB. Might be addressed in 2015 VT-10 repaving project or will have to wait. Reducing speed limit from 50mph to 40mph might also help.	Low	State, Town

ID	Short description	Type	More Information	Priority	Responsibility
86	VT-44 around Windsor/ West Windsor town line ~ West Windsor & Windsor ~ Widen shoulders to improve safety	Roadway	Identified High Crash Location in 2003-2007 data from VTrans. Road surface pitches considerably. Already removed some trees to make it better. Quite a few bikes and walkers. Narrow roadway. TAC. Could address in future paving project.	Medium	State
87	VT-44 near Coaching Lane ~ West Windsor ~ Install crossing for pedestrians and bicyclists	Roadway	Improve safety for recreational users crossing the road - including horse riders and mountain bicyclists. State has approved a crossing. Should be completed in 2013. TAC, RF. District assisted with engineering to re-do the intersection but cannot help with construction. Cannot have crosswalk since in a 50mph zone.	Medium	Town
88	VT-44 & VT-44A ~ Windsor ~ Improve Safety	Roadway	Limited sight distances at intersection. TAC. Would need to acquire property at intersection. [State responsibility, but town assistance to purchase property would get it moving]	Medium	State
89	VT-11 at Clinton/Main/South St ~ Springfield ~ Improve intersection geometry to improve safety	Roadway	Confusing junction with 5 incoming road sections. Identified High Crash Location in 2006-2010 data from VTrans. TAC, SB. Intersection was studied in 2012/2013 HSIP (Highway Safety Improvement Program), but no clear solutions. Intersection improved by removal of a building in December 2013.	Low	Town
90	VT-11 (River St) ~ Springfield ~ Address access management issues to improve safety	Roadway	Identified High Crash Location in 2006-2010 data from VTrans. Gas station access management issues. New activity at 100 River St (which includes Springfield Health Center) contributes to increased activity/ conflicts. TAC, SB.	Low	Town
91	VT-11 (Chester Rd) near Plaza ~ Springfield ~ Improve intersection safety at high crash location	Roadway	Identified High Crash Location in 2006-2010 data from VTrans. TAC. Issues might significantly addressed by recent changes to McDonalds' accesses.	Low	Town
92	VT-11 (Chester Rd) near Riverside School ~ Springfield ~ Improve intersection safety	Roadway	Identified High Crash Location in 2006-2010 data from VTrans. TAC. Springfield Selectboard is considering doing something here.	High	Town
93	VT-11 (Pleasant St) & Elm St ~ Chester ~ Improve sight distances at intersection near bridge	Roadway	VT-11 bridge is very close to Elm St intersection, guardrail obstructs sight distances and limits turn radius, hard to turn onto/ out of Elm St. Identified High Crash Location in 2006-2010 data from VTrans. TAC, SB. No easy fix.	Low	State, Town

ID	Short description	Type	More Information	Priority	Responsibility
94	VT-103S around Peck Rd ~ Chester ~ Add advanced warning signs for intersections to improve safety	Roadway	Add intersection warning signs? High speeds in the area. Identified High Crash Location in 2003-2007 data from VTrans, but not in 2006-2010 data. No bridge on Missing Link Road from Sept 2011 to present due to Irene - so currently reduced number of crash incidents. Bridge will be re-built. TAC, RF, SB. District will talk with Highway Safety.	High	State
95	VT-103 from VT-131 to Chester town line ~ Cavendish ~ Widen shoulders and improve safety	Roadway	Proctorsville Gulf. Improve bicyclist safety. Narrow shoulders, poor sight distances, roadside obstacles, high vehicle traffic, high truck volumes, high speeds, ice in shady areas. Particularly narrow shoulders when two lanes climbing the hill. 2006 Bicycling and Walking Plan. 1999 State Truck Network study. SB, TAC. The reclaim/paving project done a few years ago should have got whatever extra shoulder it could. Not much more is feasible given constraints.	Low	State
96	VT-106 in Perkinsville ~ Weathersfield ~ Widen shoulders to improve bicyclist safety	Roadway	Improve safety for bicyclists. Narrow roadway with very narrow shoulders, particularly between Maple St and Kendricks. 2006 SWC Bicycling and Walking Plan. TAC.	Medium	State
97	Brownsville-Hartland Rd near Hartland town line ~ West Windsor ~ Improve bicyclist safety	Roadway	Improve safety for bicyclists. Poor road surface.	Low	Town
98	US-5 near Country Club ~ Windsor ~ Widen shoulders to improve safety	Roadway	Improve safety for motorists and bicyclists. Widen shoulders where possible. TAC, SB, RF. Could be incorporated into future paving project.	High	State
99	US-5 and VT-44A ~ Weathersfield ~ Improve intersection geometry to improve safety	Roadway	Improve geometry (to right angle) - for 44A to US-5 southbound. TAC.	Medium	State
100	VT-44 & Union St/ Ascutney St ~ Windsor ~ Improve sight distances at intersection	Roadway	Improve intersection. Bad sight distances. Yields and stops confusing. TAC.	Low	Town
101	VT-44 near Shattuck Hill Rd ~ West Windsor ~ Remove ledge to improve road safety	Roadway	Near Shattuck Hill Road. Remove ledge - very close to roadway. TAC.	Low	State
102	VT-44 near Shattuck Hill Rd ~ West Windsor ~ Improve sight distances	Roadway	Just west of Shattuck Hill Road. Improve sight distances, maybe by raising the height of the road. Talc plant land is likely to become recreation land (including ATVs) around 2019/2020 once it has been rehabilitated. TAC. District says not likely to happen.	Low	State
103	VT-100S & VT-103 ~ Ludlow ~ Improve intersection geometry and traffic flow	Roadway	High Crash Location 2006-2010. Issues during ski traffic season. Improve road markings and signage? Closed on ski days& traffic control near	Medium	Town

ID	Short description	Type	More Information	Priority	Responsibility
			Shaws. Need to make intersection more obvious, including signage.		
104	VT-103 between village and VT-100N ~ Ludlow ~ Improve roadway safety	Roadway	Several accidents. Tendency for speeding at heading out of town. TAC. Blinking speed limit sign has helped.	Low	State
105	VT-103 & VT-100N ~ Ludlow ~ Improve safety at high crash intersection	Roadway	High Crash intersection. Traffic islands have been recently fitted with delineators to improve awareness of islands and intersection.	Medium	State
106	VT-103N and Buttermilk Falls Rd and Jackson Gore entrance ~ Ludlow ~ Improve intersection geometry to improve safety	Roadway	Alter intersection geometry to make more 90 degree angle between VT-103N and Buttermilk Falls Road and Jackson Gore entrance. TAC. Okemo Mountain required to build a left turn lane through Act 250 provisions.	Medium	Okemo Mountain, State
107	VT-100N at Rod and Gun Club Road ~ Ludlow ~ Improve Safety	Roadway	Poor sight distances pulling out of Rod and Gun Club Road. TAC. Would need to cut away at bank.	Low	State
108	Improve industrial site access in North Springfield ~ Springfield	Roadway	Implement North Springfield Truck Study 2008.	High	Town
109	VT-103 & VT-10 ~ Chester ~ Improve intersection configuration and safety	Roadway	Need to improve safety at intersection, particularly with the high speeds on VT-103. Remove median? Add a feeder lane to get out of 10 safely? Reduce speed limit? TAC. Should have been addressed in last VT-103 paving project. Would need to remove island.	Low	State
110	VT-11 (Chester Rd) ~ Springfield ~ Improve roadway safety in high crash location	Roadway	Chester Rd from Breezy Hill Rd to Park Street (near Springfield Hospital Rehabilitation). Lots of accidents - head ons, rear enders, etc. Turn traffic issue. High Crash Location 2006-2010. TAC. Not much that can be done.	Low	State
111	VT-11 (Chester Rd) ~ Springfield ~ Improve roadway safety	Roadway	Chester Road near Fairground Heights Road. Lots of crashes. Wide. Several businesses. TAC.	Low	Town
112	VT-11 (Clinton Street) ~ Springfield ~ Improve safety and access management	Roadway	Springfield (Clinton St). Identified High Crash Location in 2006-2010 data from VTrans. Access management issues? Several crashes. Good sight distances. TAC, SB.	Low	Town
113	Exit ramp from I-91 southbound to VT-11 westbound ~ Springfield ~ Improve geometry as feeds into VT-11 to improve safety	Roadway	Safety issues as traffic feeds from I-91S exit ramp onto VT-11W. Right directional lights don't shut off from interstate which confuses drivers. TAC. Change signage from yield to stop? District to get traffic safety to look at it.	Medium	State
114	Exit ramp from I-91 northbound to VT-11 westbound and eastbound ~ Springfield ~ Improve signage or priorities to improve safety	Roadway	Change signage or alter priority (eg VT-11 stop?) to stop people running through the stop sign from the exit ramp. TAC.	Medium	State

ID	Short description	Type	More Information	Priority	Responsibility
115	VT-106 & Maple St/ Quarry St in Perkinsville ~ Weathersfield ~ Improve sight distances at intersection/ add advanced warnings on VT-106	Roadway	Several crashes and near misses. Cars, pedestrians, cyclists. Might help if narrow road abut. TAC, RF, SB. District will look at it.	Medium	State
116	VT-131 & VT-106 in Downers ~ Weathersfield ~ Improve intersection safety	Roadway	Improve safety. At some point may need traffic light. Add rumble strips? Investigate 4-way stop? TAC. District will look at it.	Low	State
117	VT-106 & Felchville Gulf Road ~ Reading ~ Improve sight distances to improve intersection safety	Roadway	Improve visibility. Remove berm and trees? Hard to see southbound from Knapp Brook Road (continuation of Felchville Gulf Rd in Cavendish). TAC, SB. District will look at it.	Medium	State
118	VT-103 and Depot St ~ Cavendish ~ Improve intersection geometry to improve safety	Roadway	Improve intersection. Currently two roads join into one just before the intersection. Improve safety for Depot St side which has issues of speeding. Improve traffic flow and reduce truck traffic on Depot St. TAC. Town Plan. More police patrolling on VT-103 is helping. Repaving slip lane and making it a T-intersection would help, but would have to wait until the next VT-103 repaving project.	Medium	Town
119	US-5 and Putnam Road ~ Springfield ~ Improve safety	Roadway	Remove this access to US-5? Make a dead end road. This is a problem area. Very steep. TAC, SB.	Medium	Town
120	VT-44 from Brownsville to Windsor ~ West Windsor & Windsor ~ Widen shoulder and improve sight distances to improve bicyclist safety	Roadway	Narrow roadway with little or no paved shoulder, poor sight distances. Identified in 2006 SWC Bicycling and Pedestrian Plan. TAC.	Medium	State, Town
121	Weston-Andover Rd ~ Andover ~ Address speeding issues	Roadway	Issue with speeding on Weston-Andover Road. Help town address through traffic calming, enforcement and other techniques. SB.	Low	Town
122	VT-131 in Whitesville ~ Cavendish ~ Improve sight distances at intersection near bridge	Roadway	VT-131 from High St intersection to Whitesville Rd intersection. Bad sight distances and they are not being improved significantly as part of the upcoming Bridge 1 project. SB. Not much to do other than bridge	Low	State
123	VT-131 ~ Weathersfield ~ Address safety issues at steep curve	Roadway	Steep curve with crashes there often. Add more signage or banking. Identified High Crash Location in 2006-2010 data from VTrans. SB.	Low	State
124	Repave Tyson Road	Roadway	Tyson Road is an important connector from VT-106 to VT-100 in Plymouth and gets increasing traffic volumes. It is in bad need of paving. SB.	High	Town
125	VT-11 (River St/ Main St) & Elm Hill St ~ Springfield ~ Reconfigure intersection to improve safety	Roadway	Reconfigure this intersection as a problem. SB.	Low	Town

ID	Short description	Type	More Information	Priority	Responsibility
126	VT 11 & US-5S ~ Springfield ~ Improve intersection configuration to improve safety	Roadway	Next to P&R lot. Dangerous intersection that needs improvement. SB.	Medium	State
127	VT-11 & US-5N ~ Springfield ~ Improve sight distances at intersection	Roadway	Next to Hoyt's Landing. Bad sight distances when coming south on US-5 to intersection due to bridge across Connecticut River. SB. Not much to do.	Low	State
128	VT-131 & Weathersfield Center Rd ~ Weathersfield ~ Improve sight distances at intersection	Roadway	Bad sight distances and high speeds. SB. Not much to do.	Low	State
129	VT-103 (Depot St) at railroad crossing ~ Chester ~ Improve pavement conditions	Roadway	Pavement and railroad crossing is in very poor condition near the Depot. Improve the crossings and approaches during future paving project. SB. District is aware of issue - on District List.	Medium	District
130	VT-11 (Pleasant St) at railroad crossing ~ Chester ~ Improve pavement conditions	Roadway	Railroad crossing in poor condition. District is aware of issue - on District List.	Medium	District
131	VT-44 & Johnson Rd ~ West Windsor ~ Improve sight distances	Roadway	Bad sight distances to the west. Maybe addressed in 2013? RF.	Medium	State, Town
132	VT-44 near Cherry St and Mill Pond ~ Windsor ~ Improve sight distances and reduce pedestrian crossing issues to improve safety	Roadway	Bad sight distances and pedestrian issues. RF.	Low	Town
133	State St & Ascutney St ~ Windsor ~ Improve intersection safety	Roadway	Need to improve safety. Next to school and on route to Mt Ascutney Hospital. RF.	Low	Town
134	US-5 in Windsor downtown ~ Windsor ~ Improve access to Industrial area	Roadway	Improve access to industrial area - particularly for trucks. SB.	Low	Town
135	US-5N around Ruth Carney Drive ~ Windsor ~ Improve safety	Roadway	Improve safety by reducing speed limit or reducing design speed of road? Not much to do. Already widened turning areas as much as possible for trucks. SB.	Low	State
136	US-5S ~ Windsor ~ Improve safety on curve	Roadway	Near house 869 on curve, which includes a mini-layby. Several accidents, including a serious one in 2012/2013. Police chief. Operations review?	Low	State
137	Airport Rd ~ Weathersfield ~ Improve paving	Roadway	Improve access road to Hartness Airport. Springfield SB, VTTrans.	High	Town
37	Replace/ Repair Bridge 9 ~ Andover	Bridge	Town Highway Bridge Pre-Candidate.	Medium	Town



ID	Short description	Type	More Information	Priority	Responsibility
38	Repair/ Replace Bridge 14 ~ Chester (Gassetts)	Bridge	VT-103 over Black River and railroad, north of Gassetts. Candidate State Highway Bridge Project.	High	State
39	Repair/ Replace Bridge 62 ~ Chester	Bridge	Thompson Rd near VT-103. Candidate Town Highway Bridge project.	Low	Town
40	Repair/ Replace Bridge 17 ~ Ludlow	Bridge	Pleasant St Extension Bridge. Pre-Candidate Town Highway Bridge Project.	Medium	Town
41	Repair/ Replace Bridge 57 ~ Ludlow	Bridge	Mill St Bridge. Was pedestrian only before Irene. Pre-Candidate Town Highway Bridge project.	Low	Town
42	Repair/ Replace Bridge 28 ~ Reading	Bridge	Town Farm Road (near Tyson Rd). Pre-Candidate Town Highway Bridge Project. Town wishes to complete work under Structures program. SB	Low	Town
43	Repair/ Replace Bridge 56 ~ North Springfield	Bridge	Main St (North Springfield) bridge between Fairbanks Road and VT-10. Pre-Candidate Town Highway Bridge Project. SB.	High	Town
44	Repair/ Replace Bridge 62 (McDs) ~ Springfield	Bridge	McDs bridge on VT-11 (Chester Road) between River St and Middle School. Candidate Town Highway Bridge Project. SB.	High	Town
45	Repair/ Replace Bridge 79 ~ Springfield	Bridge	Park St Bridge between VT-11 (Main St) and Mineral St. Pre-Candidate Town Highway Bridge project. SB.	High	Town
46	Repair/ Replace Bridge 63 ~ Weathersfield	Bridge	Ascutney Basin Road Bridge near VT-106. Pre-Candidate Town Highway Bridge project.	Low	Town
47	Repair/ Replace Bridge 24 ~ Windsor	Bridge	Brook Road, east of Estey Lane. Pre-Candidate Town Highway Bridge program.	Low	Town
48	VT-131 ~ Increase Exit 8 Park & Ride lot capacity ~ Weathersfield	Transit and P&R	Increase Park & Ride lot capacity. Supported by 2011 SWC Park & Ride Count Report. Town Plan, TAC, SB.	High	State
49	VT-131 & VT-103 in Proctorsville ~ Cavendish ~ Potential new Park & Ride lot location	Transit and P&R	Identified in 2012 SWC Park and Ride Needs Assessment. TAC. {Low responsibility}	Low	Town
50	VT-106 & VT-10 in North Springfield ~ Springfield ~ Potential new Park & Ride lot location	Transit and P&R	Identified in 2012 SWC Park and Ride Needs Assessment.	Low	Town
51	US-5 ~ Windsor ~ Improve public transit access	Transit and P&R	Improve public transit options to major employment centers from Windsor. SB.	High	Town
52	VT-131 ~ Maintain/ Improve sidewalks in Cavendish village (Cavendish)	Pedestrian and Bicyclist	Completed sidewalk inventory in 2011. TAC.	Medium	Town

ID	Short description	Type	More Information	Priority	Responsibility
53	VT-131 ~ Maintain and upgrade sidewalks in Proctorsville village (Cavendish)	Pedestrian and Bicyclist	Completed sidewalk inventory in 2011. TAC.	Medium	Town
54	VT-103 ~ Chester ~ Construct sidewalk connection from Chester village to high school	Pedestrian and Bicyclist	Construct a sidewalk extension or path per 2008 VT 103 Corridor Management Plan from village to the High School. TAC, SB.	Medium	Town
55	VT-11 ~ Chester ~ Improve sidewalks in Chester village	Pedestrian and Bicyclist	Implement recommendations of RSMS/ sidewalk inventory. TAC, SB.	Medium	Town
56	VT-103 ~ Ludlow ~ Maintain sidewalks in Ludlow village area and plan pedestrian connections to other major walking destinations	Pedestrian and Bicyclist	TAC.	Medium	Town
57	VT-103/VT-100 ~ Ludlow ~ Improve pedestrian connections from Ludlow Village to Lakes region	Pedestrian and Bicyclist	2014 North Ludlow Bike Path Study.	Medium	Town
58	VT-106 in Felchville ~ Reading ~ Plan for pedestrian facilities in Felchville	Pedestrian and Bicyclist	Support pedestrian projects to improve safety. TAC, SB.	Medium	Town
59	VT-11 ~ Springfield ~ Maintain and upgrade sidewalks to retain pedestrian network in Springfield downtown and nearby residential neighborhoods	Pedestrian and Bicyclist	Particularly need to improve sidewalks around Union St/ Park St to the school - SB. 2013 Sidewalk Inventory. TAC, SB.	Medium	Town
60	Near VT-106 ~ Springfield ~ Maintain sidewalks and improve pedestrian connections in North Springfield	Pedestrian and Bicyclist	2013 Sidewalk Inventory. TAC.	Medium	Town
61	Springfield Reservoir loop ~ Springfield ~ Plan pedestrian facilities near the North Springfield Reservoir	Pedestrian and Bicyclist	Support pedestrian projects in the Maple St/ Causeway/ Reservoir Road/ Piper road loop. SB.	Medium	Town
62	US-5 ~ Weathersfield ~ Plan for pedestrian facilities in Ascutney	Pedestrian and Bicyclist	Support pedestrian projects in village, especially near the school. Town Plan, TAC, SB.	Medium	Town
63	VT-106 ~ Weathersfield ~ Plan pedestrian facilities in Perkinsville	Pedestrian and Bicyclist	Town Plan, TAC, SB.	Medium	Town
64	VT-44 ~ West Windsor ~ Maintain sidewalk network and improve connections to major pedestrian destinations around Brownsville village	Pedestrian and Bicyclist	Particularly from Ski-Tow Road to the village. TAC.	Medium	Town

ID	Short description	Type	More Information	Priority	Responsibility
65	US-5 ~ Windsor ~ Maintain and improve sidewalk network in Windsor downtown and nearby residential neighborhoods	Pedestrian and Bicyclist	TAC.	Medium	Town
66	VT-44 ~ Windsor ~ Improve pedestrian connections from Union St to playing fields	Pedestrian and Bicyclist	Improve pedestrian connections. Currently no sidewalk in narrow section of road. Have to cross road several times to stay on sidewalk. Need to also address issue of retaining wall. TAC.	Medium	Town

# ABBREVIATIONS AND GLOSSARY

## ABBREVIATIONS

AADT	Annual Average Daily Travel
ABC	Accelerated Bridge Construction
ACS	American Community Survey
ADA	Americans with Disabilities Act of 1990
ADAAG	ADA Accessibility Guidelines
ADT	Average Daily Travel
ANR	Agency of Natural Resources
BBR	Better Back Roads (funding source for some bridge & culvert inventories)
CMAQ	Congestion Mitigation and Air Quality Improvement
CMP	Corridor Management Plan
CRT	Connecticut River Transit (operates “The Current”)
CTPP	Census Transportation Planning Package
DHV	Design Hour Volume
E&D	Elderly and Persons with Disabilities (also sometimes referred to as PTAC)
FEH	Fluvial Erosion Hazard area (now known as River Corridors)
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GIS	Geographic Information Systems
GPS	Global Positioning System
HMGP	Hazard Mitigation Grant Program
HRRR	High Risk Rural Roads (connected to HRRR and HSIP)
HSIP	Highway Safety Improvement Program (connected to HRRR and RSAR)
ITE	Institute of Transportation Engineers
LEHD-OTM	Longitudinal Employment Household Dynamics On-The-Map
MAP-21	Moving Ahead for Progress in the 21 <sup>st</sup> Century
MFI	Median Family Income
MUTCD	Manual of Uniform Traffic Control Devices
NHTS	National Household Travel Survey
P&R	Park and Ride (also sometimes PNR)
Region	Southern Windsor County Region
RPC	Southern Windsor County Regional Planning Commission
RSAR	Road Safety Audit Review (connected to HRRR and HSIP)
RSMS	Road Surface Management System (software for road inventories)
RTP	Regional Transportation Plan
SHSP	Strategic Highway Safety Plan
SOV	Single Occupancy Vehicle
SR2S	Safe Routes To School (sometimes SRTS)
STRAHNET	Strategic Highway Network
STRACNET	Strategic Rail Corridor Network
SWCRPC	Southern Windsor County Regional Planning Commission
SWCTAC	Southern Windsor County Transportation Advisory Commission
TAC	Transportation Advisory Committee
TAP	Transportation Alternatives Program (formerly Transportation Enhancements)
TDM	Transportation Demand Management
TEAC	Transportation Enhancements Advisory Committee

TOD	Transit Oriented Development
TPI	Transportation Planning Initiative
UVTMA	Upper Valley Transportation Management Association
VBC	Vermont Byways Council
VLR	Vermont Local Roads
VHSA	Vermont Highway Safety Alliance
VMT	Vehicle Miles Travelled
VOBCIT	Vermont Online Bridge and Culvert Inventory Tool
VSA	Vermont Statutes Annotated
VTrans	VT Agency of Transportation (or VAOT) (sometimes referred to as DOT)
WTG	Way To Go Commuter Challenge week

Other abbreviations for publications:

- Orange Book – VTrans Handbook for Local Officials (includes info on different VTrans funding programs, standards, technical assistance)
- Red Book – Continuous Traffic Counter Grouping Study and Regression Analysis Report

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## GLOSSARY

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**Average Annual Wage** – The average wage paid per year per employee within a given geographic area.

**Average Daily Trip (ADT)** –An indicator of traffic volume. Measured by counting the number of vehicles that pass a certain point. Daily totals are averaged for a given period, usually one year. Often reported as AADT-annual average daily traffic. AADT is corrected for seasonal variations.

**Bicycle Facilities** – A general term denoting improvements and provisions made to accommodate or encourage bicycling and walking, including parking facilities, maps, bikeways, walkways, sidewalks, and shared roadways not specifically designated for bicycle use.

**Bikeway** – Any road, path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are shared with other modes of transportation or for exclusive use of bicyclists.

**Context Sensitive Design** – Design considerations that are based upon FHWA’s Context Sensitive Solutions approach that seeks to provide flexibility in all phases of the transportation project development process in order to preserve and enhance scenic, aesthetic, historic, community, and environmental resources, while improving or maintaining safety, mobility, and infrastructure conditions. Flexibility in design (i.e. reducing roadway standards) in order to preserve community character is essential in Vermont as many state arterial and collector highways serve as Main Streets where they pass through village centers. For more information, see: *Flexibility in Highway Design* (FHWA, 1997) and <http://contextsensitivesolutions.org/>.

**Design Hour Volume (DHV)** – DHV is the traffic volume for the design hour, which is typically the 30<sup>th</sup> highest hour of the year. DHV is the figure used as the basis for traffic analyses for traffic impact studies and determining solutions for highway capacity problems,

**Double Stack Containers** – A type of rail transport that involves stacking trailers two high on top of one another while attached to a rail car.

**Fixed Route** – Bus or rail service which follows an established route with scheduled stops.

General Aviation Services – All aircraft, not including military and commercial airlines.

Goods Movement – The transporting of consumer products that people use.

Human Service Agencies – Those agencies which provide social services.

Infrastructure – The underlying foundation or basic framework of a system.

Intermodal – Providing seamless connections for travelers and shippers between different modes of transport.

Level of Service – A measure of how traffic-free or traffic-congested a road segment or intersection is. Levels range from A (complete maneuverability) to F (gridlock).

Median Family Income (MFI) – The midpoint in the range of incomes – as many families earn above this point as below.

Median – The midpoint in a range of values.

Mobility Limited – Difficulty related to transportation based on inability to leave home without assistance because of mental or physical limitations.

Multimodal – Using more than one mode of transportation.

National Highway System – A federal highway funding initiative intended to insure that all areas of the country are served by highways meeting minimum design, construction, and performance standards.

Paratransit Service – A sub-category of public transportation which provides service to the mobility-impaired on a regular basis. Para-transit services include demand-responsive transportation services such as shared-ride taxi.

Public Transportation – Transit systems such as bus, rail, air, and taxi used to convey the general public.

Road Classification – A system for grouping roads into categories according to specified criteria. Useful in inventorying, describing, and discussing roads.

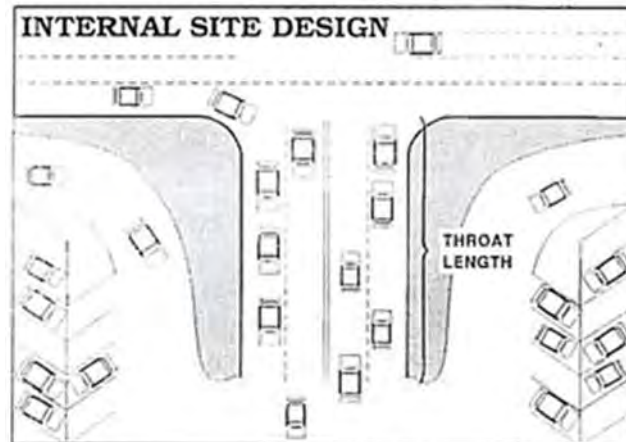
Seasonal Unit – Vacation housing units used or intended for use only during certain seasons, for weekends, or for other occasional use throughout the year; includes time-shares or shared-ownership units.

Single Occupancy Vehicle (SOV) – Private vehicle conveying one person.

Strip Commercial Development – Commercial or retail uses, usually one-story high and one-store deep, that front on a major street and are auto-oriented, usually with large parking lots in front of the building and large signs that can be read by fast-moving cars along the major road. State planning law discourages strip development along major highways, meaning that intensive developments, including retail, commercial and intensive residential development, are ideally suited to locations within community centers and are not suitable along rural highway corridors.

Sufficiency Rating – An evaluation of the adequacy of a bridge or road to perform its required functions, based on structural, safety, and service conditions.

Throat Length – Throat length is an access management term for providing safe access to a development site. Traffic circulation within a commercial site (i.e. access, parking lot) needs to provide safe and clear traffic circulation, including the provision of adequate storage space for vehicles entering and exiting the site, while minimizing traffic conflicts. The image below illustrates throat length.



Source: *Model Land Development and Subdivision Regulations That Support Access Management* (Center for Urban Transportation Research, University of South Florida)

Traffic Calming – A series of techniques used to control traffic and reduce travel speeds that seeks to maximize mobility, while creating more livable surroundings by reducing the undesirable side effects of mobility.<sup>28</sup>

Transportation Disadvantaged – Persons who, for reasons of health, age, lack of private vehicle, and/or low income may have a transportation need.

Vehicle-Miles Traveled (VMT's) – Also known as Total Vehicle-Miles. An indicator of automobile usage over a given time period (usually on an annual basis). Equal to the total number of miles traveled by all vehicles. Estimated using surveys and traffic counts.

Warrants – Warrants refer to traffic engineering criteria used to determine if certain roadway improvements are required, such as approach [traffic] volumes and percentage right turns in advancing volumes. If the applicable warrants are met, then certain roadway improvements are needed (e.g. turning lanes, traffic signals, pedestrian crossing, etc.).

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<sup>28</sup> Institute of Transportation Engineers (ITE). Traffic Calming Definition. Accessed 3/19/2013 at [www.ite.org/traffic/index.asp](http://www.ite.org/traffic/index.asp). Traffic Calming: State of the Practice. August 1999. Prepared for the Federal Highway Administration (FHWA) by Institute of Transportation Engineers (ITE)/ Reid Ewing. Available online at [www.ite.org/traffic/tcstate.asp](http://www.ite.org/traffic/tcstate.asp)

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- Ski Corridor Management Plan and Ski Country Model – See Appendix B for more information about the various components of the plan and model
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